FACTORS ASSOCIATED WITH SUCCESSFUL TALENT DEVELOPMENT IN SOUTH AFRICAN SOCCER PLAYERS

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- Solo

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ABSTRACT

In recent times, the performances of the South African senior national team ("Bafana Bafana") have not matched the impressive off-field advancements in South African professional soccer. At the historic 2010 FIFA World Cup™ held in South Africa, Bafana Bafana became the first host nation to be eliminated in the first round of the competition. Such disappointments have compelled stakeholders in South African soccer to call for a re-assessment of all structures and programmes which have an impact on the playing abilities of South African players.

Of prime importance is the need to obtain a better understanding of talent development in South African soccer. The aim of this research study was to determine the relevance of selected factors associated with successful talent development in South African male professional soccer players competing in the 2008-2009 ABSA PSL season.

In order to accomplish the research aims, the literature relating to talent development concepts and models was examined. The literature review identified seven factors which are relevant to talent development in soccer. The empirical study was exploratory, and it utilized a descriptive, non-experimental approach. Data were collected via a 53-item questionnaire, which was designed to evaluate the identified seven factors. The questionnaire was administered to a sample of 56 South African professional soccer players who played for clubs participating in the 2008-2009 season of the ABSA Premier Soccer League.

The results obtained from the sample were analysed in terms of their descriptive statistics and confirmatory factor analysis was performed. The following six factors were statistically confirmed as being associated with the successful talent development of the sample: Training Environment, Motivation and Ambitions, Personal Development, Family Support, Cultural Factors and Coaching. These six factors accounted for 58% of the overall variance. The questionnaire had a reliability of 0.84, as measured by the Cronbach alpha coefficient.

The study concludes that talent development in South African soccer is a multifactorial and complex process. Although the sample size was not suitable for discriminant analysis, theories such as the relative age effect and the '10-year rule' may be applicable to South African soccer. This study also adds to the limited body of knowledge on South African soccer, by identifying and scientifically analysing those factors which are associated with successful talent

development. As success on the international stage becomes a priority in South African soccer, the identified factors serve as a sound scientific basis in the formulation of improved structures and strategies for perfecting the abilities of young soccer players, and increasing the competitiveness of Bafana Bafana.

Keywords: soccer*, talent development, factors, professional players

CHAPTER ONE

INTRODUCTION TO THE RESEARCH PROBLEM

1.1 INTRODUCTION

Soccer in South Africa was forever changed when the President of the Fédération Internationale de Football Association (FIFA), Sepp Blatter, opened the envelope to reveal South Africa as the host of the 2010 FIFA World Cup™. Taken in 2004, this decision was a just reward for a country in which there is a passionate following for soccer, and in which more than 10% of the population identify themselves as an 'active soccer player' (FIFA, 2010).

The imminent event also heightened the status of local club soccer, especially for the Premier Soccer League (PSL) - the highest level of professional club soccer in South Africa. In 2007, the PSL signed a television deal with SuperSport worth R1,6 billion. This became the largest sporting deal in South African sport; and it also catapulted the PSL "into the top 15 ranked leagues in the world in terms of commercial broadcast deals" (SuperSport 2009). Another sponsorship deal was concluded with ABSA, in which the PSL sold the league's naming rights to the banking firm for R500 million over a period of 5 years (Joseph, 2007).

In terms of organization, attendance and revenues, the first FIFA World Cup on African soil was an overwhelming success. A total of 97% of all purchasable tickets were sold, and the 2010 FIFA World Cup generated a total revenue of USD 3 655 million (FIFA, 2011).

However, the South African senior national team ("Bafana Bafana") was eliminated in the first round of the 2010 FIFA World Cup and became the first host nation to be eliminated at this stage of the competition (FIFA 2010). South Africa was among the world's best in organising the FIFA World Cup; yet on the field, South African soccer players did not meet the global standard. Bafana Bafana's early exit caused massive disappointment for the nation's fans; and it was a great disservice to the proud history of South African sport.

1.2 THE NEED FOR THE STUDY

The lack of success in the 2010 FIFA World Cup highlighted the fact that South Africa is not a global powerhouse in soccer. However, the signs of Bafana Bafana's demise in international soccer were evident long before the 2010 FIFA World Cup. As may be shown in Table 1.1, since international readmission in 1992 and being crowned African champions on home soil in 1996, Bafana Bafana has performed worse with each passing edition of the African Cup of Nations Finals (FIFA 2010). Moreover, in all its appearances at the FIFA World Cup in 1998, 2002 and 2010, Bafana Bafana has never gone past the first round (FIFA 2010).

Table 1.1 Performances of the South African national soccer team at the African Cup of Nations Finals 1994 – 2010

Year	Played	Won	Drew	Lost	Goals For	Goals Against	Final Position
1994	Did not qualify						
1996	6	5	0	1	11	2	Champions
1998	6	3	2	1	9	6	Runners - Up
2000	6	3	2	1	8	6	3rd Place
2002	4	1	2	1	3	3	Quarter-Finalist
2004	3	1	1	1	3	5	Eliminated after First Round
2006	3	0	0	3	0	5	Eliminated after First Round
2008	3	0	2	1	3	5	Eliminated after First Round
2010	Did not qualify						

Source: FIFA (2010)

These disappointing results are in stark contrast with the increasing popularity and commercial success of South African soccer. Consequently, those involved in, or with an interest in, South African soccer have been left wondering:
Which processes or areas do we need to prioritize and improve, in order to produce South African soccer players and teams who are successful on the international stage?

It is time that researchers turned their attention to the structural identification and development of talented players within South African professional soccer. Is there a firm understanding of the talent development process in South African soccer? Globally, research has been conducted on the factors associated with the acquisition of elite skills and proficiency in soccer. A similar inquiry would be valued within the South African context. A retrospective analysis of the factors associated with successful talent development in South African professional soccer players is thus required.

Such a study would contribute to the current knowledge on talent development within South African soccer. The conclusions of the study would assist interested stakeholders in South Africa to develop the game of soccer and assist in the quest to improve the performances of Bafana Bafana in international competitions.

1.3 AIM AND OBJECTIVES

1.3.1 AIM

The specific aim of this study is to determine the relevance of selected factors associated with successful talent development in South African male professional soccer players competing in the 2008-2009 ABSA PSL season.

1.3.2 OBJECTIVES

In order to achieve the research aim, the following objectives were set:

- To determine the relevance of selected factors associated with successful talent development of South African professional soccer players competing in the 2008-2009 ABSA PSL season by using a quantitative measure such as a questionnaire.
- To perform a confirmatory factor analysis in order to establish the loading of the questionnaire items on the selected factors.

1.4 SCOPE OF THE STUDY

This research study was exploratory; and it utilized a descriptive, non-experimental approach. The data collection was quantitative in nature. The intent was to identify factors associated with successful talent development in soccer and to assess their influence in the talent development of the research participants. A retrospective method was applied. This method was selected, as the study aimed to obtain information on a talent development process which had already occurred.

A literature review was first performed in order to identify the factors. The literature review served as an important theoretical basis for the selection of an appropriate measuring instrument. A questionnaire was selected as the measuring instrument for the study. The questionnaire obtained the participants' general biographical information (for example, age) and their experiences and perceptions regarding factors associated with successful talent development in South Africa. The factors selected for analysis were: Training Environment, Motivation and Ambitions, Personal Development, Family Support, Cultural Factors, Financial Support and Coaching.

A pilot study was conducted prior to the main research study. The aim of this pilot study was to ascertain whether the correct items had been identified in the construction of the questionnaire, and to detect any possible flaws in the measurement procedures. Participants in the pilot study were recruited from a professional soccer club, Bay United, which competed in the 2008-2009 season of the ABSA PSL. Bay United is based in Port Elizabeth, and their training facilities are on the NMMU Summerstrand South Campus. Eleven professional soccer players from Bay United were chosen as participants in the pilot study.

The final research sample consisted of 56 male South African professional soccer players registered to compete in the 2008-2009 season of the ABSA PSL. In order to increase the study's validity and reliability, players of foreign origin or nationality were excluded from the study. This distinction allowed the study to accurately address the problem statement.

The quantitative data collection started in Cape Town on 28 August 2008. Permission was granted to administer the questionnaire to Ajax Cape Town players at their training ground. On 10 September 2008, the Moroka Swallows management allowed the researcher to explain his study and distribute his questionnaires at the start of a team match analysis session in Johannesburg. The completed questionnaires were collected on 12 September 2008. From September to December 2008, Bay United players completed the questionnaire after their training sessions at the NMMU Summerstrand South Campus.

The last date of data collection was 13 July 2009, with the South African U-20 national team in Johannesburg, as they camped for the FIFA U-20 World Cup in Egypt.

1.5 CONCEPT CLARIFICATION AND TERMINOLOGY

In order to ensure clarity, the following key terminology has been explained for the purposes of this study.

1.5.1 TALENT

In recognition of the fact that there is no universal consensus on a definition of "talent", "talent" will be defined as a set of favourable attributes in a youth player, which are perceived to demonstrate potential elite adult performance.

1.5.2 TALENT IDENTIFICATION

Hoare (2000:2) defines talent identification as: "The screening of children and adolescents using selected tests of physical, physiological and skill attributes, in order to identify those with

potential for success in a designated sport". This definition will be adopted for the purposes of this study.

1.5.3 TALENT DEVELOPMENT

Talent development refers to the provision of, and participation in, an optimal learning and training environment for the realization of talent. For the purposes of this study, while informal learning is acknowledged, it will be assumed that optimal talent development occurs in structured learning environments.

1.5.4 TALENT DEVELOPMENT MODEL

A talent development model is a theoretical construct used to explain, predict or modify the process of talent development from novice to elite performer.

1.5.5 FACTOR

This is an intrapersonal or environmental catalyst which influences or facilitates a participant's talent development (Gagné 2004: 120). The interaction of these factors affects the achievement of elite performance. In order to reflect the current situation in which South African youth play soccer without regard to physical characteristics, the influence of anthropometric and physiological factors will be noted in the various theories and concepts, but not specifically analysed in this research study.

1.5.6 SOUTH AFRICAN PROFESSIONAL PLAYER

A player is defined, as one of South African nationality, registered with a club competing in the 2008-2009 season of the ABSA Premier Soccer League, the highest level of club soccer in South Africa.

1.6 FORMAT OF THE REPORT

The research study will be divided into five chapters as follows:

- Chapter One introduces the research aim, the background to the proposed study and the purpose of the research. The research objectives are also outlined, and a brief analysis of the research design and methodology is presented.

- Chapter Two will explore the literature on talent development. The concept of talent and its dimensions is highlighted. Additionally, contemporary research on talent development models and factors associated with talent development will be outlined.

- Chapter Three motivates and explains the research design and methodology adopted for this research study.

- Chapter Four presents the data analysis and provides a description of the research results.

- Chapter Five discusses and evaluates all the findings of the study, and presents recommendations that should assist in a more scientific and structured approach to talent development in soccer.

CHAPTER TWO

THE LITERATURE REVIEW

2.1 INTRODUCTION

In addressing the problem statement, it is crucial to consider the literature on talent development and its associated factors within soccer. In this chapter the concept of 'talent' will be defined and explained in order to describe how 'talent' is identified and developed.

Scientific research has been conducted on the relevant physiological variables which may be considered significant in talent identification. However, these variables have limited stability and cannot fully account for the complete transformation of a junior soccer player into an elite soccer professional (Reilly, Bangsbo & Franks, 2000: 669).

Thus, the literature review highlights the talent identification and selection processes and their contribution and limitations to the talent development process. The literature overview also identifies the various talent development concepts and models, which should be considered when developing elite performance in soccer players. This chapter includes contemporary research findings on factors associated with successful talent development in all sport codes, and particularly in soccer. An analysis of these findings should provide a theoretical basis for the

construction of a measuring tool which could provide some answers to the research aim and the research objectives.

2.2 THE CONCEPT OF 'TALENT' IN SOCCER

As stated by Helsen, Holmes, Van Winckel & Starkes (2000: 728), "'talent' is both an appealing and common-sense explanation of what underlines skill in sport". All sport codes are concerned with identifying and developing talent. In the same manner, elite sport programmes often have elaborate and comprehensive protocols and test batteries, which can be used to detect a talented junior player. Those players with certain physical or personality attributes are then selected into sport talent development programmes.

The same process is followed in soccer. Here the emphasis is placed on displaying specific soccer-related skills and attaining the target measures in the various test protocols. In its current application in soccer, 'talent' is the extent to which a player possesses particular physical, physiological and mental abilities. These are regarded as contributory to elite performance on the soccer field. As such, the term 'talent' has been used to describe two distinct things: raw material as well as the end-product of a developmental process (Trankle & Cushion, 2006: 266). As a result, it is necessary to formulate clear definitions and a greater understanding of talent.

Hoare and Warr (2000: 753) propose that in complex team sports such as soccer, there are anthropometric, physiological, psychological, perceptual and technical contributions to performance. These multiple factors should be considered in any discussion with regards to 'talent' in soccer, in addition to the 'game sense' or 'awareness' that is required for excellence as a soccer player. More importantly, any attempt to identify early soccer talent must take into account the influence that growth, maturity and other relevant factors will have on these multiple factors across the player's developmental cycle (Hoare and Warr, 2000; Williams & Reilly, 2000).

It would be ideal to provide a working definition of talent, irrespective of the field of interest. Howe, Davidson and Sloboda (1998), as cited in Helsen et al. (2000:728), propose the following properties of talent:

- Talent in soccer, and in any other sport code, is partly innate - as its origins are in genetically transmitted structures.
- The full effects of talent may not be evident at an early age, but there may be indications of potential talent. These would allow trained personnel to identity players before "exceptional standards of mature performance have been demonstrated".
- Early indications of talent provide a basis for predicting who is likely to succeed.
- Only a minority are talented.
- Talent is relatively domain-specific.

Although this may seem to be an effective description of 'talent', it is highly debatable whether early indications of talent may accurately predict future expertise, especially when multidisciplinary factors in the talent development process are considered.

2.3 TALENT IDENTIFICATION AND TALENT SELECTION: THE BASIS FOR TALENT DEVELOPMENT

Talent identification programmes have become increasingly important in sport, due to the increase in the number of professional sport codes and the resultant greater competition for talented junior players (Williams & Reilly, 2000: 658). The internationalization of sport has also meant that higher performance standards are required in both domestic and international competition (Hoare & Warr, 2000: 751). As stated previously, talent identification involves "screening children and adolescents using selected tests of physical, physiological and skill attributes in order to identify those with potential for success in a designated sport" (Hoare, 2000:2).

In South Africa, talent selection is regarded as a separate but allied process by most sport federations. The distinction between talent identification and talent selection is due to the fact that talent selection is the "screening of young athletes currently participating in a sport using

experienced coaches and/or physical, physiological and skill tests in order to identify those most likely to succeed in that sport" (Hoare, 2000:2). Thus, the aim of both talent identification and talent selection is to place the players in a dedicated talent development programme. After being identified, numerous selection tests may be performed for a player to remain on a specific talent development pathway.

It is important to understand the nature of these selection tests, which have been devised to differentiate between the potentially elite and non-elite performers. According to Bailey and Morley (2006: 222), kinanthropometric and physical measures have been prioritized in talent identification. Univariate differences in aspects such as endormorphy as well as multivariate analysis on measures, such as agility, are widely used to differentiate between the potentially elite and non-elite performers (Atkinson & Nevill, 2001: 813).

In the case of soccer, talent has traditionally been established by identifying young players whose physiques and proportions resemble those of elite performers (Malina, Pena Reyes, Eisenmann, Horta, Rodrigues & Miller 2000: 686). These players must also attain the threshold values in specific physiological measurements, in order to be perceived as having the potential for elite performance (Atkinson & Nevill, 2001: 813).

One of the mission pillars of the South African Football Association (SAFA) is to contribute to "Africa's ascendancy in world football, through the hosting of major events in Africa, while aspiring and striving to become a leading football playing nation" (SAFA, 2009). Consequently, SAFA has a talent identification system in place. SAFA's talent identification system is administered by the Soccer School of Excellence and delivered through various campaigns with private sponsors (SAFA, 2009). The objectives of this talent identification system include "the development of a blueprint for the identification and proper nurturing of talent throughout the country" and the utilization of modern technology to successfully identify such talent (SAFA, 2009).

An example is the "Wonke Wonke" programme" launched by SAFA and sponsor Sasol to discover talent ahead of the SA National Under 23 side's bid to qualify for the 2008 Beijing

Olympics (SAFA, 2009). As implied by the programme's name ('Wonke Wonke' is a Zulu colloquial term meaning 'everyone'), the aim of the programme was to "hold trials in every corner of South Africa to unearth talent in conjunction with the 25 SAFA regions, ensuring that all players born after 1986 get the opportunity to showcase their talent" (SAFA, 2009).

The emphasis was placed on identifying players with particular physical characteristics and the creation of a player database. It is envisaged that the database could then be queried for players of a particular profile; and then national team coaches at all levels could select the team, based on the ideal profiles required (SAFA, 2009).

Bailey and Morley (2006:222) state that talent identification is fundamentally flawed if it uses only kinanthropometric and physical measures as a basis for determining future elite performance in soccer. This is due to the fact that kinanthropometric and physical measures are unstable during adolescence; additionally, determinants of performance may vary with growth, maturation and development. Williams and Reilly (2000: 658) also point out that the application of different measures in soccer talent identification has meant that there is no current consensus on the use and importance of physical, psychological and physiological qualities in predicting future elite performance.

Moreover, most coaches prefer to identify talent in real-life match situations. Skill or drill tests usually fail to replicate the "game sense" and decision-making that is required in elite soccer (Williams, 2000: 737). By taking cognisance of these findings, it is necessary to find a talent identification programme that encompasses more variables and factors which ultimately lead to elite performance in soccer.

Richards (1999) identified the following factors which influence the relative success of a talent identification programme:

- The ability to identify potential athletes at an early age;
- The ability to anticipate physical growth and development;
- The ability to ensure a positive support structure, such as parents and peers;

- The ability to isolate the potential athlete's interest in the individual sport, when he possesses talent in other sport codes;
- The ability to provide a quality coaching environment.

Therefore, talent identification cannot be done over the course of a day or a week, but it should be a process of monitoring players over a period of time. A more holistic approach is required; and this should involve more variables from those domains which have an effect on an elite soccer player's performance.

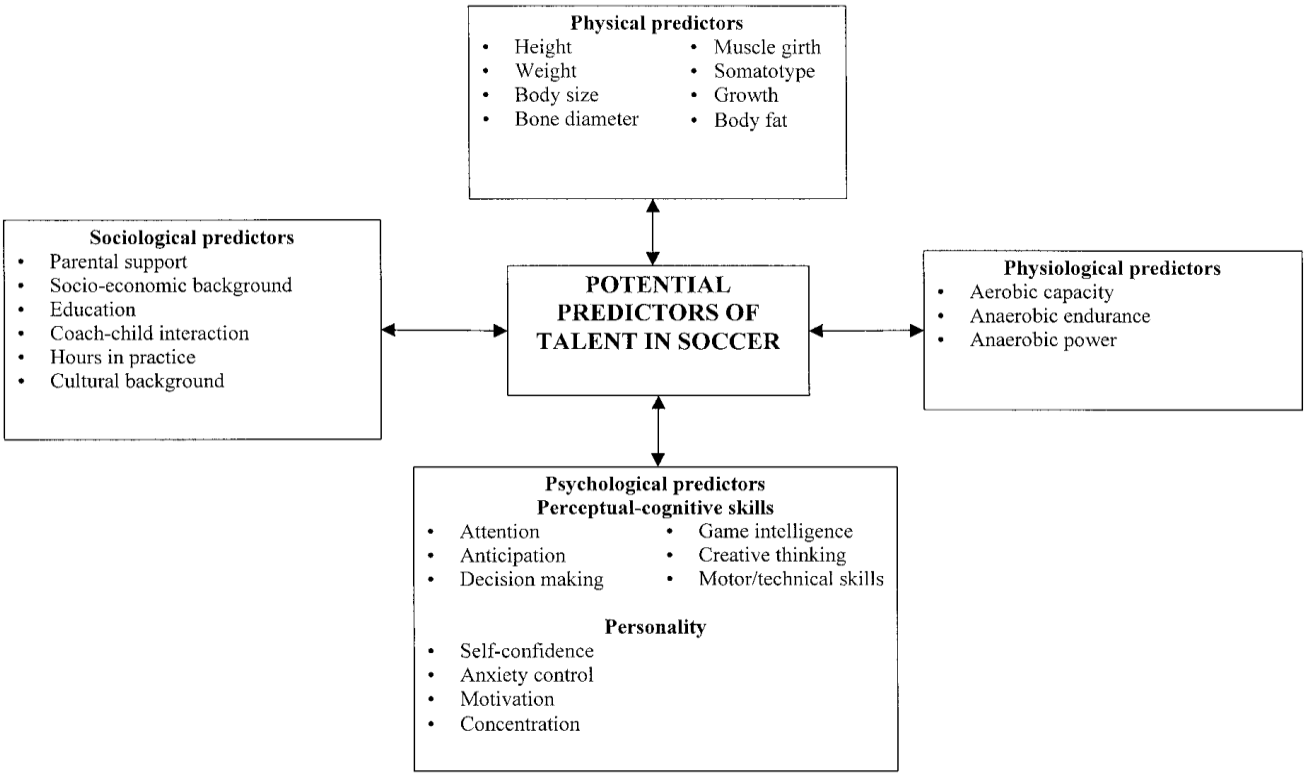

Figure 2.1 Potential predictors of talent in soccer

Source: Williams and Reilly (2000: 665)

Figure 2.1 shows a more exhaustive representation of the potential predictors of talent in soccer players as proposed by researchers Williams and Reilly (2000: 665). Sociological, psychological, physical and physiological predictors are noted as indications of elite potential in soccer. Players should be assessed on this full spectrum of predictors.

In addition to these predictors, the subjective knowledge of the coach should also be incorporated in the determination of elite potential. This would facilitate greater consistency between the theory and practice of talent identification. This is especially true when it is considered that the coach is responsible for the player's development into an elite professional. If the coach does not "see" the player's talent, the player's potential will never be realised.

2.4 TALENT DEVELOPMENT – THE NURTURING OF POTENTIALLY ELITE PERFORMERS

"Without general and specialised forms of learning, individuals will be excluded from a large number of opportunities, irrespective of their abilities" (Schoon, cited in Bailey & Morley 2006: 215). Following the talent identification process, it is vital that the athletes be provided with adequate opportunities and support to enable them to develop to their full potential - through a process of talent development. Therefore, to the grand question of whether elite performance is the result of nature or nurture, it should not be assumed that 'nature' and 'nurture' are mutually exclusive.

It is the position of this research study that 'nature' and 'nurture' are inextricably interlinked and that these two assist each other in the talent development process.

Talent development includes the provision of appropriate coaching, training and competition programmes, as well as access to facilities and equipment (Hoare 2004:3). Talent development is a long-term process and investment which provides suitable learning for the player to realise his potential and attain an elite level of performance. This process should ideally take place in a structured setting, such as a school or academy. The emphasis should be placed on learning, training and practice.

According to Reilly et al. (2000: 695), "the identification of talent in soccer is followed by selection onto a systematic programme for developing playing abilities and nurturing the individual towards realising potential already predicted". Moreover, talent identification and development are more complex issues in team games (for example, soccer) than in individual

sports (such as track and field), where there are discrete objective measures of performance (Reilly et al., 2000: 695).

Talent development implies that players are provided with a suitable learning environment in which an interdisciplinary scientific approach is combined with the "know-how' of coaches, so that the player has an opportunity to realise his potential.

There are several fundamental issues that are linked to talent development in soccer. These issues will be addressed in this study. A holistic soccer talent development has to address issues relating to:

- The amount and quality of practice required to achieve elite levels of performance (Ericsson, Krampe & Tesch-Romer, 1993; Williams & Hodges, 2005);
- The roles of coaches and family in the lives of developing athletes (Gould & Carlson, 2004; Baker & Horton, 2004);
- The provision of an appropriate environment for developing athletes (Hedstrom & Gould, 2004; Pain & Harwood, 2007);
- Specialization in specific sports at appropriate ages (Baker, 2003; Balyi, 2001); and
- The establishment of appropriate competitive structures and planning (Balyi & Hamilton, 2003; Canadian Soccer Association, 2007).

2.5 TALENT DEVELOPMENT IN SOUTH AFRICAN SOCCER

In South Africa, SAFA has adopted a strategy of organising regional and national competitions at junior level, in order to further develop any players who are identified in their talent identification programmes (SAFA, 2009). This strategy involves "sponsored programmes for every level of junior football, providing regional and national competitions, coaching, talent identification, a Soccer School of Excellence and national squads with their own training camps and international competition schedules" (SAFA, 2009).

Historically, the Under-12 age is the youngest level of competition that SAFA organises. Table 2.1 shows the tournaments for male players, which have been organized by SAFA at the various

age-group levels as a part of its talent development programme. At the Under-12 level, there are currently 11 development centres (with 28 full-time coaches) throughout South Africa (SAFA, 2009).

Table 2.1: Male age group competitions which have been part of SAFA's talent development programme

AGE GROUP	COMPETITION	INTERNATIONAL PARTICIPATION
Under-12	- Chappies Little League (District Level) - Simba Young Lions Tournament (Provincial Level)	Under-12 Danone Nations Cup
Under-14	- Transnet Tournament (Provincial Level)	Under-14 Nike International Premier Cup
Under-16	- MTN Under 16 Cup (Provincial Level)	None
Under-17	- Engen Challenge (Provincial Level) - Coca-Cola Tournament (Provincial Level)	FIFA Under-17 World Cup
Under-19	Metropolitan National League (District to National Level)	None
Under-20	Players should be competing in the SAFA-sanctioned leagues such as ABSA PSL and National First Division	- COSAFA Under-20 Championships - Southern Africa Zone 6 Youth Games - CAF Youth Championships - FIFA Under-20 World Cup
Under-23	Players should be competing in the SAFA-sanctioned leagues such as ABSA PSL and National First Division	- All-African Games - Summer Olympic Games

Source: Compiled from the SAFA website (2009)

Each centre provides coaching for 60 talented players, many of whom move to SAFA's Soccer School of Excellence once they turn 13 years old (SAFA, 2009). Both the development centres and the Soccer School of Excellence are funded by the various companies who sponsor the age-group leagues and the tournaments.

Internationally, there is regular competition starting from the Under-17 and Under-20 level, with qualifiers for FIFA-sanctioned regional and global tournaments. All the other tournaments below the Under-17 level are by invitation only. After the Under-19 age group, players are expected to sign up with professional teams. There are no structured leagues which focus on age-governed participation after the Under-19 age group.

The need for youth programmes and talent development has also been realised by the professional soccer clubs competing in the South African soccer leagues. The clubs are interested in spotting talented young players from the millions of children who play soccer in South Africa. The South African professional clubs conduct these programmes, with the aim and hope of discovering their next brilliant striker or exceptional defender.

Moreover, all the clubs in the ABSA PSL are obligated to institute youth programmes and talent development programmes. Some of the requirements for receiving a monthly R1 million grant for participation in the ABSA PSL include co-ordinating youth academies, maintaining development structures, improving club facilities and ensuring that coaches at all levels have the minimum required coaching qualifications (Alfred, 2007).

Professional soccer club SuperSport United, which won the 2008-2009 ABSA PSL league championship, has forged a strategic partnership with English professional club Tottenham, in order to access science-based support systems and training methods for its age-group teams (SuperSport United Football Club, 2009). The recently-founded SuperSport United/Tottenham Hotspur Development Academy coaches young soccer players between the ages of 15 and 17, with training facilities and further support provided by the Tshwane University of Technology. Traditional South African soccer powerhouses Kaizer Chiefs and Orlando Pirates have also

established appropriate developmental structures to achieve future success on the soccer field (Kaizer Chiefs Football Club, 2008; Orlando Pirates Football Club, 2008).

2.6 TALENT DEVELOPMENT, TRAINING AND MATURATION

Ericsson et al. (1993: 366) proposed that performance improvements in sport, or in any other domain, are a direct result of training and other deliberate efforts to improve. Consequently, it is important to assess the time and effort that is required for expertise and elite performance to be developed. In soccer, it has also been noted that a player's birth month can have a significant effect on his perceived ability and performance when the players are grouped by age. Players are sometimes regarded as being more talented, simply because they are more mature (Glamser & Vincent, 2004).

However, this maturity may be mistaken for ability. Age-advantaged players are encouraged to participate, while those disadvantaged by age may drop out of the sport and they would therefore never realise their full potential. These issues are discussed as the '10-year rule', the theory of "deliberate practice" and "the relative age effect".

2.6.1 THE '10-YEAR RULE'

When discussing talent development in sport, it would be practical to determine the time and effort required to attain an elite level of performance. The player has to dedicate some time and effort towards the training and development of his talent. One of the first research studies on the effects of practice and training on talent development and learning was conducted by Simon and Chase (as cited in Baker & Horton, 2004: 215). Here, these two authors proposed that performance differences between individuals can be explained by the "quantity and quality of training" (Baker, 2003: 86).

Although these researchers focused on the development of chess expertise, this study by Simon and Chase offered the '10-year rule'. This advocates an early specialization approach to sport talent development. The '10-year rule' proposes that "a 10-year commitment to high levels of quality training is the minimum requirement needed to attain an elite level of expertise (Baker &

Horton, 2004: 215). Bailey and Morley (2006: 212) state that the '10-year rule', and the need for 10 000 hours of training, is applicable to a wide range of activities including science, sport and music. The role of practice in high-level performance has been well documented.

In Australia, research has been conducted on the training commitment levels of hockey, netball and basketball players during their development towards elite performance. The research concluded that players at international levels in these sports took between 10 and 13 years to develop to an elite level and around 6 000 hours of sport-specific training (Football Federation Australia, 2006).

Williams and Hodges (2005) conducted a study among 16-year old soccer players at English Premier League Academies. The researchers discovered that the players who were offered full-time employment contracts had been involved in competitive sport for more than 10 years. The selected players spent "an average of around 15 hours per week, 700 hours per year and a total of 7000 hours in specific practice activities designed to enhance performance" (Williams & Hodges, 2005: 638). This implies that by the time the player plays in his first match in the English Premier League, he would have accumulated at least 10 years - or 10 000 hours - of training. Helsen et al. (2000: 731) had similar findings. These authors concluded that 10 years of dedicated practice are necessary before selection into the Belgian national team.

The '10-year rule', as proposed by Simon and Chase (as cited in Baker & Horton, 2004: 215), and the subsequent research studies in different sport codes form the empirical evidence to support early specialization in sport. In its application to soccer, the '10-year rule' suggests that the development of soccer talent and elite performance is dependent on the player's genetic factors, the correct environmental factors, such as coaching and access to training, and the player's commitment and motivation to practise (Williams & Hodges, 2005: 638).

This adds further support to a wide range of factors being considered in talent identification and development programmes. The '10-year rule' questions the validity of identifying only physical or physiological predictors of elite performance. It recommends that the "dedication and commitment to spend hours and hours practising and refining skills" are also determinants in

elite performance (Williams & Reilly, 2000: 664). It is evident that the '10-year rule' further compounds the complex interaction of physical, physiological and psychological factors that are involved in talent development.

From an early specialization perspective, the '10-year rule' would imply that talented junior soccer players should limit their sport participation to soccer only for at least 10 years before the attainment of elite performance can be expected. The amount of practice required suggests that there is limited or no time available for competitive participation in other sports. However, Baker (2003:88) suggests that non-participation in other sports is one of the negative features of the '10-year rule' and early specialization. This is a significant concern in soccer talent development, especially when it is considered that studies have shown a negative correlation between hours of sport-specific training required to reach international expertise and the number of prior sporting activities experienced (Football Federation Australia, 2006).

It is suggested that even in a sport-specific talent development context; there is a need for sport diversification. Brown (2001: 75) stresses that participation in other sports assists in overall sport-skill development at a young age and the pressure situations are also transferable to other sports. Moreover, the practice data for soccer indicate that important career decisions are made 10 years into a player's career. Consequently, competitive involvement in other sports may be considered up until this stage (Helsen et al., 2000:731).

2.6.2 DELIBERATE PRACTICE

The '10-year rule' proposed by Simon and Chase (as cited in Baker & Horton, 2004: 215) primarily focuses on the quantity of training required for elite performance. The theory of 'deliberate practice' propagated by Ericsson, Krampe and Tesch-Romer (1993) further clarifies the role of practice in the attainment of elite performance by suggesting that there is a quality element to practice activities. According to Ericsson et al. (1993: 366), "the maximal level of performance for individuals in a given domain is not attained automatically as a function of extended experience, but the level of performance can be increased even by highly experienced individuals as a result of deliberate efforts to improve."

Ericsson et al. (1993) studied expert level musicians and found that they spent in excess of 25 hours per week in deliberate practice activities, while less successful musicians spent considerably less time. Another study found that by the age of 20, expert musicians had accumulated over 10 000 hours in 'deliberate practice'. Amateur musicians had accumulated 2000 hours by the same age (Baker et al., 2003: 3).

'Deliberate practice' activities can be contrasted with the more common activities, which are considered practice such as playing the sport for enjoyment or observing others performing the sport-specific skills. Those activities that involve structured sport activities and which are played for fun under adult supervision are considered 'deliberate play' (Sobelak & Côté, 2003: 42). 'Deliberate play' can be distinguished from organized sport because it is organized to suit the demands of the participant with modified rules and changed parameters.

'Deliberate practice' activities are distinct in nature, as they are deliberately suited to the demands of the sport, require considerable effort and attention to detail, are not intrinsically motivating, and may not lead to any immediate social or financial rewards (Baker & Horton, 2004: 215).

In their study on 'deliberate practice' across sport codes, Baker et al. (2003: 3) concluded that in comparison to non-expert athletes in netball, basketball and field hockey, expert athletes spent more time in "video training, competition, organized team practices and one-on-one coach instruction". 'Deliberate practice' is thus applicable in sport (Ericsson et al., 1993). Further studies on its effect have been conducted in soccer, figure skating, middle-distance running and field hockey (Baker et al., 2003: 4).

Helsen et al. (2000: 727) state that the study by Ericsson et al. (1993) was significant for its conclusion that the role of talent nurturing had been given less relevance in the development of elite performance, as opposed to the significance of genetic factors. 'Deliberate practice', and its instrumental goal of improving performance, thus represents a necessary requirement for the realisation of elite performance, irrespective of the athlete's genetic abilities. Ward, Hodges, Williams and Starkes (2004) (as cited in Williams and Hodges, 2004: 639) state that players at

Premier League Academies in England considered their motivation to succeed, allied with the commitment to practise, to be more important in achieving success than their initial skill level or even their talent.

Central to the theory of 'deliberate practice' is the basic premise that "the amount of time that an individual is engaged in deliberate practice is monotonically related to that individual's acquired performance" (Ericsson et al., 1993: 368). In direct support of the '10-year rule', Ericsson et al. (1993: 363), concluded that "many characteristics once believed to reflect innate talent are actually the result of intense practice extended for a minimum of 10 years". The accumulation of these hours must also coincide with the athlete's critical periods of physical and cognitive development (Baker, 2003: 87).

It has been suggested that the earlier an athlete begins focused training and 'deliberate practice', the greater the chance the athlete has of achieving elite performance in the chosen domain (Ericsson et al., 1993: 397). There is also a need to progressively add to the difficulty of the deliberate practice in order to avoid plateaux in learning and to assist in the adaptation to higher volumes of training stress observed at the elite levels of sport performance (Baker & Horton, 2004: 215).

Ericsson et al. (2003: 368) emphasise that an understanding of the long-term purpose of 'deliberate practice' is crucial for commitment to its activities. Individuals should be motivated to practise by a realisation of the effect that practice has on performance. This seems to underline the correlation between practice and elite performance, rather than any causal relationship between the two variables (Bailey & Morley, 2006: 219). This is part of an important question: Why do some young players choose to invest in practice while others do not?

In soccer, junior players who experience early success may be motivated to practise more, while junior players with perceived low ability may be pushed to drop out of the sport. However, irrespective of the relationship between practice and elite performance, the research data highlighted suggest that 'deliberate practice' is required for the talented junior player to develop into an elite performer.

2.6.3 THE 'RELATIVE AGE' EFFECT

According to Glasmer and Vincent (2004: 32), "youth sport programmes use cut-off dates to ensure that children will receive age-appropriate instruction and to allow for fair competition". However, there is a great variance in the perceived abilities of children who may compete in the same age bracket. An Under-13 soccer player born in January may have a distinct advantage over an Under-13 soccer player born in December. A 12-months difference in age has been shown to significantly explain performance differences in youth competitions due to important anthropometric variances (Reilly, Bangsbo & Franks, 2000: 677; Helsen, van Winckel & Williams, 2005: 629).

This is known as the 'relative age effect' and it may be explained by both physical and psychological factors.

In terms of physical development, it has also been noted that within the same age group, older children may possess greater size, speed and co-ordination - simply because they are more mature (Glamser & Vincent, 2004). Reilly et al. (2000: 677) concluded that if junior players have a birth-date late in the competition year, these players are placed at a disadvantage within the organization of soccer participation. The researchers maintain that matching junior soccer players according to biological age is unrealistic. They propose that players should compete according to their body size.

A junior player's perceived potential and predicted success in soccer is affected by the 'relative age effect'. Current talent identification and selection both appear to be significantly influenced by a junior player's physical attributes rather than by his soccer skill (Helsen et al., 2000: 730).

Baker et al. (2003: 2) state that the relative age effect may be explained by the fact that older players are better in all physical aspects and they thus experience more success and rewards in the sport. This early success motivates the older players to remain in the sport, while the younger players drop out. It is also possible that older players get incorporated into higher competitive representational teams, where they receive better facilities and training than their younger peers.

Early-maturing young players may also be given specialist coaching, which late-maturing players are denied this opportunity at the same chronological age.

Similar findings with the psychological impact of the 'relative age effect' have been observed in diverse sports such as soccer, basketball, ice hockey , swimming and tennis (Esteva & Drobnic, 2006: 64).

The collective result of the relative age effect is achieved through the notions of physical developmental advantage, socialization and the self-fulfilling prophecy (Glasmer & Vincent, 2004: 33). Slightly older players tend to be superior physically and psychologically. This makes their selection more likely. These players are taught the correct skills and techniques, while being socialized into appropriate attitudes for later success by capable coaches. Those players who are not selected are not exposed to this socialisation and specialised training. Thus, they have a higher risk of non-selection at subsequent player evaluations. Moreover if the slightly older players are told by coaches that they are talented and therefore destined for elite participation, these players are more likely to train harder and longer to attain the elite level.

Significant trends of the 'relative age effect' have been observed using Australian data. When analysing its talent identification and elite player development programme, the Football Federation Australia (2006) observed that the relative age effect is greatest at the youngest age levels for junior male soccer players. This effect decreases as age and abilities increase. As shown in Figure 2.2, out of the 351 Under-14 and Under-15 junior provincial soccer players, 42.45% of the players were born in the January-March quarter, while only 11.97% of the players were born in the later October-December quarter.

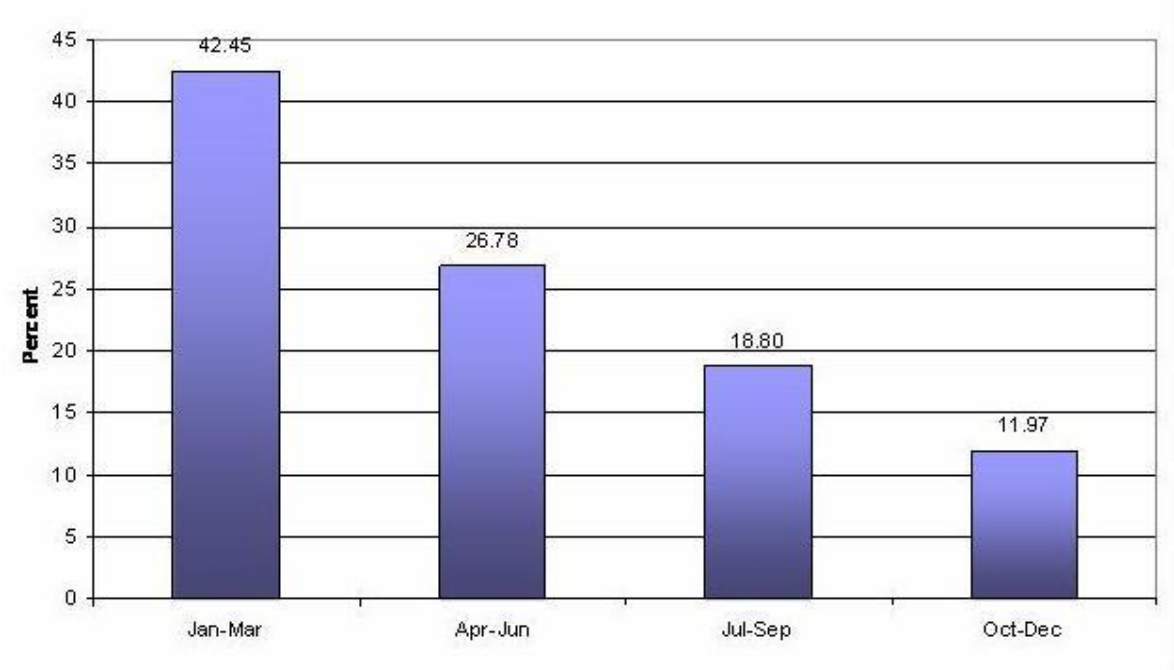

Figure 2.2 2006 Australian Under-14 and Under-15 provincial youth soccer team players by birth quarter distribution

Source: Football Federation Australia (2006)

A similar trend was also observed among the 47 Australian Under-17 and Under-20 male national team players. In this instance, as shown in Figure 2.3, 44.68% of the players were born in the January-March quarter, while only 10.64% of the players were born in the later October-December quarter (Football Federation Australia, 2006). These results are consistent with those of researchers Glasmer and Vincent (2004). These researchers studied the relative age effect among American youth soccer players who were part of the Olympic Development Programme . They found that almost 70% of the players were born in the first half of the year (Glasmer & Vincent, 2004: 31).

At elite level, the relative age effect is smaller due to the greater variation in ages. Those who have attained this level have had to deal with numerous other obstacles which are not only maturity-based (Football Federation Australia, 2006). Consequently, an elite player born in the October-December quarter would have displayed more commitment and self-belief to succeed than his age-advantaged peers. It is also true that changes in the established 'football year' and the cut-off date could cause a shift in the birthdate distribution of professional players.

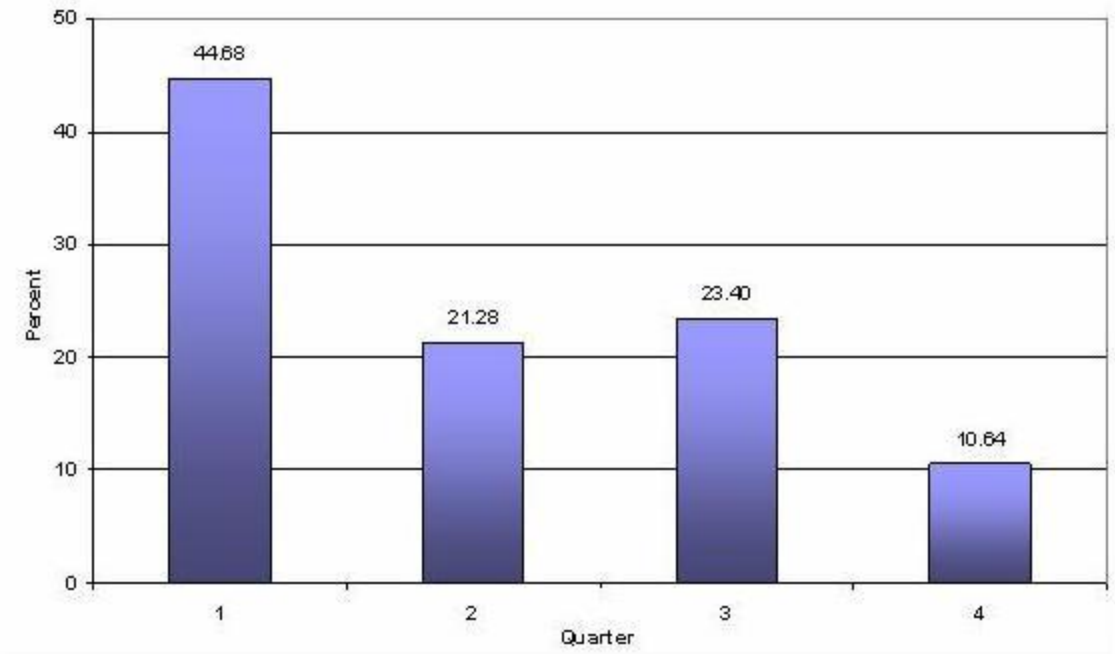

Figure 2.3 2006 Australian Under-17 and Under-20 male national team soccer players by birth quarter distribution

Source: Football Federation Australia (2006)

The relative age effect is still existent and players born in the early part of the selected age band are usually over-represented (Barnsley, Thompson & Legault, 1992; Vaeyens, Philippaerts & Malina, 2005). A corresponding shift in the birthdate distribution of elite junior soccer players was observed when FIFA changed the cut-off date in international youth competitions from 1 August to 1 January in 1997 (Musch & Grondin, 2001).

2.7 TALENT DEVELOPMENT MODELS

Despite the difficulties in predicting long-term success in young players, talent identification and development programmes are currently growing rapidly in professional soccer clubs and national associations (Reilly et al., 2000: 695). Most of the talent development programmes and initiatives in professional soccer are based on the scientific approaches advocated by talent development models (Football Association of Ireland, 2004: 6). Thus, talent development models are part of the scientific evidence that has been used to explain the ability to identify and nurture talent and potential elite performance in sport.

The six talent development models examined in this study possess multidimensional conceptions of ability that stress the development of talent and its interaction with personal and environmental characteristics.

2.7.1 BLOOM'S STAGES OF TALENT DEVELOPMENT

One of the first research studies on talent development across various domains was conducted in 1985 by Bloom (Morgan & Giacobbi, 2006: 296). According to Gould and Carson (2004: 20), Bloom investigated the talent development of 120 individuals. These included artists, academics, musicians, swimmers and tennis players. As cited by Morgan and Giacobbi (2006: 2960), Bloom's findings have become well-referenced in sport research, due to their conclusion that elite performers progress through definitive stages of development.

The retrospective analyses of talent development by Bloom and his associates suggest clear patterns of opportunity in nurturing talent (Callahan, 1997: 28). Bloom outlined three critical stages of talent development for the realisation of elite performance (Morgan & Giaccobi, 2006: 296). As shown in Figure 2.4, the first phase is the Romance Phase. This occurs in the early years of both childhood and sport participation. The features of the Romance Phase are: exploration of the activity, the development of love for the activity, receiving encouragement from significant others, having fun and being successful (Gould & Carson, 2004: 20). Parents have a significant role in this phase as they offer socio-emotional support, financial support. Parents act as role models for disciplined independence (Hedstrom & Gould, 2004: 34). Subotnik, Olszewski-Kubilius and Arnold (2003:2) state that Bloom's model illustrates that "at the most fundamental level, parents provide two critical resources: money and time".

Bloom's model listed the next phase as the Precision Phase. In this stage of talent development, there is a focus on skill development and technical mastery (Gould & Carson, 2004: 20). Thus, during these middle years, the coach or mentor promotes long-term systematic skill learning in the talented individual. Hence, there is considerable exposure to domain-specific content.

STAGE 1: ROMANCE PHASE (EARLY YEARS)	STAGE 2: PRECISION PHASE (MIDDLE YEARS)	STAGE 3: INTEGRATION PHASE (LATE YEARS)
Performer - Joyful - Playful - Excited -'Special' - Fun/social oriented	**Performer** - Hooked/committed - Potential identified - More serious - Task/achievement oriented	**Performer** - Obsessed/dominates life - Personally responsible - Independent - Willingness to dedicate time and effort required for highest standards
Mentor - Process centred - Kind/cheerful/caring - Notice child's 'giftedness'	**Mentor** -Superior technical knowledge - Strong personal interest - Respected - Strong guidance and discipline - Expected quality results	**Mentor** - Master coach - Feared/respected - Love/hate relationship - Successful/demanding
Parents - Positive - Shared excitement - Notice child's 'giftedness' - Sought mentors	**Parents** - More moral and financial support (to maintain mentor relationship) - Restrict other activities - Concerned for holistic development	**Parents** - Lesser role
General - Little or no emphasis on competition	**General** - Competition used as a yardstick for progress	**General** - Fine tuning

Transition 1	Transition 2
- Development of an athletic identity - Accelerated development - Introduction to a more technical coach - Becoming more achievement oriented - Talent identification - Competition becomes yardstick of success - Increased commitment	- Prioritisation of sport in life - Psychological rebellion - Transition characterized by turning points perhaps stimulated by a successful performance/key event - Introduction of a master coach

Figure 2.4 Bloom's Stages of Talent Development Model

Source**:** Morgan & Giaccobi 2006: 296

Wolfenden and Holt (2005: 109) state that practice time increases during the Precision Phase and competition is used to measure progress. The incorporation of competition suggests that the talented individual becomes more achievement-orientated and shows more dedication to succeed.

The final phase is the Integration Phase in which the talented individual continues to work with the coach or mentor with greater commitment and personal responsibility. The talented individual has to practise for many hours to attain optimal performance through training and the development of technical skills. Other activities are sacrificed for the sake of the main activity. There is a realisation that the activity is significant in one's life (Gould & Carson, 2004: 20).

As a result, responsibility for training and competition shifts from the coaches to the individual and the parents have a lesser role. As stated by Morgan and Giaccobi (2006: 296), individuals become experts, more autonomous and knowledgeable about their training and competition. The chosen activity dominates all aspects of the participant's life.

Gould and Carson (2004: 20) state that the three phases occur over a 15 to 20-year period and Bloom proposed that each elite performer should move through each phase in a progressive sequence, without skipping phases. Across all domains and all phases, there are considerable investments of tangible and intangible resources in nurturing talented individuals, such as financial support and transportation (Hedstrom & Gould, 2004: 34). "Bloom found strong evidence that no matter what the initial characteristics (or gifts) of the individuals, unless there is a long and intensive process of encouragement, nurturance, education and training, the individuals will not attain extreme levels of capability in these particular fields" (Bailey & Morley, 2006: 220).

Wolfenden and Holt (2005: 109) state that Bloom's model of talent development is not intended to be sport-specific and the stages are presented as generalizations across other talent domains. However, this model has been used as a theoretical basis for numerous talent development programmes in sport. Bloom's findings were significant for demonstrating that "talent development is a long-term process involving not only the talented person, but also a strong

support system" (Gould & Carson, 2004: 20). Bloom's model of talent development is also significant, as the need for training and personal commitment during practice as identified in the three phases adds further support to the importance of the '10-year rule' and "deliberate practice" in talent development.

2.7.2 GAGNÉ'S DIFFERENTIATED MODEL OF GIFTEDNESS AND TALENT

First presented in 1985, Gagné's Differentiated Model of Giftedness and Talent (DMGT) added to knowledge within talent development by offering a continuum which shows the development of aptitudes or gifts into talents with specific domains (Tranckle & Cushion, 2006: 268). Gagné's differentiated model of giftedness and talent is rooted in the educational field but its evaluation of the talent development process is applicable in diverse fields such as the arts, academic fields and sport (Gagné, 2004: 119).

At the centre of Gagné's DMGT is the distinction between giftedness and talent. "Giftedness designates the possession and use of untrained and spontaneously expressed natural abilities (called outstanding aptitudes or gifts), in at least one ability domain, to a degree that places an individual at least among the top 10% of age peers" (Gagné, 2004: 120). "Talent designates the outstanding mastery of systematically developed abilities (or skills) and knowledge in at least one field of human activity to a degree that places an individual at least among the top 10% of age peers who are or have been active in that field or fields" (Gagné, 2004: 120).

Based on this model, it may be proposed that 'giftedness' is a term that can be used to describe individuals who are endowed with a natural potential to achieve that is distinctly above average in one or more aptitude domains. In Gagné's DMGT, the aptitudes that constitute giftedness underlie the development of talents (Callahan, 1997: 24). Furthermore, Gagné contended that giftedness is, in fact, potential talent and giftedness is implicitly recognized through exceptional talent (Gagné, 2004: 120). This would suggest that giftedness is the beginning of the learning process and talent represents the achievement of a specific level of performance, as well as being the result of careful long-term development.

Aptitudes are innate or natural human abilities which can be observed in young children before they undergo any systematic training or practice. According to McPherson (1997: 66), while "aptitudes have a significant genetic component, their growth is by no means controlled solely by maturational processes; environmental stimulation plays an equally important role through daily use and information training". The identified aptitudes in Gagné's DMGT are found in the intellectual, creative, socio-affective and sensorimotor domains (Gagné, 2004: 120). It is the interaction of these aptitudes that shapes individual differences and leads to the development of different talents. For example, a child with high aptitude in the sensorimotor domain may have the fine visual perception and physical reflexes required to develop as a soccer goalkeeper. If the child is further gifted in the socio-affective domain, he or she may also possess the necessary influence and empathy to develop outstanding talent as a team captain.

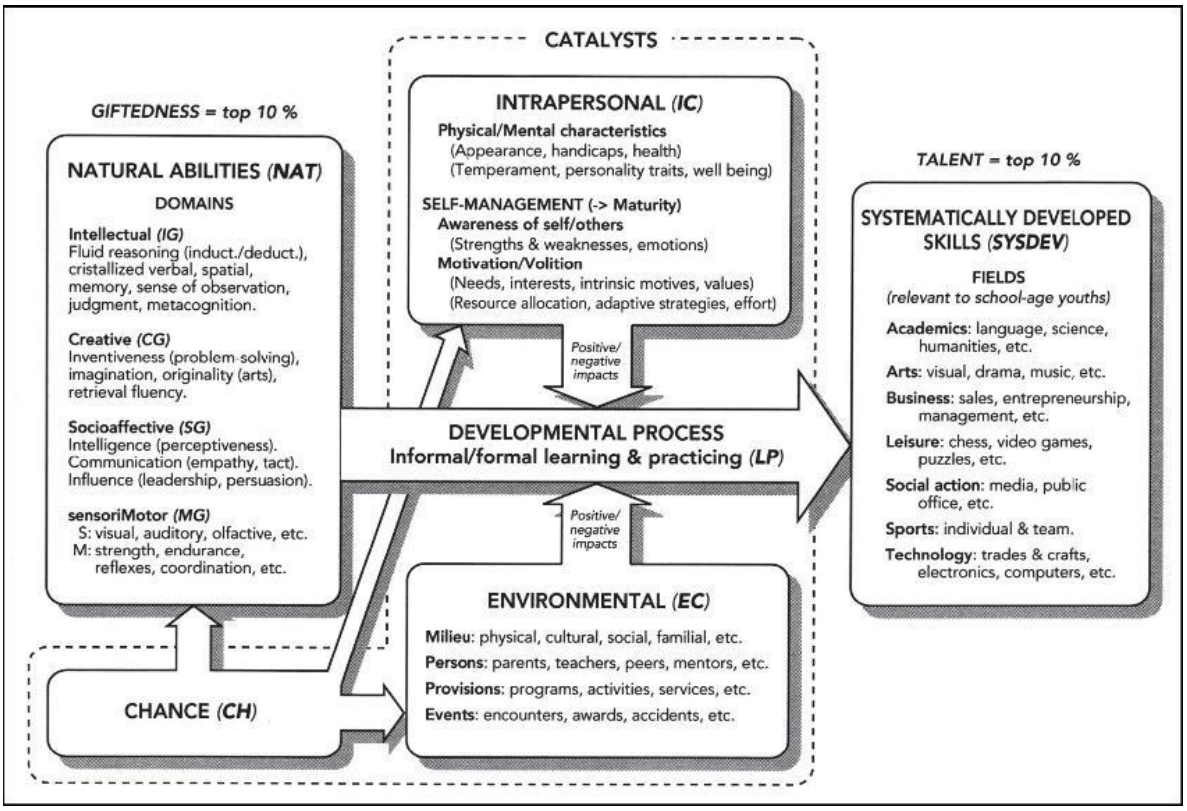

Figure 2.5 Gagné's Differentiated Model of Giftedness and Talent

Source: McPherson 1997: 66

According to Gagné's DMGT, three components influence the learning and practice process that changes natural abilities into systematically developed skills or talents (Gagné, 2004: 120). Intrapersonal catalysts, environmental catalysts and chance can have positive or negative effects on the developmental process. As illustrated in Figure 2.5, intrapersonal catalysts include physical, motivation, volition, self-management, and personality. Environmental catalysts include milieu, other people, provisions, and events (McPherson, 1997: 66).

Chance is linked to natural abilities, intrapersonal and environmental catalysts. The influence of chance is a significant assertion in the model, especially the link between chance and natural abilities, which relates to the view that gifts are genetically determined. In the same manner, "the link between intrapersonal catalysts, chance and the developmental process relates to the suitability of the individual to the field of expertise in which they are trying to develop skills" (Tranckle & Cushion, 2006: 268).

It has been noted that while the researchers have advocated the relevance of the model for sports as well as other fields, Gagné's DMGT has received limited recognition in sports research and sports talent literature (Tranckle & Cushion, 2006: 268). However, recently the Football Federation Australia (2006) has used Gagné's DMGT to formulate its talent development programme. Gagné's DMGT is noteworthy, due to this emphasis on the value of both nature and nurture in talent development. "Without an innate ability no amount of training will create a top elite player, and without the appropriate quantity and quality of training a player will not develop into a top elite player" (Football Federation Australia, 2006).

Gagné's definition of talent as an outstanding performance in a specific activity that can be developed through learning and interactions with environmental influences or even modified by the personality and motivation of the learner is also significant in sport talent development research and literature (McPherson, 1997: 67).

2.7.3 CSIKZENTMIHALYI, RATHUNDE, WHALEN AND WONG'S MODEL OF TALENT DEVELOPMENT IN TEENAGERS

Researchers have also investigated the development of talents in the social context. In 1993, Csikszentmihalyi, Rathunde, Whalen and Wong (as cited in Hedstrom & Gould, 2004: 36) chronicled the development of outstanding teenage achievers in a high school environment. "Over 200 students with talent in art, athletics, mathematics, music or science were tracked throughout high school to determine how they differed from their peers whose talents were more ordinary" (Gould & Carson, 2004: 20).

The aim of this longitudinal study was to analyse what facilitates the development of individual skills into talents, and to understand why some teenagers develop their talent and others do not. Csikszentmihalyi et al. (as cited in Hedstrom & Gould, 2004: 36) argued that talent is socially constructed. Based on their findings, it was concluded that "talent must be viewed as a developmental process and cannot be attained unless it is valued by society and recognized and nurtured by parents, teachers and coaches" (Gould & Carson, 2004: 20).

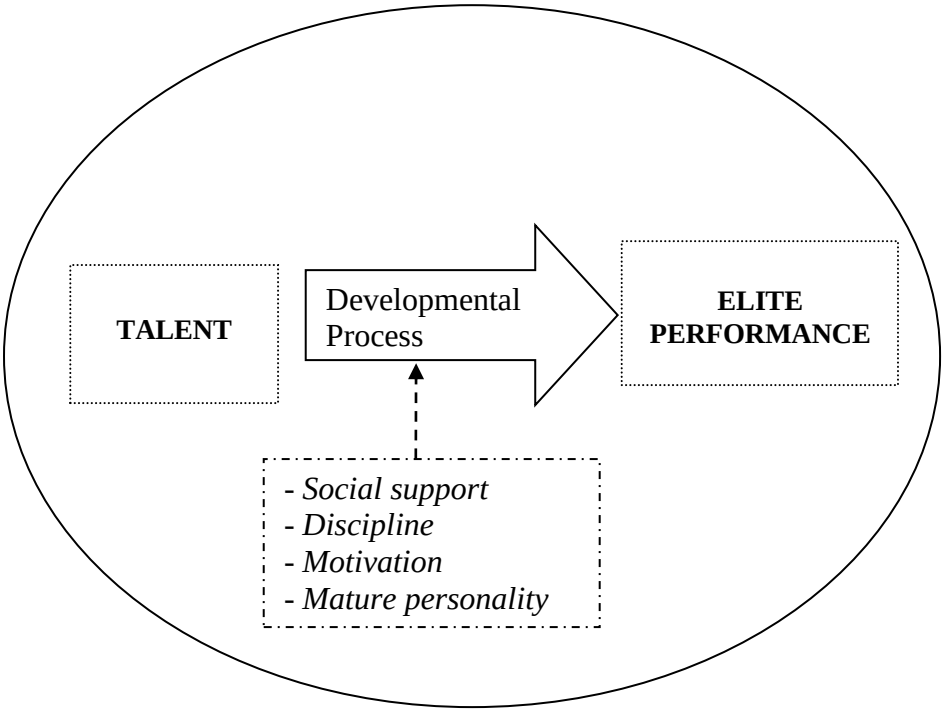

Figure 2.6 Talent development model proposed by Csikszentmihalyi et al.

Source: Adapted from Hedstrom and Gould (2004: 36)

This relationship is illustrated in Figure 2.6. Trankle and Cushion (2006: 266) state that an acknowledgement of the social construction of talent is crucial for its definition and societal influences are particularly relevant in sporting contexts.

According to Gould and Carson (2004: 20), the investigators concluded that:

(i) Teenagers cannot develop talent unless they enjoy the activities of their domain, are intrinsically motivated and are willing to work hard to achieve their goals.

(ii) Conflicts inherent in the development of talent cannot be avoided.

(iii) No teenager succeeds unless he or she is supported by caring adults.

(iv) Talent development comes more easily to teenagers who have learned habits conducive to talent development.

Consistent with earlier research, Csikszentmihalyi et al. (as cited in Hedstrom & Gould, 2004: 37) determined that the teenager's social environment is vital to talent development. Those who enjoyed emotional and material support from their families tended to develop their skills more. However, it was not necessary for the family to be a "happy family". According to Subotnik et al. (2003: 2), the researchers noted that a balance of support and tension within the family is conducive to high levels of talent development. It is suggested that such families produce individuals who are self-motivated and self-directed.

In their investigation of the pattern of activity and time use, the researchers found that learning to invest in difficult tasks is indispensable to the development of a skill. This is in direct support of the theory of deliberate practice, as proposed by Ericsson et al. (2003). Csikszentmihalyi et al. (as cited in Gould & Carson, 2004: 20) also proposed that the "sum of momentary experiences" that individuals have, while working in their own field of talent, is an important determinant of whether they stay engaged in that field over time.

Gould and Carson (2004: 21) state that the study also highlighted the fact that schools are not conducive to "flow" experiences. "Flow" is an optimal state of consciousness that occurs when people are able to meet the challenges of their environment with appropriate skills, and feel a

sense of well-being, mastery, and self-esteem (Martens, 1997: 45). This finding suggests that extra-mural participation in any given domain is required for talent development to occur.

The findings of Csikszentmihalyi et al. (as cited in Gould & Carson 2004: 20) identified motivation as a critical component in the talent development process. Motivation is greatly influenced by significant others such as coaches and parents. As stated by Hedstrom and Gould (2004: 36), "investigators suggested that for talent to develop information or knowledge relative to the tools of the domain must be provided". Thus, significant others also serve as important sources of information during the talent development process.

Discipline is also required to study the domain long enough to acquire the skills needed for superior performance. This need for discipline leads to the development of a mature personality during the teenage years. This mature personality allows the talented teenager to cope with the opportunities and obstacles that they will inevitably face in their chosen endeavours (Gould & Carson, 2004: 20).

2.7.4 CÔTÉ 'S STAGE MODEL OF SPORT PARTICIPATION

One of the criticisms of Bloom's stages of talent development model is that the model is not intended to be sport-specific. The stages are presented as generalizations across talent domains (Wolfenden & Holt, 2005: 109). Therefore while there are specific merits in Bloom's model, there was a need for a model of sport participation that is more responsive to talent development in the sport domain. In order to address this gap in sport talent development knowledge, researcher Côté interviewed four athletes and their families on the athletes' athletic career development (Morgan & Giaccobi, 2006: 296).

Côté identified three distinct chronological categories, which are important in sport talent development. These were named the "stages of sport participation".

As shown in Figure 2.7, the first stage of Côté's model has been described as the 'sampling years'. The 'sampling years' are between the ages of 6 and 12 years and they consist mostly of

play, with enjoyment, as well as experimentation in different sports (Wolfenden & Holt, 2005: 109). Therefore, there is early diversification - in order to develop fundamental motor skills and experiences needed in different sports. Brown (2001: 58) states that all the families in Côté's study considered participation in more than one sport to be an important element of talent development.

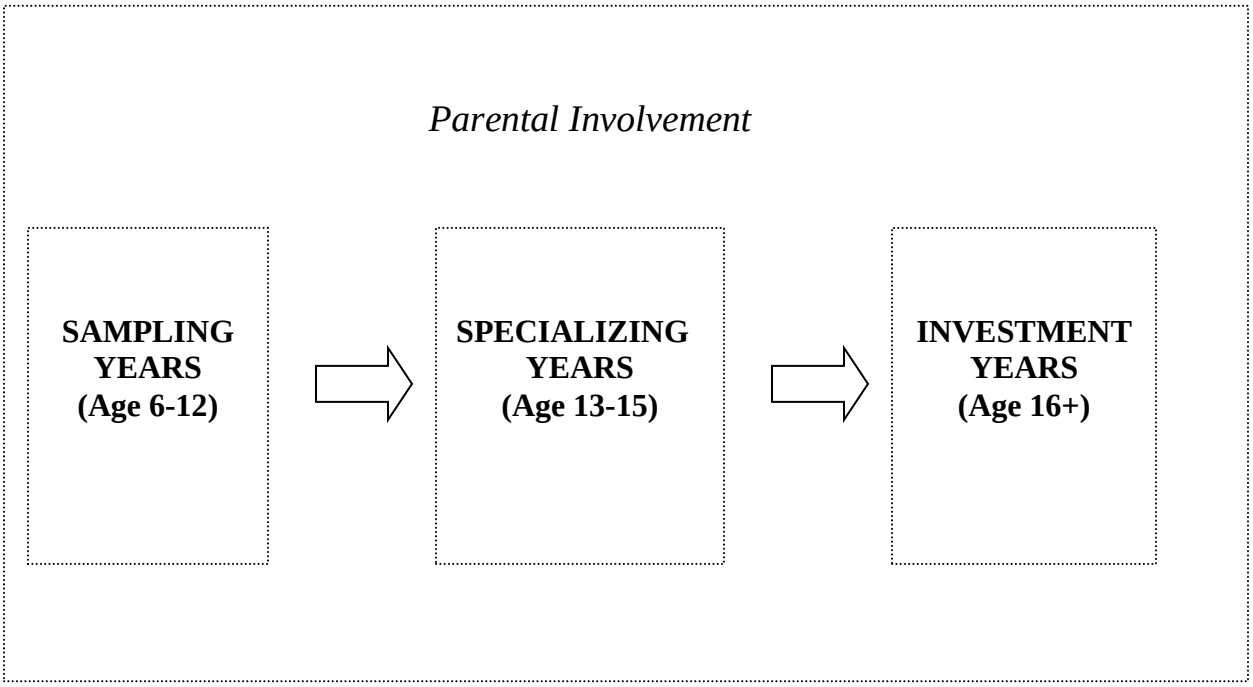

Figure 2.7 Côté's stage model of sport participation

Source: Morgan and Giaccobi 2006: 296

According to Hedstrom and Gould (2004: 37), during the 'sampling years', there is little pressure to achieve and parents provide opportunities for the child to enjoy sport and fun. It may be implied that parents encourage their child's sport involvement, as a result of their belief that sport is a positive experience and contributes to a child's overall development. There are also benefits for sport-specific development. As suggested by Baker (2003: 89), "play-like involvement in a number of sports is beneficial for developing the intrinsic motivation required during later stages of development when training becomes more structured and effortful".

The next period in Côté's stage model of sport participation is the 'specializing years'. This is the period between the ages of 13 to 15 years when athletes choose one or two sports and focus on developing their skills with more structured practices. Similar to Bloom's Precision Phase, the athlete gradually decreases involvement in extracurricular activities. However, unlike Bloom's second stage, where parental influence is secondary to the coach's or mentor's influence, during Côté's 'specializing years', parental involvement increases and parents develop a growing interest in the child's sport (Wolfenden & Holt, 2005: 109).

The parents sacrifice their own leisure time in their role of providing financial assistance, obtaining access to coaches/facilities, organizing less social activities for the athlete and prioritizing the athlete's sport and school achievement. Brown (2001: 58) points out that siblings can also cooperate - to create an environment that makes it possible for the elite athlete to develop his or her sports skills.

The final stage of sport participation is the 'investment years'. These start from the age of 16 years. The 'investment years' are illustrated by the "quest for an elite level of performance with more time, effort and intense deliberate practice needed" (Morgan & Giaccobi, 2006: 296). The athlete is now solely committed to a single sport and focused on achieving an elite standard, and building a close relationship with the coach (Wolfenden & Holt, 2005: 110).

Therefore, while the athlete's dependence is greatest in the second stage of Bloom's model, it is only in the third and final stage of Côté's stage model of sport participation that the coach attains the greatest significance in the athlete's life. In the 'investment years', parents have a less direct role, but still provide emotional and tangible support. The nature of the parental involvement across each stage of development thus changes from a leadership role in the sampling years, to a facilitative role in the specializing years and to a supportive role in the investment years (Baker et al., 2003: 6).

Brown (2001: 59) advises that a revised model of Côté's model added a fourth stage, 'perfection years, starting from the age of 18 years where the athlete is more autonomous and maintains and perfects his acquired skills.

It is evident that Côté's stages of sport participation are quite similar to Bloom's critical stages of talent development. According to Baker et al. (2003: 6), Bloom and Côté's models demonstrate how parental support helps potentially elite young players to deal with the demands of the practice required to reach the elite level of performance. In both models, it is also evident that athletes, who are unable to access certain social and financial resources, face a more difficult road to the top of their sport.

Furthermore, both models demonstrate that each stage of talent development is characterized by shifting demands imposed on the talented athlete and his parents (Wolfenden & Holt, 2005: 109).

There is also a distinct contrast in the support that current sport talent development literature offers for the two models. This draws attention to their most important difference. The main difference between the two models is that "Côté's model of sport participation is anchored in the concepts of deliberate play and deliberate practice" (Wolfenden & Holt, 2005: 110). This is due to Côté's model being grounded in the sport domain, while Bloom's model finds applicability across a wide range of talent domains.

2.7.5 BALYI'S SIX-STAGE LONG-TERM ATHLETE DEVELOPMENT MODEL

Long-term athlete development (LTAD) is a generic and conceptual framework for athletes' development that was first proposed by Dr. Istvan Balyi (England Hockey, 2005:2). The LTAD model explains the stages of sporting ability and establishes a link between the development of players to their physical and psychological growth. According to Balyi (2001: 1), sports can be categorized as early-specialization sports or late-specialization sports. Early-specialization sports, such as diving and gymnastics, require early sport-specific specialization in training. All team sports may be classified as late specialization sports which require a more generalized approach to early training.

In terms of Balyi's LTAD model, early-specialization models require a four-stage model, while late-specialization sports require a six-stage model (Balyi & Hamilton, 2003). The four-stage and six-stage models are shown in Table 2.2. For the late-specialization sports, the emphasis during

the first two phases of training should be on the development of general motor and technical skills with support from parents and coaches (Football Association of Ireland, 2004: 17).

Table 2.2 Balyi's early-specialization and late-specialization LTAD models

Early Specialization Model	**Late Specialization Model**
1. Training to Train Stage	1. FUNdamental stage
2. Training to Compete	2. Learning to Train
3. Training to Win	3. Training to Train
4. Retirement / Retainment	4. Training to Compete
	5. Training to Win
	6. Retirement / Retainment

Balyi's six-stage LTAD model is generic in nature and requires adjustment on a sport-specific basis (Balyi, 2001: 2). In soccer, Balyi's six-stage LTAD model has been used in the talent development programmes of the Football Association of Ireland and the Canadian Soccer Association (Balyi & Hamilton, 2003). The ages specified in the various stages of the six-stage LTAD model are the indicative chronological ages. Ideally, developmental maturity should be used to determine the most appropriate developmental stage and the emphasis of an individual's training (England Hockey, 2005: 12).

As shown in Table 2.3, the first stage of Balyi's six-stage LTAD model is the FUNdamental stage. The objective is to learn all fundamental movement skills and build overall motor skills (Balyi, 2001: 3). The capitalization of the letters 'FUN' also reflects the emphasis on fun and enjoyment. With the encouragement of parents and significant others, fundamental movement skills should be practised and mastered, before any sport-specific skills are introduced. There is no formal competition, although all the activities should be structured and monitored. The development of these skills, using a positive and fun approach, will contribute significantly to future athletic achievements.

Balyi's six-stage model is based on the '10-year rule' and on an early start to participation in a wide range of sports during the FUNdamental stage (age 6-8 for girls and 7-9 for boys) is also encouraged (Balyi & Hamilton, 2003). This emphasis on motor development will produce athletes who have a better trainability for long-term and sport-specific development.

The "learning to train" stage involves learning all fundamental sports skills (Balyi, 2001: 3). During this period, there is an accelerated adaptation to motor co-ordination. Early specialization may be detrimental to later stages of skill development and to the refinement of the fundamental sport skills (Balyi & Hamilton, 2003). The effect of the role-model is very important at this stage, as the young player begins to identify with famous players and successful teams (Canadian Soccer Association, 2007: 48).

The third stage of Balyi's six-stage LTAD model (the "training to train" stage) typically occurs during the ages of 12-16 years in males and 11 - 15 years in females (England Hockey, 2005: 12). The emphasis is on building the aerobic base, building strength towards the end of the phase and further developing the sport-specific skills (Balyi 2001: 4). During this phase, the coach assumes greater importance in the athlete's future development. The player is dependent on the coach, as technical instruction introduces more advanced techniques, and the tactical skills are presented in a more complex environment with a position-specific emphasis (Football Association of Ireland, 2004:74).

The fourth "training to compete" stage optimizes fitness preparation and sport, individual and position-specific skills, as well as performance (Balyi & Hamilton, 2003). This phase of development is introduced after the goals and objectives of the "training to train" stage have been achieved. There is an equal emphasis on competition and on the competition-specific training ratio (Balyi, 2001: 2). The fulfilment of each player's potential depends on his own efforts, the support of team-mates and the guidance of the coach (Canadian Soccer Association, 2007: 50).

Table 2.3 Balyi's Six-stage Long Term Athlete Development Model

Stage of Development	Age	Primary Objectives of Development	Frequency of Training	Training/ Competition Ratio
FUNdamentals	M: 6-9 F: 5-8	Learning FUNdamental movement skills	Physical activity 5-6 times per week	No formal competition
Learn to Train (L2T)	M: 9-12 F: 8-11	Learning FUNdamental sports skills	Physical activity 5-6 times. Learning a variety of sports should be encouraged	75:25
Train to Train (T2T)	M: 12-15 F: 11-14	Building fitness and sport-specific skills	Sport-specific practice 6-9 times a week for the aspiring performer	Gradually decreasing ratio of training to competition ↓
Train to Compete (T2C)	M: 15-18 F: 14-16	Refining skills for particular events or competitions	Training up to 12 times per week	
Training to Win (T2W)	M: 18+ F: 16+	Maximizing performance in competition	Training up to 15 times per week	25:75
Retirement/ Retainment	Any age after retirement		Not applicable	Not applicable

Source: England Hockey 2005: 11

Elite performance is achieved in the final stage of athletic preparation: the "training to win" stage". This stage starts at the age of 17 years in females and 18 years in males. Its objectives are to "maximize fitness preparation and sport, individual and position specific skills as well as

performance" (Balyi, 2001: 5). With the aid of a strong support system, the athlete's physical, technical, tactical and psychological qualities are now fully developed, and the focus of training shifts to performance optimization. Coaches are required to give tactical direction and there is a stronger emphasis on competition rather than on training (Canadian Soccer Association, 2007: 51). After the athlete retires from elite sport, the 'retirement/retainment" stage commences. This stage refers to the activities performed after an athlete has retired from competition permanently. These activities are encouraged to be sport-related careers such as coaching, officiating and sport administration (Balyi, 2001: 5).

Balyi's six-stage LTAD model illustrates a structured player development pathway which creates long-term excellence. The utilization of the natural stages of physical, mental, and emotional growth in athletes also makes Balyi's model very applicable to soccer. For example, to cater for the FUNdamentals stages, the Canadian Soccer Association has created partnerships with elementary schools and municipalities, to increase soccer participation and improve quality facilities (Canadian Soccer Association, 2007: 13).

Balyi's six-stage LTAD model is based on widely accepted research and its effectiveness lies in the strategic integration and application of theories to optimize the talent development process.

2.7.6 BAILEY AND MORLEY'S MODEL OF TALENT DEVELOPMENT IN PHYSICAL EDUCATION

Researchers Bailey and Morley (2006) developed a talent development model that is applicable to the field of physical education. This model was developed in the field of physical education as it is an area of school curriculum that is connected to the domains of sport and education. The researchers acknowledged the previous research that had been conducted by Bloom (1985) and Csikszentmihalyi et al. (1993). However, Bailey and Morley (2006) proposed that these earlier models covered a wide range of domains and a specific framework for investigating the actualization of abilities was required in the field of physical education (Bailey & Morley, 2006: 212).

According to Bailey and Morley (2006: 211), "most researchers on high ability favour domain-specific, multidimensional conceptions of ability that stress the development of behavioural potential and its interaction with personal and environmental characteristics". In devising the model of talent development in physical education, Bailey and Morley (2006) determined that;

- The model should be cognizant of the multi-dimensionality of abilities;
- It should be able to differentiate between potential and performance;
- The model should acknowledge the range of factors that can impact on an individual's development of an ability; and
- It should focus on physical education and allow the achievement of its diverse outcomes (Bailey & Morley, 2006: 212).

It is important to identify the abilities that are developed within certain domains and to distinguish those which are the building blocks of the stated formal outcomes. Therefore, Bailey and Morley (2006) posed the question: "What abilities are developed in physical education?" An analysis of the previous research in physical education listed psychomotor, interpersonal, intrapersonal, cognitive and creative abilities as requirements for any future performance excellence in physical education (Bloom & Morley, 2006: 215)

As shown in Figure 2.8, Bailey and Morley stressed that outcomes can only be achieved if there is correct identification of abilities, practice and provision. "The process of identification relies heavily on a stimulating, challenging and revealing environment whereby the various abilities of all children can be readily manifest" (Bailey & Morley, 2006: 217). The model also incorporates the theory of deliberate practice, as they argue that high quantity and quality practice is a necessary input for the development of expert performance. The provision element involves ensuring that talented students are given sufficient exposure to their domain area, such as organizing extra-curricular and supplementary activities.

Bailey and Morley's model of talent development in physical education proposes that the processes of identification, practice and provision are influenced by personal and environmental characteristics. As stated by Bailey and Morley (2006: 220), environmental characteristics are one of the reasons why some talented children do not progress to elite performance levels later

on in life. Talented children may be lost, due to inadequate social environments, non-supportive families, lack of financial support or any host of environmental concerns. Personal characteristics include kinanthropometric and physical measures, which are compared to expert norms and criteria to evaluate whether the talented athlete has the required genetic composition to compete at an elite level.

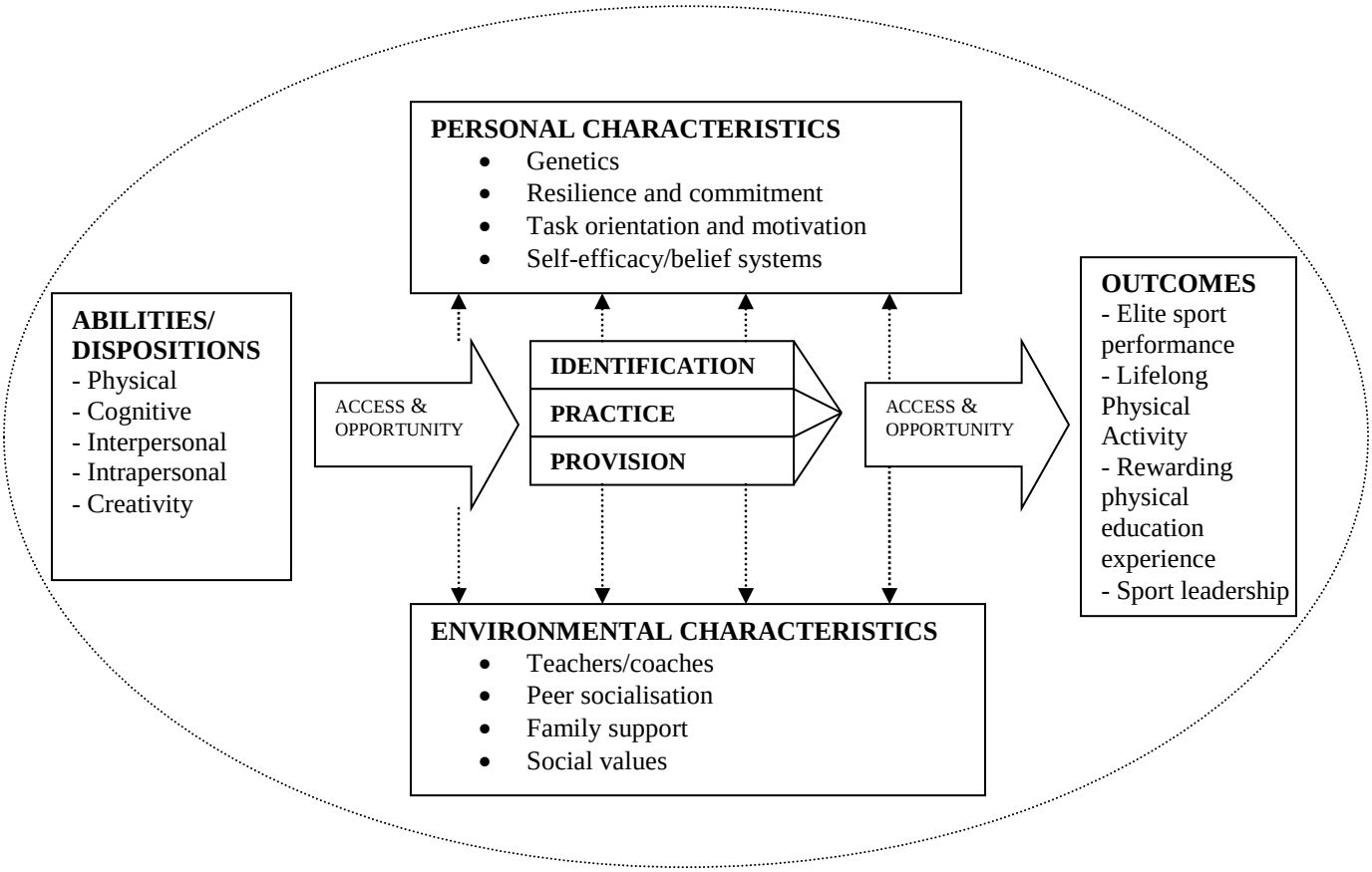

Figure 2.8 Model of Talent Development in Physical Education

Source: Figure constructed by author based on Bailey and Morley (2006: 217)

However Bailey and Morley (2006: 221) state that this approach is flawed as "kinanthropometric and physical measures are unstable during adolescence and determinants of performance vary with growth, maturation and development". Psychological characteristics are regarded as more predictive as the talented athlete has to display commitment and determination to reach the elite level.

In order to achieve the physical education outcomes such as elite sport performance, there has to be access to the correct learning environment and opportunities to achieve. According to Bailey and Morley (2006: 223), "the opportunity to study in a school with high expectations of its students and to be taught by teachers and coaches with specialist skills makes a significant contribution to later performance in specific domains". Those talented athletes who are deprived of these opportunities will be less likely to reach the elite performance level. In this lies the main application of Bailey and Morley's model talent development in physical education: it illustrates how individual development is the result of an interaction between inherited abilities, social and cultural learning as well as access and opportunity.

2.8 RESEARCH FINDINGS ON TALENT DEVELOPMENT FACTORS

Maguire and Pearton (2000) asserted that talent development in sport depends on a wide range of factors and elements. The focus and efficiency of sport organizations, the availability and identification of human resources, the methods of coaching and training, and the application of sports medicine and sport sciences are all elements which may be measured and analysed to understand an athlete's talent development process (Maguire & Pearton, 2000: 760).

It seems likely that a significant number of children never fulfil their early promise due to developmental and maturational factors and an inadequate or inappropriate social environment Bailey and Morley (2006: 223) state that young athletes deprived of the necessary factors associated with talent development "will struggle to become aware of whatever talents they might possess". As such, it is important to identify the factors associated with successful talent development, as concluded by researchers.

The following section examines research findings on factors associated with successful talent development.

2.8.1 RESEARCH FINDINGS ON FACTORS ASSOCIATED WITH SUCCESSFUL TALENT DEVELOPMENT

According to Baker and Horton (2004: 211), there are numerous factors which can influence the acquisition and manifestation of high levels of performance. In order to analyse their influence, factors can be divided into variables that have a primary influence on expertise and variables that have only a secondary influence - through their interaction with other variables. Primary influences are genetic, training and psychological factors while secondary influences include socio-cultural and contextual elements (Baker & Horton, 2004: 211).

Genetic factors involve the blending of physical and mental faculties into appropriate action. There is a large amount of literature on the hereditary nature of specific physiological and cognitive characteristics, which are relevant to sport performance (Baker & Horton, 2004: 211). According to Baker and Horton (2004: 213), studies of hereditary characteristics are essentially interested in how a person's genetic makeup (genotype) influences the expression of specific behaviours or capacities (phenotype). Research findings "indicate that significant amounts of inter-individual variation in cardiorespiratory function can be attributed to the presence or absence genes" (Baker & Horton, 2004: 213). It is also suggested that the level of attainment, in activities where these factors are important, would be affected by having an advantageous genotype.

Researchers examining differences between expert and non-experts in the cognitive aspects of sport have revealed no differences in stable physical abilities such as reaction time (Baker & Horton, 2004: 214). However, experts and non-experts do differ on information-processing strategies that can be influenced through training. It is in this way that training factors affect the talent development process (Ericsson, 1993: 365). As advocated by the "10-year" rule and the theory of 'deliberate practice', Baker and Horton (2004: 214) state that increases in sport performance are positively influenced by the adaptations to task constraints that take place through training or practice. "By continually modifying the level of task difficulty, future experts can prevent learning plateaus and perpetuate adaptation to higher amounts of training stress" Baker & Horton (2004: 215).

It is difficult to examine the psychological factors that affect talent development, due to the unique requirements of the different sports. Baker and Horton (2004) propose that there are common mental characteristics which are essential to high levels of performance in any sport. These psychological factors can be divided into those characteristics necessary for the acquisition of expertise and those necessary for the manifestation of such expertise (Baker & Horton, 2004: 216). A high level of motivation is necessary for the acquisition of expertise - "without the proper motivational disposition, it is unlikely that an athlete would be capable of attaining any significant level of proficiency" (Baker & Horton , 2004: 217).

Situational psychological requirements, such as self-confidence and concentration, were identified as being necessary for the manifestation of expertise (Baker & Horton, 2004: 217).

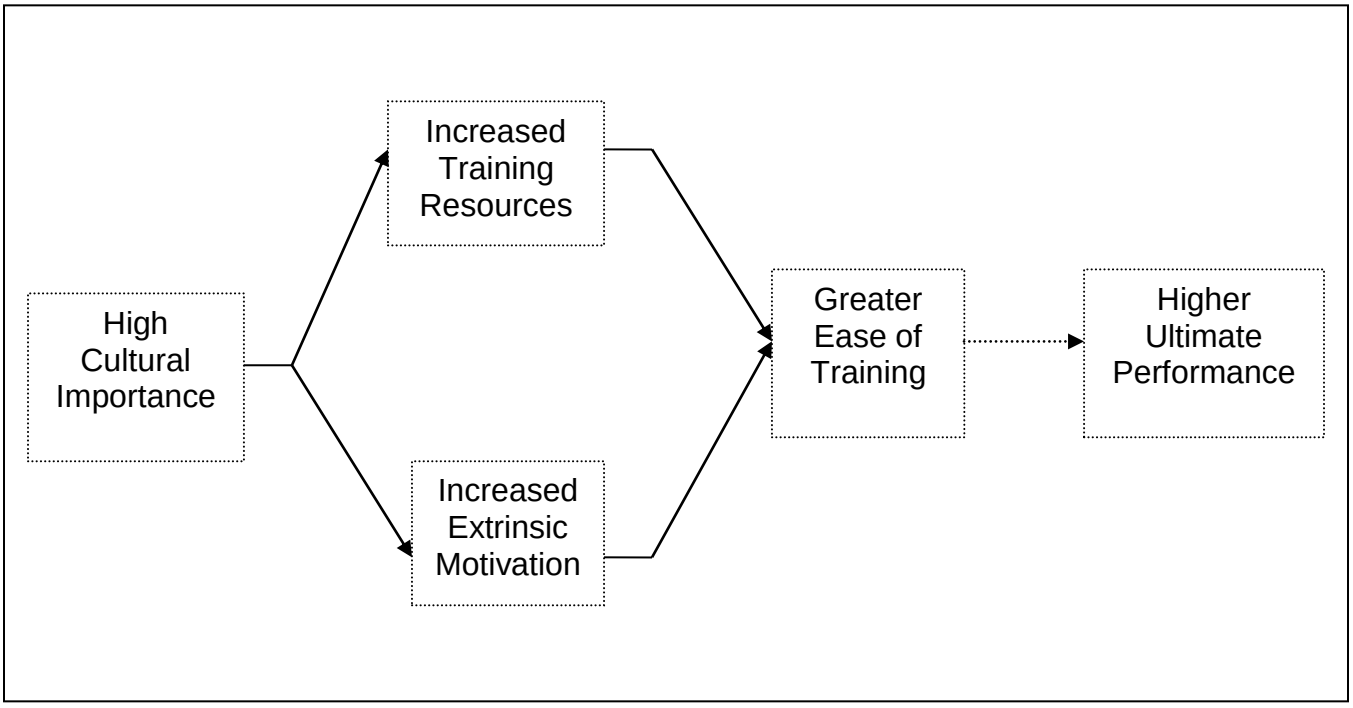

Figure 2.9 Example of the secondary effect of socio-cultural variables in sport

Source: Baker & Horton ,2004: 219

The role of primary influences is influenced by secondary factors relevant to the sport performed (Baker & Horton 2004: 219). According to Baker and Horton (2004), the socio-cultural context

is important in determining an athlete's development. Individual cultures may value different sports and may provide more societal resources to promote increased involvement and the development of higher levels of skill in that sport. This hypothetical relationship has been illustrated in Figure 2.9. Societal support leads to greater extrinsic motivation to continued involvement, leading to a greater ease of training, which in turn, facilitates the accumulation of practice hours in that sport.

If there is no societal support or endorsement, this may lead to a decreased quality of available resources and support. This makes the athlete's development path to expertise and elite performance even more difficult.

Baker and Horton (2004: 219) noted cultural importance, instructional resources and familial support as socio-cultural factors which have an influence on talent development. Contextual factors also have a role in talent development (Baker & Horton 2004: 221). It may be assumed that in sports that are relatively new or less developed, expertise can be attained with less training and deliberate practice. The number of active competitors in a sport and the depth of competition also influence the ease with which one can realize elite performance (Baker & Horton, 2004: 223).

In the case of soccer, there is a worldwide base of competitors and this makes elite performance more difficult to attain.

The adopted sport development systems within a country also determine the athlete's development pathway, as well as those factors which would have a bearing on the achievement of elite performance. Researchers Green and Oakley (2001) analysed the literature on aspects which are common to successful elite sport development systems. This study compared the sport development systems of Eastern Bloc states and Western countries. In the opinion of the researchers, all the countries were at various stages in the development of their elite sport system, yet a number of approach similarities could be identified (Green & Oakley, 2001: 256).

In terms of talent development, Green and Oakley (2001) found the following factors that affect talent development to be common among the sport development systems which were analysed:

- The provision of sports services to create an excellence culture in which all members of the team (athletes, coaches, managers, scientists) can interact with one another in a formal and informal way;
- The presentation of well-structured competitive programmes with on-going international exposure;
- The presence of well-developed and specific facilities with priority access for elite athletes;
- The formulation of comprehensive planning for each sports need;
- A recognition of the fact that excellence requires significant financial resources, with appropriate funding for infrastructure and people; and
- An athletic lifestyle support system and the preparation for life after sport (Green & Oakley 2001: 256).

This trend towards uniformity in the global development of elite sport systems demonstrates that there are significant factors necessary for talent development and elite performance.

In line with the analysis of a country's sport development system to identify factors affecting talent development, Gibbons, McConnell, Forster, Riewald and Peterson (2003) studied the factors affecting the development of a US Olympian. Gibbons et al. (2003: 4) acknowledged that the successful development of a US Olympian is the result of a long-term process, which requires high levels of training and support. The research study was based on the administration of the 'Talent Identification and Development Questionnaire' (TID
) to approximately 2100 US Olympians who competed in the Winter and Summer Olympic Games from 1984 to 1988.

According to Gibbons et al. (2003: 5), two questionnaire items asked the US Olympians to list the five factors which they believed had contributed the most to their success. The US Olympians also had to list the five most significant obstacles they had to overcome, in order to achieve success in their sport. The results of these questionnaire items are shown in Table 2.4.

Table 2.4 The top 10 success factors and the top 10 obstacles for US Olympians

Top 10 Success Factors	Top 10 Obstacles
1. Dedication and persistence	1. Lack of financial support
2. Support of family and friends	2. Conflict with roles in life
3. Excellent coaches	3. Lack of coaching expertise or support
4. Love of sport	4. Lack of support from US Olympic Committee and national governing body
5. Excellent training programmes and facilities	5. Mental obstacles
6. Natural talent	6. Lack of training/competition opportunities
7. Competitiveness	7. Medical problems
8. Focus	8. Lack of social support
9. Work ethics	9. Physical limitations
10. Financial support	10. Failure

Source: Gibbons et al. (2003: 20)

The factors which were listed as a success factors and those listed as being obstacles are of the greatest importance. As shown in Table 2.4, three factors (financial support, coaching, training and competition opportunities) were listed as both success factors and as obstacles. In terms of talent development, the US Olympians underlined the importance of having opportunity and access to high quality programmes and training facilities at all developmental phases. Conversely, the US Olympians reported a lack of access to programmes and facilities as an obstacle to elite performance.

A lack of financial support was the primary obstacle to overcome and the US Olympians reported having financial support as being one of the top 10 factors of success. "Greatest financial hardships were experienced at the national and international competitive phases and the better the performance level, the more they perceived a lack of financial support as an obstacle" (Gibbons et al., 2003: 20). As the US Olympians who completed the questionnaire participated had already in a wide range of sport codes, the provision of these factors should be prioritized in any sport in which elite performance is desired.

Wolfenden and Holt (2005) conducted a study in which they examined players', parents' and coaches' perceptions of talent development in tennis. The results from the semi-structured interviews revealed six categories associated with adult influence on talent development in tennis: emotional support, tangible support, informational support, sacrifices, pressure and relationship with coaches (Wolfenden & Holt, 2005: 107).

Emotional support represents the ability to turn to others for comfort and security during times of stress (Wolfenden & Holt, 2005: 116). The study revealed that both parents provided emotional support but coaches were not cited as being a source of emotional support. Tangible support relates to concrete assistance given to a person to help him/her cope with stressful events. Parents were identified as being a source of tangible support through the provision of financial support and transportation to training events (Wolfenden & Holt 2005: 116). Informational support identified significant others who provide the talented athlete with advice or guidance on the possible solutions to problems. Coaches were the main source of tennis-specific advice whereas parents provided more general advice relating to tennis participation (Wolfenden & Holt, 2005: 118).

Notable sacrifices were made by elite junior tennis players. Sacrifices made by players, mothers and siblings were identified as being crucial to the player's talent development (Wolfenden & Holt, 2005: 119). Participation in elite junior tennis involved some degree of pressure and stress. Players had to overcome the pressure created through parental over-involvement as well as parental and coach expectations in order to attain elite performance levels (Wolfenden & Holt, 2005: 120).

Hedstrom and Gould (2004: 26) state that "the feedback and behaviour of a parent can affect how long a child stays involved in a sport as well as how a child perceives his or her abilities.". In terms of relationships with coaches, generally positive relationships between player and coach are required for optimal talent development and the parents reported a positive perception of their child's coach (Wolfenden & Holt, 2005: 121). This study contributes to the literature, by providing information on the specific nature of the social context in which talent development in tennis occurs. In addition, its generic findings can be applied to other sport codes.

Baker et al. (2003) also examined the training and environmental factors that influence the acquisition of sport expertise. According to Baker et al. (2003: 1), environmental factors associated with the attainment of sport expertise include maturation factors, parental influences, cultural factors as well as coaching and instruction. Maturational factors refer to the 'relative age effect'. These factors can lead to training inequalities and reduced the opportunities for younger children to excel (Baker et al., 2003: 3).

The roles of coaching and instruction should also be prioritized in talent development. In the early stages of development athletes require primarily technical instruction to develop proper fundamentals, along with a high degree of support and praise to encourage participation commitment. "The ability of the coach to devise an environment that fosters optimal learning thus becomes one of the most significant keys to athlete development" (Baker, 2003: 4) Coaches with a significant tactical knowledge in the later part of athlete development are required in the later stages of talent development. According to Baker et al. (2003: 5), the practice structure and domain-specific knowledge of coaches are highly relevant to the progression and development of athletes in sport.

Baker et al. (2003) relied on the previous research done by Bloom and Côté to justify the importance of parental influences in talent development. Bloom's stages of talent development and Côté's stage model of sport participation illustrate how parental support helps elite athletes deal with the demands of the sustained deliberate practice necessary to reach an expert level of performance (Baker et al., 2003: 6). There is an evolving role for parents, as the athlete's development progresses. Athletes who are unable to access the emotional and financial resources face a more difficult pathway to elite performance.

Finally, Baker et al. (2003) mentioned cultural factors as being a significant, but often overlooked, component of athlete talent development. Athletes who compete in sports which are considered to be an integral component of the national identity are more likely to receive support, training and opportunities (Baker et al., 2003: 6).

In South Africa, limited research has been conducted to explain the talent development process and performance environment in the various sports in which participation takes place at an elite level. Nortje, Coopoo & Lazarus (2005) did, however, postulate that certain core factors influence the attainment of sporting excellence in South Africa. To assess their claim, the researchers administered a questionnaire to the top 45 swimmers in South Africa during the Senior National Championships held in Durban in April 2003 (Nortje et al., 2005: 8).

The questionnaire elicited data on the swimmer's demographic background, factors influencing elite performance, training and tertiary education, drugs in sport, coaching, facilities, scientific support and finance for swimmers.

After analysing the results of this study, Nortje et al. (2005: 12) stated that following factors are required for South African swimmers to achieve world-class performance: "Efficient administration of the sport, the most up-to-date scientific and medical support programmes, the best coaching skills coupled with the financial support, raw talent and the will to win".

For talent development in soccer, Williams and Reilly (2000: 662) stated that "sociological research places greater emphasis on the importance of environmental factors in nurturing talent". Familial influences, injury as well as facilities, practice and the role of the coach have all been noted as vital sociological factors in soccer talent development (Williams & Reilly, 2000: 662). In general, parents introduce children to participation in organized soccer, whereas friends, leaders and coaches may also be responsible for the young player's continued commitment to the sport.

The researchers suggest that social class has a significant effect on soccer participation. Children from middle-class backgrounds are usually advantaged as a result of their parents' increased financial support, greater mobility and flexibility in transporting their children to various activities and trhe giving of more supportive encouragement for the child's involvement (Williams & Reilly, 2000: 662). On a larger scale, Hoffmann, Ging and Ramasamy (2002: 253) also noted that economic, demographic and cultural factors are important variables which influence a country's performance in international soccer games.

Facilities, practice and the role of the coach are others factors to take in consideration in a soccer player's talent development pathway. According to Williams and Reilly (2000: 662), "the behaviour of coaches and their involvement with a child are more important in the development of talent than early initial ability". If there is a negative relationship and a lack of common goals between the coach and the player, the player may not give his best effort and may even drop out of the sport.

Consistent with the theory of deliberate practice, Williams and Reilly (2000: 663) suggest that "a supportive learning environment, effective practice and high quality coaching can help overcome perceived shortcomings in initial ability". Ultimately, a player's potential to succeed may be determined in part by their susceptibility to injury. It is for this reason that Williams and Reilly (2000: 663) emphasize that the prevention and detection of sports' injuries should be a central issue in soccer talent development.

2.8.2 FACTORS ASSOCIATED WITH SUCCESSFUL TALENT DEVELOPMENT AND THOSE SELECTED FOR THIS RESEARCH STUDY

After a careful analysis of contemporary research in this study, a number of factors were identified as being associated with successful talent development in South African soccer players and selected for this study.

These factors are shown in Table 2.5.

Table 2.5 Identified and selected factors associated with successful talent development in South African soccer

Reviewed literature on talent development models and related research conducted by the following researchers	Themes	Identified and selected factor
Nortje et al. (2005) Gibbons et al. (2003) Bailey & Morley (2006) Gagné' (2004) Green & Oakley (2001) Baker & Horton (2004)	Environmental catalysts Training and competition opportunities Training resources Scientific and medical support Provision of sports services	**Training Environment**
Nortje et al. (2005) Csikszentmihalyi et al. (1993) Bailey & Morley (2006) Baker & Horton (2004) Ericsson et al. (1993)	The will to win Personal characteristics Psychological factors Sacrifices Deliberate practice	**Motivation and Ambitions**
Gagné' (2004) Csikszentmihalyi et al. (1993) Green & Oakley (2001) Bailey & Morley (2006)	Intrapersonal catalysts Mature personality Personal characteristics Athlete lifestyle support	**Personal Development**
Baker et al. (2003) Wolfenden & Holt (2005) Bailey & Morley (2006) Baker & Horton (2004) Balyi (2001) Csikszentmihalyi et al. (1993) Bloom (1985) Williams & Reilly (2000) Côté' (1999)	Parental influences Sacrifices Familial influences Emotional support Social support	**Family Support**
Baker et al. (2003) Williams & Reilly (2000)	Cultural factors Social class	**Cultural Factors**

Reviewed literature on talent development models and related research conducted by the following researchers	**Themes**	**Identified and selected factor**
Green & Oakley (2001) Gibbons et al. (2003) Nortje et al. (2005) Wolfenden & Holt (2005)	Financial support Financial resources Tangible support	**Financial Support**
Williams & Reilly (2000) Bloom (1985) Balyi (2001) Bailey & Morley (2006) Csikszentmihalyi et al. (1993) Baker & Horton (2004) Nortje et al. (2005) Côté' (1999) Wolfenden & Holt (2005) Gibbons et al. (2003)	Coaching support Role of coach Relationship with coaches Coaching and instruction Coaching expertise Coaching skills	**Coaching**

2.9 CONCLUSION

The literature review has shown that multiple determinants of performance exist. A combination of physical, psychological and external factors will influence the talent development of an athlete. Talent detection, identification and development are processes that cannot be analysed with a reductionist approach, especially when such an approach prioritizes the physical aspects of an athlete. Psychosocial and environmental factors play a major role in the development of the elite player and these factors need to be emphasized. Theoretical concepts such as deliberate practice and the '10-year rule' also need to be considered.

In this study, Training Environment, Motivation and Ambitions, Personal Development, Family Support, Cultural factors, Financial Support and Coaching were selected for analysis as factors

which are associated with successful talent development in South African professional soccer players. The results of this investigation, and other related studies in South African soccer, could potentially assist in the creation of coherent, structured, and player-centred talent development pathways – and take Bafana Bafana one step closer towards international success.

The following chapter will outline the research methodology, the construction of a measuring instrument and the testing procedures used in the study.

CHAPTER THREE

RESEARCH METHODS AND PROCEDURES

3.1 INTRODUCTION

This research study aims to identify the factors associated with successful talent development in South African soccer players. According to Gratton and Jones (2004: 4), research is "a systematic process of discovery and advancement of human knowledge". This definition is in agreement with that offered by Davies (2007: 9), who states that the "purpose of research is to discover answers to questions through the application of scientific procedures".

It is evident that this study requires a research methodology that facilitates the measurement of the factors associated with successful talent development in South African soccer players. Henn, Weinstein and Foard (2006: 9) state that the correct selection of the research methodology is crucial, in order to guide the research process, and to accurately collect the data evidence that is required to make reasonable conclusions.

This chapter will highlight the research design of the study. It will also provide details on the defined population, its chosen sample and the questionnaire design. Issues and choices (including

ethical considerations) surrounding the questionnaire format and the sampling technique will also be outlined. The statistical analysis performed on the gathered data is also highlighted.

3.2 RESEARCH PARADIGM

The selection of a research paradigm is the first step towards the achievement of the research aims. According to Henn et al. (2006: 10), by definition, a 'research paradigm' is a term that is used to describe "a set of assumptions about how the issue of concern to the researcher should be studied". The research paradigm dictates the methods and techniques which should be adopted when conducting the research study. Torgerson (2003: 7) states that the most important characteristic of a suitable and appropriate research paradigm is that it should ensure that the research study is "replicable as well as reliable and credible".

The paradigm that is adopted for a research study is partly determined by the nature of the research problem. The positivistic paradigm, and its associated quantitative research strategies, proposes that the only true knowledge is scientific in character, and that scientific measurement can be used to describe the interrelationships between phenomena (Gratton & Jones, 2004: 16).

The positivistic paradigm takes the view that the world is external and objective to the researcher (Punch, 2003: 12). The causal relationships between variables may be quantified, while it is assumed that only those variables under study may be used to explain the observed phenomenon. The main features of the positivistic paradigm include the emphasis on hypothesis testing, the production of precise and specific quantitative data, as well as high reliability and replication (Gratton & Jones, 2004: 16). In this study, the positivistic paradigm and quantitative approach are to be used.

3.3 RESEARCH DESIGN

This research study was exploratory. It utilized a descriptive, non-experimental approach. The data collection was quantitative in nature. The intention was to identify factors associated with talent development in soccer and to assess their influence in the talent development of the

research participants. Here, "successful talent development" was identified as the independent variable, while the selected factors (Training environment, Motivation and Ambitions, Personal Development, Family Support, Cultural Factors, Financial Support and Coaching) were regarded as the dependent variables. Exploratory designs with descriptive and non-experimental approaches have been advocated in studies where the primary intent is to explore a phenomenon (Creswell, 2003: 215).

A retrospective method was applied. This method was selected since the study aimed to obtain information on a talent development process which had already occurred.

The research design is crucial in a research study as it assists the researcher in planning procedures that can lead to valid and reliable findings (May, 1993: 37). A research design also outlines the plan - according to which the researcher obtains research participants and collects information from them. A series of rational choices has to be made in determining the final research design. Figure 3.1 shows the research design process adopted for this study.

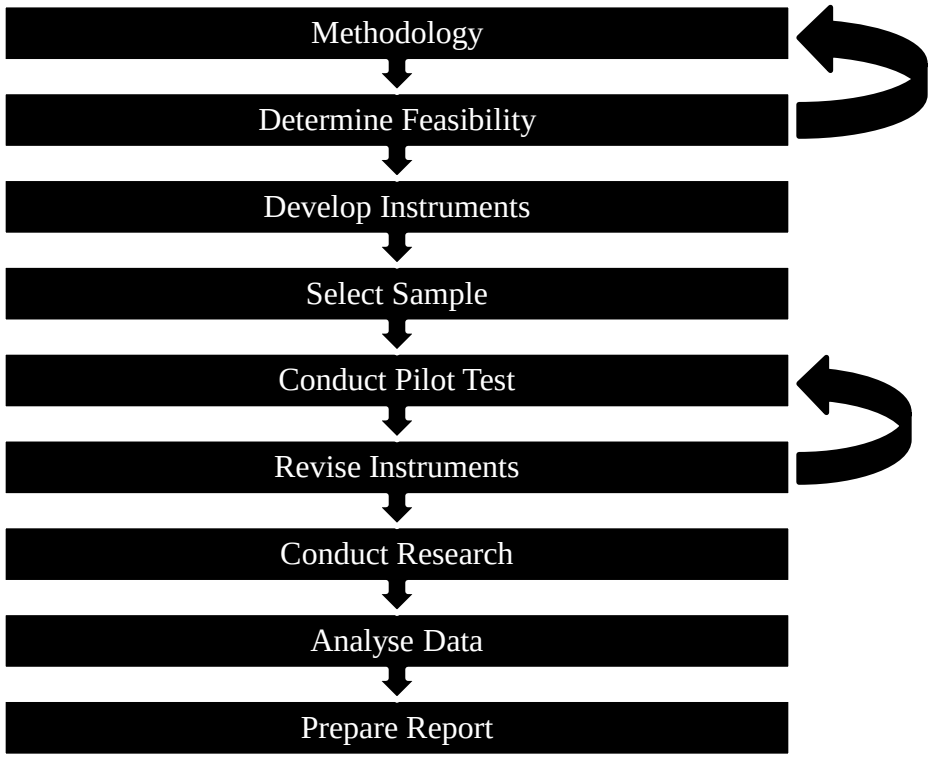

Figure 3.1 Research design process

The development of this research design was influenced by the research study's purpose, target audience, temporal aspects, the level at which the data would be analysed and the extent to which the researcher could control the study. The selected research design allowed decisions to the made on the research measuring instrument (survey design), the type of sample used (sample design), how the data were collected (data collection methods), how variables were measured (data measurement), and how these variables would be analysed to address the problem statement and the research aims (data analysis).

This chapter will provide details of the sample and survey design while the data analysis will be elaborated on in Chapter Four.

3.4 SURVEY DESIGN

Conducting a survey involves the collection of a large amount of numeric evidence, usually by means of a questionnaire (Davies, 2007: 70). Henn et al. (2006: 126) further state that a descriptive survey is concerned primarily with addressing the particular characteristics of a specific population of subjects, either at a fixed point in time, or at varying times for comparative purposes.

The survey design has to identify the methods and procedures that will be used in conducting the survey.

Questionnaires were the measuring instrument in this research study. These questionnaires were personally administered (also known as face-to-face delivery), due to the sample size and the sampling technique. Gorard (2003: 93) suggests that personally administered questionnaires are beneficial in allowing a wider response as the researcher is on hand to explain difficulties and to ensure that the correct participants from the target population answer the questionnaire. Coombes (2002: 139) asserts that this method of questionnaire distribution normally achieves high response rates and comprehensive data may consequently be collected.

3.4.1 QUESTIONNAIRE DESIGN

Gratton and Jones (2004: 115) define a questionnaire as "a standardised set of questions to gain information from a subject". Thus a questionnaire includes a pre-formulated written set of questions to which respondents record their answers, usually within closely defined alternatives. Questionnaires may be used to measure the attitudes, opinions and demographic characteristics of subjects. Punch (2003: 51) asserts that a questionnaire must be designed so that it answers the research objectives and assists in the data analysis process.

3.4.1.1 Questionnaire content

In order to test the talent development factors identified through the literature review, a questionnaire evaluating the participants' perception of their own talent development was utilized. The questionnaire was divided into two sections. Section A obtained biographical information from the respondents and assisted in classifying respondents according to their personal characteristics. Section B had items in which the respondent had to indicate his level of agreement or disagreement - based on experiences from his own talent development. The responses were analysed to evaluate the players' views of the factors associated with their successful talent development. There were also two open-ended questions relating to the respondent's talent development.

3.4.1.2 Questionnaire format

According to Gratton and Jones (2004: 119), questions may be described as open-ended or close-ended. Open-ended questions allow the respondent to give a personal response in his or her own words, while close-ended questions require the respondent to select an answer from a number of predetermined alternatives. Gorard (2003: 103) states that the type of question chosen has implications for the type of evidence to be obtained.

In this study, the questionnaire contained both closed-ended and open-ended questions. For the closed-ended questions, the questionnaire asked positively-worded, factual questions and investigated the respondent's opinions on his own talent development process. As noted by Henn et al. (2006: 139), "closed questions are easily asked, easily understood, quick to answer and

quick to code for analysis." This view is supported by Coombes (2002: 333), who adds that closed-ended questions are also quick to administer, while allowing all the respondents to express their opinion in a uniform manner.

Gratton and Jones (2004: 121) propose that the type of measurement scale be identified, and that the measurement scale be appropriate for the statistical techniques to be used during the data analysis. Section A used nominal scales of measurement, while Section B only utilized an ordinal measurement scale. Diamantopoulos and Schlegelmilch (2000: 24) define a nominal scale as a type of scale in which the measures "serve only as labels for identification and classification", while an ordinal scale creates an "ordered relationship" between the characteristics being measured.

In Section A, the respondents were asked to provide biographical data which would assist in the categorization of their responses. The respondents also had to describe their participation in various activities linked to their talent development. In Section B of the questionnaire, attitudinal questions were asked and a 5-point Likert scale was used. The Likert scale is generally used to assess attitudes. The Likert scale is designed to allow respondents to indicate how strongly they agree or disagree with carefully constructed statements concerning an attitudinal object (Gratton & Jones, 2004: 121). The responses on this Likert scale ranged from 'strongly disagree' to 'strongly agree'.

The two open-ended items (Items 8 and 9) were included in the questionnaire, in order to receive input from the respondents and to identify any factors which may not have been addressed in those selected by the researcher. A coding frame was used to categorise the responses for the open-ended questions. Each player's verbatim statement was analysed, according to its content, and then grouped within a similar subset. The subsets were then grouped together under a theme. The themes for the statements regarding the player's perception of his main reasons for success in soccer (Item 8) were created under the conceptual factors associated with successful talent development. The themes for the statements on the player's own perception of his career highlights (Item 9) were formulated as in vivo themes, based on vivid terms in the player's own words.

Table 3.1 highlights the content and response layout of the questionnaire:

Table 3.1: Questionnaire content and format

Question number	**Measurement Scale**	**Type**	**Theoretical concept identified**	**Number of items or sub-questions**
SECTION A				
1	Nominal	Demographic	Biographical information	1
2	Nominal	Demographic	Race	1
3	Nominal	Demographic	Education level	1
4	Nominal	Demographic	Family structure - siblings	3
5	Nominal	Demographic	Family structure - parents	1
6	Nominal	Free choice	Start of soccer participation	3
7	Nominal	Simple dichotomy	Talent identification programme participation	1
8	Nominal	Free choice	Year when player made PSL debut	1
9	Nominal	Checklist	Participation in semi-professional and professional lower leagues	2
10	Nominal	Free choice	Current PSL club	1
11	Nominal	Checklist	National team representation	1
12	Nominal	Free choice	Overall sport participation	3
SECTION B				
1	Ordinal	5-point Likert scale	Training environment	7
2	Ordinal	5-point Likert scale	Motivation and ambitions	7
3	Ordinal	5-point Likert scale	Personal development	6

Question number	Measurement Scale	Type	Theoretical concept identified	Number of items or sub-questions
SECTION B				
4	Ordinal	5-point Likert scale	Family support	10
5	Ordinal	5-point Likert scale	Cultural factors	7
6	Ordinal	5-point Likert scale	Financial support	8
7	Ordinal	5-point Likert scale	Coaching	8
8	Open-ended question	Free response	Player's perception of main reasons for success in soccer	1
9	Open-ended question	Free response	Player's perception of career highlights	1

3.5 SAMPLE DESIGN

Selecting a sample is a necessary and fundamental part of any quantitative research study. The purpose of sampling is to obtain data on the subset of a given population, so that the researcher can make inferences on the population based on that data obtained from the subset (Coombes, 2002: 34). Therefore, it is important to select a sample which is both representative and unbiased.

The reliability and validity of a research study is a function of the data collected from the sample. As such, issues surrounding the sampling frame should be addressed. The chosen population, the sample, the sampling technique and the survey design are highlighted in this part of the research study.

3.5.1 DEFINING THE TARGET POPULATION

Population refers to the entire group of people, events or items of interest that the researcher wishes to investigate, while an element is a single member of that population (Sekaran, 2003: 265). David and Sutton (2004: 149) define a population as "every possible case" that the researcher could include in the study. The population frame is a listing of all the elements in the population from which the sample is drawn (Sekaran, 2003: 265).

The researcher has to identify the target population - which is the complete group of specific population elements relevant to the research study. The precise criteria employed by the researcher to define the target population must be applicable to the nature of the research enquiry and the research objectives. Gorard (2003: 58) points out that the population should always be defined in advance, so that the research results are can be accurately generalized.

In this study, the target population consisted of professional soccer players registered with soccer clubs that were participating in the 2008-2009 season of the ABSA PSL. This season started on 27 August 2008 and ended on 10 May 2009 (SAFA, 2009). The ABSA PSL is the highest level of club soccer in South Africa. In March 2009, 507 professional players were registered at the 16 competing clubs (Greig, 2009: 36). Of these 507 players, a total of 86 players were of foreign origin (Greig, 2009: 36). These players developed their talent in various foreign countries and their experiences cannot be applied to the South African soccer environment.

Additionally, there might have been different cut-off dates for age categorization. As a result, the 86 foreign players were excluded from the study's population. The study's target population was defined as the 421 professional players registered with clubs participating in the 2008-2009 season of ABSA PSL, and who are South African by nationality.

3.5.2 DEFINING THE SAMPLE

Sekaran (2003: 266) describes sampling as the process of selecting a sufficient number of elements from the population, so that a study of the sample and an understanding of its properties or characteristics would make it possible for the researcher to generalize such properties or

characteristics to the population elements. In research studies involving a large number of elements, the cost and time involved in examining every element makes sampling a reliable means of obtaining results.

A sampling frame is a list or other record of the population from which all the sampling units are drawn (May, 1993: 70). Gratton and Jones (2004: 100) state that the results obtained from a sample must have good generalizability in relation to the target population. Effective sampling should contribute to the validity and reliability of the study.

Table 3.2: 2008-2009 ABSA PSL clubs represented in the sample

PSL club	Number of Respondents
Ajax Cape Town	11
Bay United	7
Bidvest Wits	3
Bloemfontein Celtic	1
Jomo Cosmos	2
Kaizer Chiefs	4
Moroka Swallows	17
Orlando Pirates	4
Platinum Stars	2
SuperSport United	5
Total number of respondents	**56**

For the purposes of this study, the sampling frame was the *Kick Off Yearbook 2008/2009* which is published by the most-widely-read soccer magazine in South Africa, *Kick Off*. The *Kick Off Yearbook 2008/2009* served as a directory of all the teams competing in the 2008-2009 season of the ABSA PSL – giving a detailed analysis of their fixtures and information on their registered

players. The 16 ABSA PSL clubs represented 'population clusters' from which the sample was drawn.

Table 3.2 shows the ABSA PSL clubs, which were ultimately included in the sample, and their contribution to the total number of respondents in the research study.

3.5.3 SAMPLING TECHNIQUE

There are two major types of sampling design: probability and non-probability sampling. In probability sampling, the elements in the population have some known chance or probability of being selected as sample subjects (David & Sutton, 2004: 150). In non-probability sampling, the elements do not have any known or predetermined chances of being selected as subjects. These two major sampling designs require different sampling techniques.

For the purpose of this study, the non-probability method of purposive sampling was used. As stated by Bloomberg and Volpe (2008: 69), "the logic of purposive sampling lies in selecting information-rich cases, with the objective of yielding insight and understanding of the phenomenon under investigation." The elements in the sample were chosen because they share certain, clearly defined core characteristics and were available to participate in the study.

Gorard (2003: 74) states that purposive sampling is fairly common in social science research. This approach is also useful when there are no measures or instruments available, the variables are unknown and there is no guiding framework or theory to assist the researcher (Creswell & Clark, 2007: 75).

In this research study, due to time and cost limitations, the researcher's intention was to administer the measuring instrument at ABSA PSL clubs which either:

- Were in close proximity to the researcher, or
- Were located in a city with a relatively high density of ABSA PSL clubs.

The research questionnaire was consequently administered in Port Elizabeth, Cape Town and Johannesburg.

3.5.4 SAMPLE SIZE

An important concern for every researcher is the size of the sample. Various factors and formulae may be taken into consideration when determining the ideal sample size. David and Sutton (2004: 153) propose that there are three main considerations to bear in mind when deciding on a sample size:

- The kind of statistical analysis which is being planned;
- The expected variability within the samples and the results, based on experience;
- The traditions in the particular research area regarding appropriate sample size

Gorard (2003: 60) suggests that the sample size should not be based on the resources available to conduct the study, but on the ability of any given sample size to yield data capable of answering the research questions associated with the study. Diamantopoulos and Schlegelmilch (2000: 16) also focus on the statistical importance of a sample. In their opinion, the three factors that are required to specify a sample size are: the degree of variability in the population; the desired degree of precision associated with the population estimate, based on a sample and the confidence level associated with any conclusions reached.

Factors such as cost, time, respondent availability and the data requirements for the required statistical analysis, ultimately led a sample size of 56 respondents in this study.

3.5.5 THE PILOT STUDY

A pilot study is recommended for all research types (Bloor & Wood, 2006: 130). According to Coombes (2000: 43), a pilot study is an effective way of testing whether the methods selected for use in the research study produce valid and relevant results. Davies (2007: 47) advocates that "a good pilot study involves selecting a sample in the same way as intended for the final study, negotiating access in the same way, delivering the instrument in the same way, calculating response rates and analysing the results in the same way". Thus, a pilot study gives an indication of how respondents will interpret and react to the questions.

An initial 11 questionnaires were distributed to professional soccer players from Bay United, a soccer club based at the NMMU Summerstrand South Campus, Port Elizabeth and competing in the 2008-2009 season of the ABSA PSL. The aim of this pilot study was to evaluate whether relevant items had been identified in the construction of the questionnaire, and to detect any possible flaws in the measurement procedures. The researcher was present when the questionnaire was completed and was able to answer any question regarding the questionnaire.

As a result, the 11 respondents correctly answered all the questions and items in the questionnaire. Based on the nature of the respondent's questions and the subsequent processing and analysis of the questionnaire responses, minor changes were made in the questionnaire format and content. These changes removed any ambiguous language from the questionnaire items and increased the reliability and validity of the questionnaire as a measuring instrument in the actual data collection procedure.

3.5.5.1 Testing the reliability of the questionnaire

Reliability concerns the consistency of a measure. That is, the tendency to obtain the same results if the measure were to be repeated by using the same subjects under the same conditions (Howell, 1999: 379). The most common types of reliability are inter-observer reliability, test-retest reliability, parallel-forms reliability and internal consistency reliability (Davies 2007: 75). Due to the nature of the pilot study and the proposed data collection methods, the internal consistency reliability was preferred. Internal consistency reliability is used to assess the consistency of results across items within a test, or the reliability of a scale.

Cronbach's alpha coefficient is one of the most common measures of scale reliability in quantitative research. Cronbach's alpha coefficient measures the extent to which item responses obtained at the same time correlate highly with each other. It can be interpreted as the correlation of the observed scale with all possible other scales measuring the same thing and using the same number of items (David & Sutton, 2004: 27). By convention in the health and social sciences, the Cronbach's alpha coefficient should be above 0.70 - to retain an item in a scale - although the researcher's discretion may be used in setting the limit (Fielding & Gilbert, 2006: 146).

The Cronbach's alpha coefficient obtained for the talent development factors identified in Section B of the questionnaire in the pilot study are presented in Table 3.3. For the identified factors, three out of the seven Cronbach's alpha coefficients were above the acceptable cut-off level of 0.70. This confirms the internally reliability of the measures used. The other four factors were retained in the questionnaire, due to the support for these factors as indicated in the research literature. The researcher also decided that the low alphas would be increased when a larger sample was used.

Table 3.3: Internal reliability (Cronbach's alpha coefficient) for the factors in Section B of the questionnaire in the pilot study

Selected soccer talent development factor (Question numbers)	**Number of questionnaire items**	**Cronbach alpha (to 4 decimal points)**
Training Environment (QB1.1 – QB1.7)	7	0.4965
Motivation and Ambitions (QB2.1 – QB2.7)	7	0.7915
Personal Development (QB3.1 – QB3.6)	6	0.5903
Family Support (QB4.1 – QB4.10)	10	0.8417
Cultural Factors (QB5.1 – QB5.7)	7	0.6819
Financial Support (QB6.1 – QB6.8)	8	0.2581
Coaching (QB7.1 – QB7.8)	8	0.8608
Overall	**53**	**0.8807**

Therefore the overall Cronbach's alpha coefficient of 0.8807 is impressive - considering the pilot research sample size. Added to this observation is the fact if the Cronbach's alpha coefficient is

too high, this may suggest that the questionnaire has a high level of item redundancy, and that there are several items asking the same question in slightly different ways.

Table 3.4: Pilot study themes and subthemes from open-ended questions used in the questionnaire

QUESTION	THEME	SUB-THEMES	RESPONDENT
8 : Reasons for success	Commitment to training	Commitment, patience, determination, hard work	P1, P3, P4, P5, P7, P9, P10, P11
	Motivation	Motivation by parents, always wanted to improve	P1, P5
	Discipline	Staying away from fun times, discipline, sacrifices	P1, P2, P4, P6, P10, P11
	Being positive	Being positive, self-belief	P2, P8
	Passion	Passion for the game, love for the game	P3, P7
	Skill	Skill	P5
	Social support	Family support, support from friends	P6
	Advice from coach	Listening to coach	P6
9 : Career highlights	Representing junior teams	Provincial teams U12 and U14 and U14 national squad, part of Orlando Pirates Development squad, EP Under 20	P1, P3, P8, P9, P11
	Playing in the PSL	Promotion to PSL, Winning NFD playoffs, playing in the PSL	P2, P5, P7, P8, P9, P11
	Becoming a role model	Becoming a role model for the community	P10
	Winning league title	Winning league title	P4
	Representing national team	Scoring for national team	P4, P11
	Being selected as player of the tournament	Being selected as player of the tournament	P4
	Beating a popular team within the PSL	Beating Pirates	P6, P7

Table 3.4 above shows the themes identified from the responses of the 11 players used in the pilot study. None of the factors showed a negative Cronbach's alpha coefficient. This indicates

that the questionnaire items were coded correctly and that all the items were coded in the same conceptual direction. Therefore, it was possible to conduct a preliminary data analysis of statistical summaries on data obtained in the questionnaire. The open-ended questions were answered with ease, and it was possible to distinguish patterns and trends in the responses.

3.5.5.2 Testing the validity of the questionnaire

Validity concerns the degree to which a questionnaire measures what it was intended to measure (David & Sutton, 2004: 27). Generally, there are three main types of validity related to the use of questionnaires: content validity, empirical validity and concurrent validity (Howell, 1999: 155). In this study, content validity was assessed for the questionnaire. Content validity, also known as face validity, refers to whether a panel of judges or experts on the topic agree that the statements do relate to what they are supposed to measure. If agreement is obtained, then the instrument has content validity.

The research supervisor, who has published widely on elite sport systems and talent identification in South African sport, guided the researcher through the literature review and was consulted in the finalization of the selected factors. The research supervisor also checked the questionnaire items and ensured that the final questionnaire would obtain the information required to answer the research question.

In addition, the researcher also discussed the questionnaire with three experienced coaches and a team manager at Bay United. All these soccer personnel mentioned the identified factors and the items listed in the questionnaire as being relevant in determining the environment in which successful talent development should occur. The final questionnaire used in the study is shown as Appendix C.

3.5.6 DATA COLLECTION

After this measuring instrument had been tested, 72 questionnaires were distributed (between 28 August 2008 and 13 July 2009) to professional soccer players registered with soccer clubs competing in the 2008-2009 season of the ABSA PSL.

In July 2008, the researcher sent emails to two teams based in Cape Town (Ajax Cape Town and Santos), requesting permission to distribute the questionnaire at their clubs. Contact was also made with teams in Johannesburg and Pretoria (Bidvest Wits, Kaizer Chiefs, Mamelodi Sundowns, Moroka Swallows and Orlando Pirates). The quantitative data collection started in Cape Town on 28 August 2008. Permission was granted to administer the questionnaire to Ajax Cape Town players at their training ground. It had also been planned to administer the questionnaire at Santos, but the team was unavailable after their match in Johannesburg was rescheduled.

On 10 September 2008, the Moroka Swallows management allowed the researcher to explain his study and distribute his questionnaire at the start of a team match-analysis session in Johannesburg. The completed questionnaires were collected on 12 September 2008. From September to December 2008, Bay United players completed the questionnaire after their training sessions at the NMMU Summerstrand South Campus. The last date of data collection was 13 July 2009, with the South African U-20 national team in Johannesburg as they camped for the 2009 FIFA U-20 World Cup in Egypt.

The following techniques were implemented to increase the response rates:

- A pilot study was conducted to evaluate the suitability of the questionnaire.
- A letter was sent via email to the selected soccer clubs, requesting permission to conduct the study at their club and outlining the study's purpose and benefits.
- Personal administration was used in questionnaire distribution. On the day of administration, the club management (through the Team Manager) introduced the researcher and notified the players that the study was supported by the club.
- The researcher was given time to explain the purpose of the research and he also stressed that participation was voluntary.
- A cover page, bearing the Nelson Mandela Metropolitan University logo, was attached to the questionnaire - in order to gain the respondents' attention. The cover page informed respondents that the information provided in the questionnaire would be regarded as confidential.

A total of 56 respondents from the 72 questionnaires distributed in the sample completed the questionnaire, and the response rate of the study was 78%. The high response rate was due to the fact that in most instances, the researcher was present to assist in the completion of the questionnaire. This also meant that all the returned questionnaires were usable.

3.5.7 DATA PROCESSING

After the data had been collected, and before they were analysed, the researcher had to examine them to ensure their validity. Gratton and Jones (2004: 192) state that data processing ensures that the data are accurate and that they can be meaningfully used to answer the research question. The three processes involved in data processing are: editing, coding and tabulation (Bloomberg & Volpe 2008: 74).

The first step was the editing of the raw data in the completed questionnaire. The questionnaires were received and checked for completeness, legibility and comprehensibility before being assigned a reference number. The coding procedure was completed effectively by the researcher, as there was a manageable sample and the format of a 5-point Likert scale simplified the coding process. The responses for the open-ended questions were also analysed. The data tabulation was completed as a part of the study's descriptive statistics.

The Microsoft Excel computer programme was used for the initial data entry, management and analysis. Computer programmes, such as Microsoft Excel, may be used for many univariate and multivariate statistical analyses as they have facilities for sorting and merging files and manipulating the data (Diamantopoulos & Schlegelmilch, 2000: 55). These procedures in data processing led to faster and more reliable statistical analysis.

3.6 ETHICAL CONSIDERATIONS

The researcher complied with all the NMMU guidelines regarding the protection of human participants or respondents, although this research study did not involve any invasive procedures that posed a health risk. The questionnaire had no sensitive issues which could psychologically

harm the respondents. As such, ethics approval was automatically granted through the NMMU Research Ethics Committee when the research proposal was approved.

There is a need to adhere to strict ethical procedures in order to guarantee, firstly, the confidentiality of all the gathered data and, secondly, the participants' anonymity. The principle of informed consent requires that research participants be fully informed of the nature of the study and any possible risks to themselves, and that they voluntarily agree to take part in the study (Gorard, 2003: 175). Upon inclusion into the research study, each respondent was given a covering letter (Appendix A), outlining the purpose of the research study and a formal document of informed consent (Appendix B).

This documentation provided information related to the objectives, purpose and significance of the research as well as the data collection procedures of the study - to enable the participant to make an informed decision regarding his participation.

All the completed questionnaires were assigned a number. All the information gathered was linked to this number and regarded as highly confidential. Only the researcher had the link between the number allocated to the questionnaire and that of the relevant participant.

3.7 STATISTICAL ANALYSIS OF THE RESEARCH DATA

In order to address the research aims and objectives, appropriate statistical analysis techniques were employed. Mr. Danie Venter, an experienced statistician from the NMMU Unit for Statistical Consultation, was engaged to perform the study's statistical analysis. The first step of this analysis involved reporting on the descriptive statistics of the sample. According to Howell (1999: 5), descriptive statistics include frequency distributions, measures of central tendency and measures of variation (such as means and standard deviations). Descriptive statistics are the most commonly used form of data analysis and the provide a basis for more advanced statistical techniques (Thomas & Nelson, 2001: 99).

Due to the descriptive and informative nature of the study, mostly descriptive statistics were calculated to determine the central tendency. The descriptive statistics included means and standard deviations (SD) for nominal data and percentages of the total population for ordinal data

Confirmatory factor analysis is a statistical technique used to verify the relationship between the observed variables and their underlying latent construct (Creswell, 2003: 160). The researcher uses the theoretical literature or the empirical research to suggest a relationship pattern (*a priori*) and then tests the hypothesis statistically (Fielding & Gilbert, 2006: 306).

Confirmatory factor analysis was performed to test the relationship between the talent development of South African professional soccer players and the factors selected in this study.

The seven selected factors were assessed in terms of their factor loadings and the percentage of variance explained. These seven factors were namely: Training Environment, Motivation and Ambitions, Personal Development, Family Support, Cultural Factors, Financial Support and Coaching. The reliability of the factors was determined by using the Cronbach's alpha. Further details of the statistical analysis performed will be provided in Chapter Four.

3.8 CONCLUSION

Chapter Three outlined the research design which was developed. Furthermore, it specified the methods and procedures used to collect and analyse the required data. The research methodology firstly addressed the survey design. In order to obtain the primary data required in the research study, a questionnaire was administered personally by the researcher. The diverse features of questionnaire design, such as content and format, were emphasized. In order to pre-test the questionnaire's reliability and validity, a pilot study was implemented.

The issues concerning the pilot study of the questionnaire and the reliability of the questionnaire items were also addressed. The sample design was identified and its importance within the research design was explained. The non-probability technique of purposive sampling was

selected to obtain acceptable results. A sample size of 56 professional soccer players from clubs competing in the 2008-2009 season of the ABSA PSL was chosen.

The primary reasons for the selection of this method were the limitations of cost and time. The practical steps taken to ensure the accuracy and precision of the sample were highlighted. The data collection and processing methods were described and justified. Various measures and techniques were implemented to encourage the respondents' participation. Finally, a statistical analysis of the data was performed.

In Chapter Four the empirical analysis and the research results will be discussed.

CHAPTER FOUR

DATA ANALYSIS AND EMPIRICAL RESULTS

4.1 INTRODUCTION

The specific aim of this study is to identify factors associated with successful talent development in the South African professional soccer players participating in the study. This chapter reports on the quantitative data analysis and the empirical findings of the study. More explicitly, effect is given to the two research objectives (as stated in section 1.3.2 of Chapter One), namely:

- To test the selected factors using a quantitative measure and perform confirmatory factor analysis in order to establish the loading of the questionnaire items on the selected factors.

This chapter has four sections. Section one presents the descriptive statistics for the biographical information of the sample. Only frequency distributions, measures of central tendency (such as the mean, median and mode) and measures of variation (such as the standard deviation) are analysed. The next section covers the presentation of the findings based on the questionnaire item responses for the selected talent development factors. Since the sample was regarded as a single homogenous group and due to the statistically small sample size in relation to the questionnaire items, no statistical significance tests were performed.

Section three features an analysis of the open-ended questions which measured the respondents' perceptions of their reasons for success, as well as their perceived career highlights. In the fourth section of this chapter, the confirmatory factor analysis of the selected talent development factors was performed - with appropriate measures for the factors' validity and reliability outlined. The chapter concludes with a description of the key findings emanating from the statistical data analysis.

4.2 DESCRIPTIVE STATISTICS FOR THE SAMPLE'S BIOGRAPHICAL INFORMATION

The respondents were asked to provide information on biographical variables, such as age, family structure and youth sport participation. These variables were required to retrospectively analyse each respondent's talent development process. Appendix C shows the questionnaire used to obtain the respondents' biographical information. In this section, each biographical variable is discussed separately in its entirety. For each of the variables assessed, reference is made to mean values, standard deviations, range values and frequency distributions.

4.2.1 AGE AND BIRTH QUARTER

The first biographical variable that was measured was age. Each respondent's age was assigned a value, based on the difference between his date of birth and the date of the data collection.

Table 4.1 Descriptive statistics for the age profile of the sample

AGE PROFILE OF THE SAMPLE	
n	56
Mean	23.30
Standard Deviation	4.64
Minimum	17.00
Quartile 1	20.00
Median	21.00
Quartile 3	27.00
Maximum	35.00

Table 4.1 illustrates the age distribution of the sample that participated in the research study. As shown in Table 4.1, the mean age for the evaluated sample was 23.30 years (standard deviation = 4.64). The frequency distribution of the sample in terms of age is indicated in Table 4.2. The largest group was between the ages of 17 and 20 years (41% of the total sample), while the smallest was made up of respondents between the ages of 28 and 35 years (21% of the sample). The first observation is a result of the fact that players from the South African U-20 national team made up a sizeable proportion of the sample (34%). Of these, 38% of the sample was in the middle age bracket of 21 to 27 years.

Table 4.2 Frequency distribution of the sample's age

FREQUENCY DISTRIBUTION: AGE (years)	
Age (years)	**Total**
17 to 20	23 (41%)
21 to 27	21 (38%)
28 to 35	12 (21%)
Total	56 (100%)

It was also important to assess the birth distribution of the sample. In order to facilitate comparisons with the data sourced from the literature, each respondent's date of birth date was assigned to a birth quarter. For consistency with FIFA's cut-off dates, January to March was determined as the first birth quarter while October to December was classified as the fourth birth quarter.

Figure 4.1 shows the sample's birth quarter distribution. Of these, 18 respondents (32% of the sample) were born in the first quarter. This represents the largest grouping according to birth quarter. The second quarter (March – June) had the lowest number of respondents with 18% of the sample. Quarter three (July – September) and quarter four (October – December) had the same number of respondents represented (25% of the sample for each quarter). No significance tests on the sample's birth distribution could be performed, due to the small sample size.

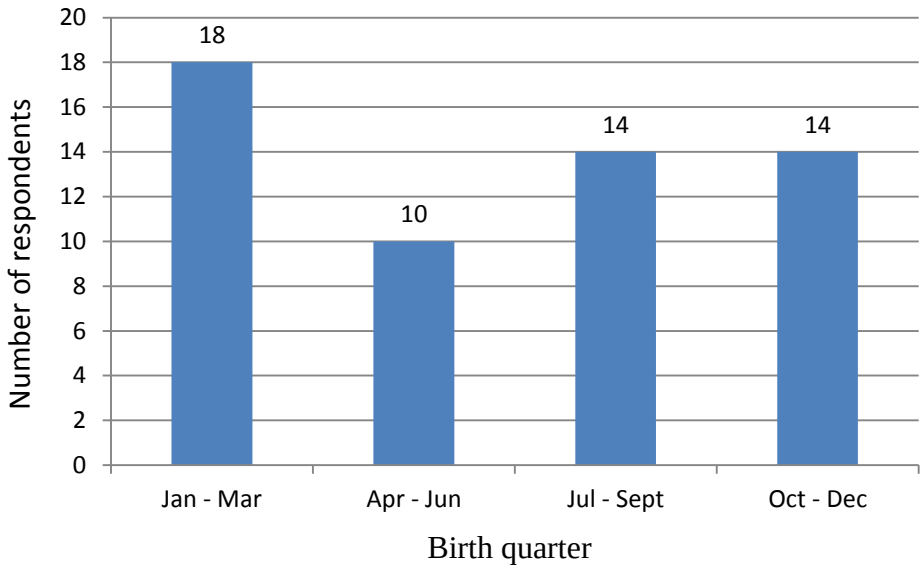

Figure 4.1 Birth quarter distribution within the sample

The birth quarter distribution was also analysed according to the age frequency distribution shown in Table 4.2. In the age range of 17 to 20 years, the first quarter (January to March) has the highest representation with nine out of 23 players. This is demonstrated in Table 4.3 which also shows that the first quarter was the most populous quarter only for the 17 to 20 years age range. In the 21 to 27 years age range, there was a more even representation with the highest concentration of players being in the third quarter (July – September). In the 28 to 35 years age group, the highest representation was in the first and fourth quarters with 4 respondents each.

Table 4.3 Sample age frequency arranged by birth quarter

	BIRTH QUARTER			
Age	Jan - Mar	Apr – Jun	Jul – Sept	Oct - Dec
17 – 20 years (n = 23)	9	2	7	5
21 – 27 years (n = 21)	5	5	6	5
28 – 35 years (n = 12)	4	2	2	4
Total	**18**	**10**	**14**	**14**

4.2.2 POPULATION GROUP

It was also of interest to note the population group distribution of the sample. For the purposes of this research, the respondents were classified into five population groups (Black, White, Coloured, Indian and Other). These were regarded as being consistent with the South African population group classifications.

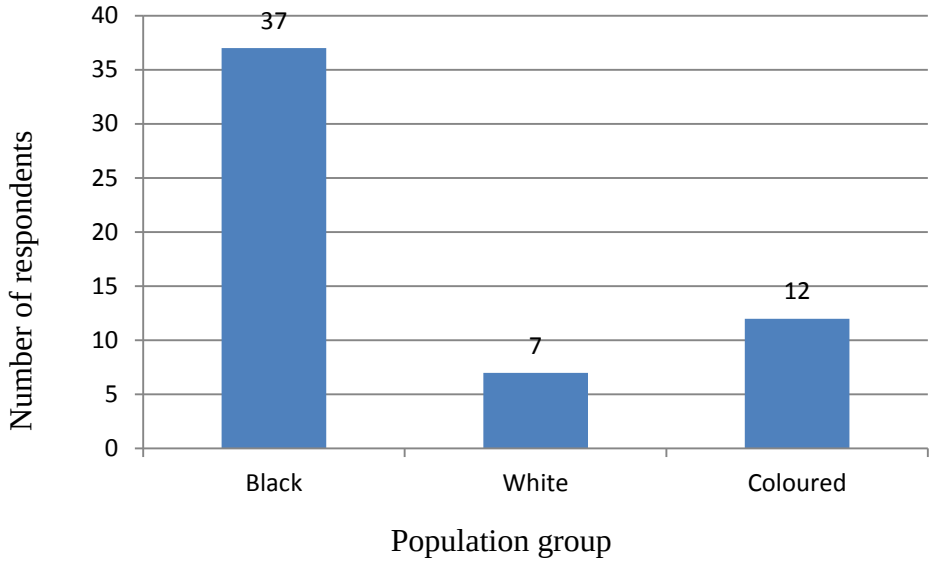

Figure 4.2 Population group distribution of the sample

As shown in Figure 4.2, the largest group in the sample consisted of Black respondents with 37 respondents (66% of the total sample). The smallest population group represented was White (13%). Only 12 players, who identified themselves as being Coloured, made up 21% of the sample. There were no Indian or 'Other' population groups represented in the sample. The possible reasons and implications of these observations will be explained in Chapter Five.

4.2.3 EDUCATIONAL LEVEL

Figure 4.3 shows the grouping of the sample according to the highest educational qualification attained.

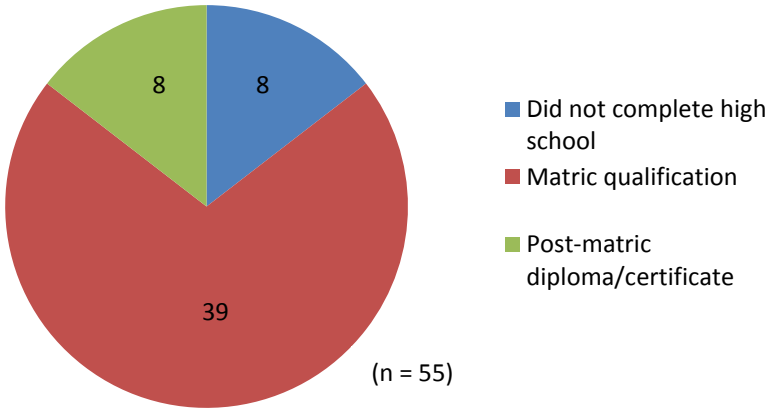

Figure 4.3 Educational level distribution of the sample

The questionnaire divided the sample into four categories according to the highest educational qualification achieved: 'Did not complete high/secondary school', 'matric qualification', 'post-matric qualification' and 'university-type qualification'. Approximately 71% of the sample (39 out of 55 respondents) had a matriculation qualification. This is the largest grouping according to highest educational level attained.

Either side of this group were the respondents who did not complete high/secondary school and those who had a post-matriculation qualification, such as a trade certificate. These two groups each represented 15% of the sample (eight respondents per grouping). There were no respondents with a university-type qualification and the possible reasons and implications of this observation will be explained in Chapter Five.

4.2.4 FAMILY STRUCTURE

Family structure was also identified as a valid variable in South African soccer talent development. Of interest, within the family structure, were the respondents'' guardian structure and the respondents' sibling structure. For purposes of analysis and categorization, the respondents' guardian structure was divided into six categories: Both parents, single father, single mother, father and stepmother, mother and stepfather and other guardians. Each

respondent's guardian structure was to be retrospectively assessed at the time of youth soccer participation.

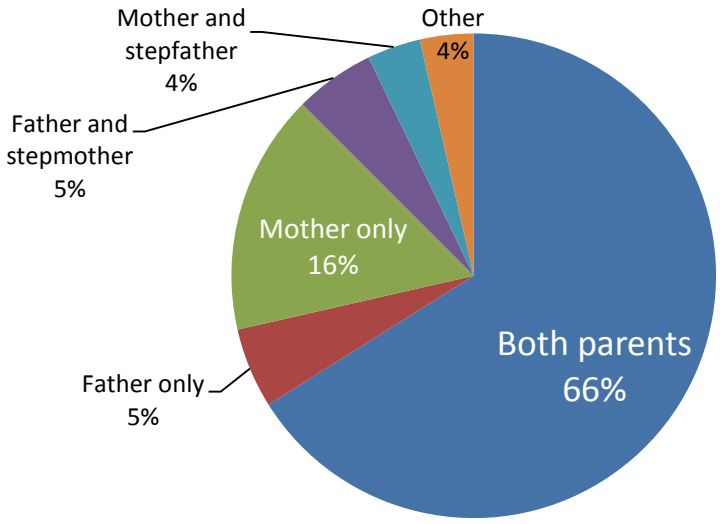

Figure 4.4 Player's guardian during junior soccer participation

A total of 66% of the sample (37 respondents) lived with both of their biological parents during their formative years in youth soccer. Only 16% of the sample spent their formative years in youth soccer living with a single mother. There were similar proportions of the sample (5% in each case). These respondents were either raised by their father only or by their father and stepfather. For 4% of the sample, a mother and stepfather provided the required guardianship. The extended family (for example, an aunt or grandparents) provided the home environment for 4% of the sample, while they participated in youth soccer. This was shown by the two respondents who responded in the 'Other' category.

It was also deemed beneficial to analyse the sample's sibling structure. As such, information was obtained on sibling structure variables such as the number of siblings, the number of brothers, the number of sisters and the number of older siblings.

All these variables are presented in Table 4.4. As shown in Table 4.4, the mean number of siblings was 3.14 (standard deviation = 1.57). Out of the entire sample of 56 respondents, only

two respondents were only children. On the other extreme, one respondent had nine siblings. Overall, 96% of the sample (54 respondents) had at least one sibling.

Table 4.4 Frequency distributions related to the sample's sibling structure

Statistics	Siblings	Brothers	Sisters	Presence of older sibling
n	56	56	56	56
Mean	3.14	1.64	1.50	1.75
SD	1.57	1.09	1.25	1.20
Min	0.00	0.00	0.00	0.00
Quartile 1	2.00	1.00	1.00	1.00
Median	3.00	2.00	1.00	2.00
Quartile 3	4.00	2.00	2.00	2.00
Maximum	9.00	5.00	5.00	6.00

The mean number of brothers per respondent was 1.64 (standard deviation = 1.09) while the mean number of sisters per respondent was 1.50 (standard deviation = 1.25). As many as 51 respondents (91% of the sample) had an older sibling. The mean number of older siblings was 1.75 (standard deviation = 1.20). There was a single respondent who had six older siblings.

4.2.5 TALENT IDENTIFICATION PROGRAMME PARTICIPATION

As indicated in the literature review of this research study, talent development in soccer is usually preceded by talent identification. The research questionnaire included a closed-ended question in which the respondents had to give an indication of whether they had attended a talent identification programme.

Figure 4.5 shows the sample responses to this question. It clearly illustrates that 53% (29 out of 55) of the respondents had attended a talent identification programme. A total of 26 respondents (47% of the sample) did not participate in a talent identification programme. This finding will be analysed as a part of the discussion in Chapter Five.

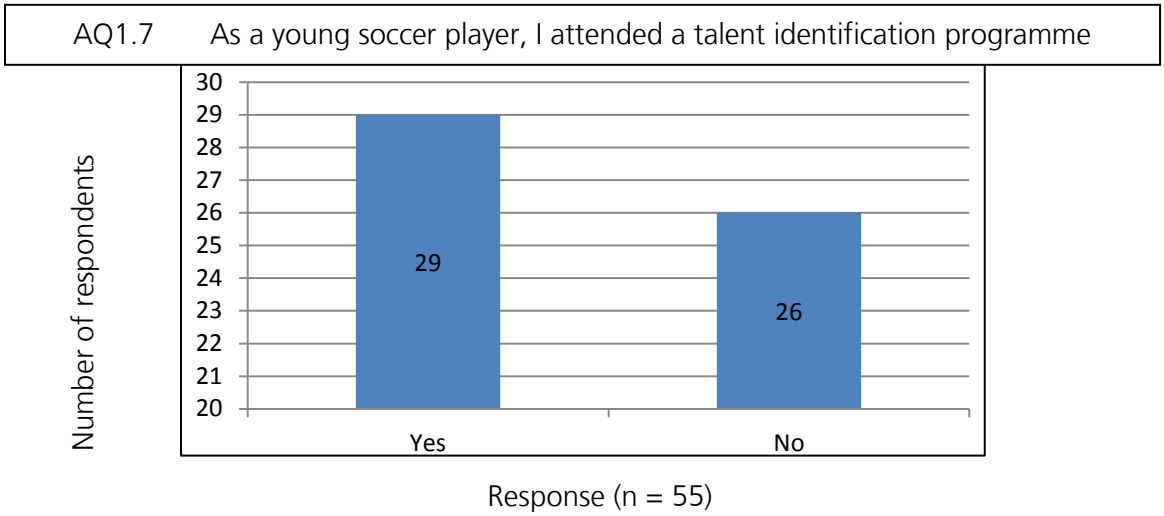

Figure 4.5 Talent identification programme participation within the sample

4.2.6 START OF SOCCER PARTICIPATION

Following from participation in a talent identification programme, the respondents' introduction to the game of soccer was scrutinized. In line with the research objectives, the start of soccer participation was analysed according to the respondent's recollection of the age at which he had started playing soccer in three distinct environments: "At home/informally", "for a school team" and "for a youth team outside school".

Table 4.5 Descriptive statistics for the age (in years) at which the respondents started playing soccer in various environments

AGE (in years) AT START OF SOCCER PARTICIPATION			
	At Home/Informally	**For a school team**	**For a youth team outside school**
n	46	45	46
Mean	6.09	9.36	10.09
Standard Deviation	1.71	2.30	2.67
Minimum	4.00	5.00	3.00
Quartile 1	5.00	7.00	9.00
Median	6.00	9.00	10.00
Quartile 3	7.00	10.00	11.00
Maximum	10.00	14.00	16.00

As shown in Table 4.5, the mean age at which the respondents started playing soccer at home or informally was 6.09 years (standard deviation = 1.71 years). By the age of 10 years, every respondent was playing unstructured soccer at home. Soccer participation at school started at a mean age of 9.36 years (standard deviation = 2.30 years), with the minimum and maximum ages being 5 years and 14 years respectively.

The mean age of entry into a youth team outside school was 10.09 years (standard deviation = 2.67 years). It is thus assumed that the respondents, first played soccer at home (mean age = 6.09 years)- They then proceeded to play the game at school (mean age = 9.36 years). The age of 16 years was the oldest age at which respondents started playing for a youth team outside school. Finally, the respondents progressed to playing for a youth team outside school (mean age = 10.09 years). The influence of these transitions on talent development will be analysed in Chapter Five.

4.2.7 OVERALL SPORT PARTICIPATION DURING FORMATIVE YEARS

The overall sport participation of the respondents during their formative years was also a noteworthy consideration. In order to standardize the level of participation, the respondents were asked to list the sports in which they played at school team or higher during their youth. Figure 4.6 lists the different sports in which the respondents participated during their formative years.

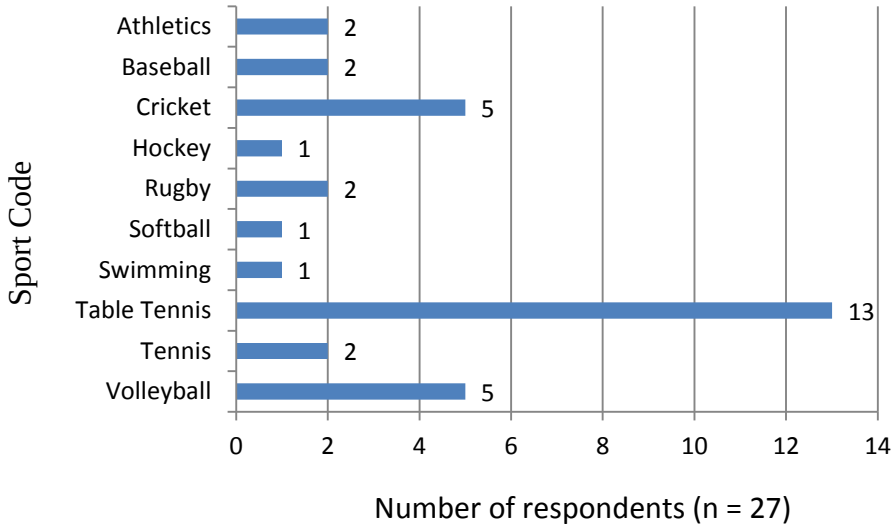

Figure 4.6 Respondents' participation in other sports besides soccer during formative years

A total of 27 respondents (48% of the sample) indicated that they had played in at least one other sport besides soccer during their formative years, playing for the school team or better. Based on Figure 4.6, table tennis was the most popular sport amongst the respondents (48% of the respondents under consideration). This was followed by cricket and volleyball (five respondents each). There was also participation in athletics, basketball and tennis (two respondents each) as well as hockey, softball and swimming (one respondent each). The most likely explanations for these observations will be presented in Chapter Five.

It was also deemed prudent to assess the highest level of participation within these additional sports. Figure 4.7 presents the highest participation level for respondents who played other sports besides soccer during their formative years. As illustrated in Figure 4.7, 74% of the respondents under consideration only played at a school team level. Six respondents (or 22% of the respondents under consideration) played at provincial level, while one respondent played for a national age group team in another sport.

These findings have implications for talent development in South African soccer and will be addressed in Chapter Five.

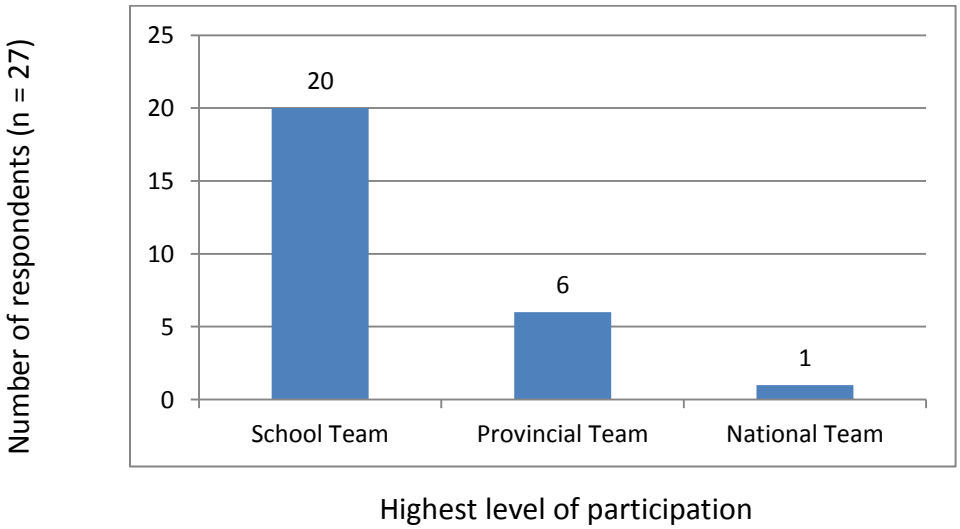

Figure 4.7 Highest level of participation for respondents who played other sports besides soccer during their formative years

4.2.8 AGE WHEN SOCCER SPECIALIZATION STARTED

It was also important to ascertain the exact age at which soccer specialization had started. As such, respondents were asked to indicate the age at which they had stopped participating competitively in other sports, and focused on soccer exclusively.

Table 4.6 Descriptive statistics for the age (in years) at which soccer specialization started

AGE WHEN SOCCER SPECIALIZATION STARTED	
n	23
Mean	13.78
Standard Deviation	2.32
Minimum	9.00
Quartile 1	12.50
Median	13.00
Quartile 3	15.00
Maximum	18.00

Table 4.6 provides the descriptive statistics for the evaluated sample in terms of the age at which they started specialization in soccer. Only 23 respondents could specifically recall the start of their soccer specialization. Therefore, any missing data were excluded from this assessment. As shown in Table 4.6, the mean age for the evaluated sample was 13.78 years (standard deviation = 2.32 years). 13 years was the median age for soccer specialization within the sample.

The frequency distribution of the sample in terms of the age at which soccer specialization had started is indicated in Table 4.7. It is evident that 26% of the respondents started their soccer specialization between the ages of nine and 12.5 years. The largest group was between the ages of 12.51 and 15 years (48% of the respondents who provided data) while the final grouping of 26% specialized in soccer between the ages of 15.01 and 18 years.

Comments on the comparisons between the observed frequency distribution and the literature on sport specialization will be provided in Chapter Five.

Table 4.7 Frequency distribution of the sample's age at the start of soccer specialization

FREQUENCY DISTRIBUTION: AGE AT THE START OF SOCCER SPECIALIZATION (years)	
Age (years)	**Total**
9.00 to 12.50	6 (26%)
12.51 to 15.00	11 (48%)
15.01 to 18.00	6 (26%)
Total	23 (100%)

4.2.9 SEASONS OF PARTICIPATION IN SEMI-PROFESSIONAL AND PROFESSIONAL LOWER LEAGUES

In order to track the talent development of the respondents, it was deemed imperative to analyse their participation in the semi-professional and professional leagues before playing in the ABSA PSL. The selected semi-professional and professional leagues were: the SAB Regional League, the SAFA Vodacom Promotional League and the National First Division, with indications of the number of seasons spent in each league specified.

Table 4.8 Respondents' participation in semi-professional and professional lower leagues

	Number of players who competed in league and duration of participation (n = 56)					
League	0 seasons	1 season	2 seasons	3 seasons	4 seasons	5 seasons
SAB Regional League	41	10	3	2	-	-
SAFA Vodacom Promotional League	29	24	1	1	1	-
National First Division	38	8	6	2	1	1

Table 4.8 shows the results of the respondents' participation in semi-professional and professional lower leagues. As many as 73% of the sample (41 respondents) did not play in the lowest league considered, the SAB Regional League. Of those 15 respondents who played in the SAB Regional League, the highest group (67%) only played for only one season. For the SAFA Vodacom Promotional League, 48% of the sample (27 respondents) played in this league. Of those respondents, the highest grouping was that of players who played for only one season in the SAFA Vodacom Promotional League (89% of the respondents under consideration).

The National First Division is the second highest level of professional soccer in South Africa. A total of 68% of the sample (38 respondents) did not play in National First Division. In terms of league tenure for those respondents who played in the National First Division, the largest groupings were the eight respondents (44% of those under consideration) who only played for season. Six respondents (33% of those under consideration) played for two seasons in the National First Division. It is worth noting that there were no respondents who had played in all three semi-professional and professional lower leagues.

4.2.10 AGE WHEN PLAYER MADE PSL DEBUT AND YEARS OF EXPERIENCE IN PSL

In this study, the start of each respondent's participation in the ABSA PSL may be acknowledged as the end of the talent development process and the attainment of elite performance. As such, data were collected to analyse each respondent's age at the time of his PSL debut and the years of experience in the PSL.

Table 4.9 shows the descriptive statistics regarding the respondents' ages at the time of their PSL debut. It is evident that the mean age at which the respondents first played in the PSL was 19.87 years (standard deviation = 2.73 years). This observation is strongly influenced by the fact that players from the South African U-20 national team made up a sizeable proportion of the sample (34%). The youngest age at which the PSL debut was made was 16 years, while the oldest age was 27 years. The relationship between the observed mean age at the time of PSL debut and the literature regarding talent development will be clarified in Chapter Five.

Table 4.9 Descriptive statistics regarding age at the time of PSL debut of the sample

AGE (IN YEARS) AT THE TIME OF PSL DEBUT	
N	54
Mean	19.87
Standard Deviation	2.73
Minimum	16.00
Quartile 1	18.00
Median	19.00
Quartile 3	21.00
Maximum	27.00

Table 4.10 illustrates the descriptive statistics on the respondents' years of experience playing in the PSL. The mean PSL league tenure at the time of the study was 3.59 years (standard deviation = 2.73). Only 11% of the respondents had not yet completed a year in the PSL while the oldest respondent in the sample (35 years old) had the longest experience in the PSL having played in the league for 16 years.

Table 4.10 Descriptive statistics regarding years of PSL experience of the sample

YEARS OF PSL EXPERIENCE	
N	54
Mean	3.59
Standard Deviation	2.73
Minimum	0.00
Quartile 1	1.00
Median	2.00
Quartile 3	5.00
Maximum	16.00

4.2.11 REPRESENTATION IN SOUTH AFRICAN NATIONAL TEAMS

The true measure of elite performance for a South African athlete is normally his selection for a national side. As such, the questionnaire required the respondents to indicate whether they had been selected for a national soccer side at any time during their career. The national soccer sides were divided into those age groups in which they are international FIFA or Olympic events. As such, the national soccer sides were identified as: Under-17, Under-20, Under-23 and Senior National side while the "Other" category was taken to include any other national sides which may have been valued by the respondent.

As shown in Figure 4.8, 13 respondents (23% of the sample) had represented South Africa at Under 17 level. As many as 50% of the sample (28 respondents) had played for South Africa at the Under-20 level. This observation is a result of the fact that players from the 2009 South African Under-20 national team made up a sizeable proportion of the sample (34%).

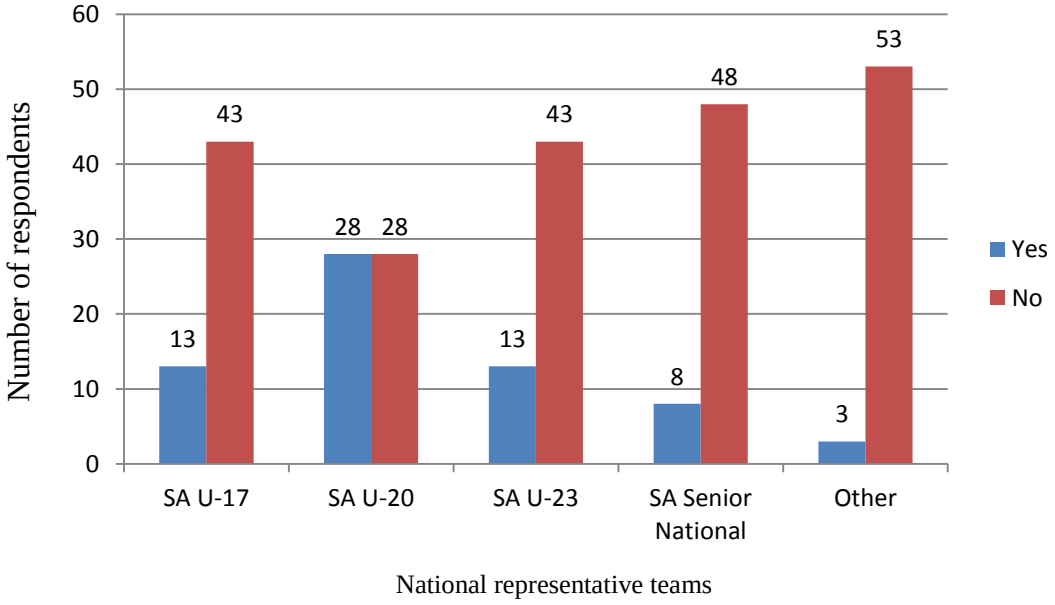

Figure 4.8 Number of players within the sample who have represented national teams

Only 13 respondents had played for the South African Under 23 squad in Olympic qualifiers. A total of 14% of the sample (8 respondents) had achieved the highest national accolade, and played for the senior national side, "Bafana Bafana". It should be noted that none of the eight

players who represented the senior national side "Bafana Bafana" had been a part of all the national junior soccer sides. The possible implications of this statement will be dealt with in the discussion in Chapter Five.

Three respondents indicated that they had represented "Other" national sides. Of these respondents, one had played for the South African Under-12 soccer national side while two respondents had played for the senior Development national team, which participated in continental competitions with no official national caps being awarded.

4.3 DESCRIPTIVE STATISTICS FOR SELECTED TALENT DEVELOPMENT FACTORS

As specified in Chapter Two, Training Environment, Motivation and Ambitions, Personal Development, Family Support, Cultural Factors, Financial Support and Coaching were selected for analysis as factors associated with the successful talent development in South African professional soccer players. This section provides the mean values and standard deviations for the most noteworthy questionnaire items within the selected talent development factors. Reference is made to the research questionnaire (Appendix C) for the exact wording of the questionnaire items (statements).

4.3.1 TRAINING ENVIRONMENT

Talent development must occur in a suitable learning environment in order to improve the chances of realising elite performance. Therefore the first factor retrospectively analysed the training environment of the sample as they participated in junior soccer. Under scrutiny were environmental catalysts such as adequate training resources and the provision of sports services. Table 4.11 shows the descriptive statistics of the sample in terms of the sample's responses in the "Training Environment" scale.

Table 4.11 Frequency percentages, means and standard deviations for items within the "Training Environment" scale

Item	1-2 Disagree		3 Neutral		4-5 Agree		Mean	SD
BQ1.6	7	13%	7	13%	42	75%	3.93	1.13
BQ1.7	13	23%	13	23%	30	54%	3.50	1.16
BQ1.5	14	25%	14	25%	28	50%	3.41	1.28
BQ1.2	23	41%	10	18%	23	41%	3.11	1.34
BQ1.1	24	43%	12	21%	20	36%	2.89	1.29
BQ1.4	37	66%	8	14%	11	20%	2.21	1.29
BQ1.3	38	68%	7	13%	11	20%	2.16	1.39

A total of 75% of the sample occasionally played in older age groups so that they could get more competition (Item BQ1.6: mean = 3.93, standard deviation = 1.13). The soccer clubs also had a training environment, in which 'the best facilities were reserved for the senior and older teams'. As many as 54% of the sample agreed with this statement (Item BQ1.7: mean = 3.50, standard deviation = 1.16). A total of 68% of the sample disagreed that they had had access to support staff such as physiotherapists and sport scientists as junior soccer players (Item BQ1.3: mean = 2.16, standard deviation = 1.39). There was also minimal monitoring of training aspects such as players' diets and their general health. This was indicated by 66% who disagreed with the statement (Item BQ1.4: mean = 2.21, standard deviation = 1.29).

4.3.2 MOTIVATION AND AMBITIONS

A player's motivation and ambitions have a bearing on his commitment to the talent development process. The questionnaire analysed personal characteristics such as "passion for the game" and "the will to win", which both have an influence on achieving elite performance. Table 4.12 shows the descriptive statistics of the sample in terms of the sample's responses within the "Motivation and Ambitions" scale.

Table 4.12 Frequency percentages, means and standard deviations for items within the "Motivation and Ambitions" scale

Item	1-2 Disagree		3 Neutral		4-5 Agree		Mean	SD
BQ2.2	7	12%	2	4%	47	84%	4.32	1.18
BQ2.1	4	8%	6	11%	46	82%	4.14	1.00
BQ2.6	8	14%	4	7%	44	78%	4.05	1.23
BQ2.5	8	15%	14	25%	34	60%	3.73	1.12
BQ2.3	8	15%	14	25%	34	60%	3.82	1.18
BQ2.7	9	16%	14	25%	33	59%	3.73	1.21
BQ2.4	21	37%	14	25%	21	37%	2.95	1.21

The "love of the game" served as the primary motivation for the 84% of the sample when they started playing soccer (Item BQ2.2: mean = 4.32, standard deviation = 1.18). As junior soccer players, 82% of the sample indicated that they were always striving to improve their performance (Item BQ2.1: mean = 4.14, standard deviation = 1.00). A total of 78% of the sample also agreed that 'becoming a professional soccer player was my dream career from a young age' (Item BQ2.6: mean = 4.05, standard deviation = 1.23). Further motivation was provided by meeting 'important people', as a result of participation in junior soccer. This was confirmed by 60% of the sample (Item BQ2.5: mean = 3.73, standard deviation = 1.12).

4.3.3 PERSONAL DEVELOPMENT

The literature review identified the prerequisite mental requirements which are necessary for talent development. "Personal Development" was identified as a factor. A scale was developed to assess the influence of personal characteristics, such as confidence and discipline in the sample's talent development. Table 4.13 shows the descriptive statistics of the sample in terms of the sample's responses in the "Personal Development" scale.

Table 4.13 Frequency percentages, means and standard deviations for items within the "Personal Development" scale

Item	1-2 Disagree		3 Neutral		4-5 Agree		Mean	SD
BQ3.3	7	13%	7	13%	42	75%	4.05	1.09
BQ3.6	6	11%	9	16%	41	74%	4.04	1.11
BQ3.2	7	12%	13	23%	36	65%	3.73	1.15
BQ3.1	10	18%	13	23%	33	59%	3.68	1.21
BQ3.5	5	9%	19	34%	32	57%	3.63	0.91
BQ3.4	14	25%	20	36%	22	39%	3.27	1.14

A total of 75% of the respondents stated that their "determination" was a major reason for success in soccer (Item BQ3.3: mean = 4.05, standard deviation = 1.09). As junior players, 65% of the respondents agreed that they had had definite goals which they wanted to achieve in soccer (Item BQ3.2: mean = 3.73, standard deviation = 1.15). Their commitment towards their sport and the associated goal-setting meant that the players sometimes chose to miss parties and other social events because of their involvement in soccer (Item BQ3.6: mean = 4.04, standard deviation = 1.11). This was confirmed by 74% of the sample. As a result, the players developed personal skills (such as time management and leadership) as a result of playing junior soccer. This was shown by a positive answer among 59% of the sample when responding to Item BQ3.1 (mean = 3.68, standard deviation = 1.21).

4.3.4 FAMILY SUPPORT

The central role of "Family Support" in sport participation and the adherence of young athletes was noted in the literature review. It was thus important to measure issues such as familial influences, parental sacrifices and emotional support during the formative years of the sample. Table 4.14 shows the descriptive statistics of the sample in terms of the sample's responses in the "Family Support" scale.

Table 4.14 Frequency percentages, means and standard deviations for items within the "Family Support" scale

Item	1-2 Disagree		3 Neutral		4-5 Agree		Mean	SD
BQ4.10	3	6%	4	7%	49	87%	4.43	0.97
BQ4.9	5	9%	5	9%	46	82%	4.21	0.95
BQ4.8	9	16%	12	21%	35	66%	3.71	1.22
BQ4.5	8	14%	11	20%	37	66%	3.75	1.22
BQ4.1	9	16%	14	25%	33	59%	3.63	1.18
BQ4.4	12	21%	11	20%	33	59%	3.41	1.28
BQ4.2	13	23%	11	20%	32	57%	3.55	1.22
BQ4.7	16	29%	10	18%	30	53%	3.38	1.32
BQ4.6	15	27%	12	21%	29	52%	3.48	1.35
BQ4.3	20	36%	12	21%	24	43%	3.27	1.41

A total of 87% of the respondents currently enjoy a good relationship with their family (Item BQ4.10: mean = 4.43, standard deviation = 0.97). There is an acknowledgment among 82% of the sample that their family had always cared for them in times of need (Item BQ4.9: mean = 4.21, standard deviation = 0.95). A total of 66% of the sample also received significant advice from a family member before deciding to pursue a professional career in soccer (Item 4.8: mean = 3.71, standard deviation = 1.22). Family members also expressed the view that they were confident that the then-junior player had the potential to become a professional soccer player (Item 4.5: mean = 3.75, standard deviation = 1.22). This was the case for 66% of the sample.

4.3.5 CULTURAL FACTORS

In Chapter Two, the literature review also explored the cultural context guiding the initiation and maintenance of soccer participation. Aspects such as social class and communal attitudes to sport had to be considered when investigating the factors associated with the talent development of the sample. Table 4.15 shows the descriptive statistics of the sample in terms of the sample's responses within the "Cultural Factors" scale.

Table 4.15 Frequency percentages, means and standard deviations for items within the "Cultural Factors" scale

Item	1-2 Disagree		3 Neutral		4-5 Agree		Mean	SD
BQ5.5	5	9%	9	16%	42	75%	4.21	1.12
BQ5.7	6	11%	10	18%	40	71%	4.07	1.14
BQ5.4	9	17%	8	14%	39	69%	3.89	1.17
BQ5.3	10	18%	8	14%	38	67%	3.89	1.30
BQ5.6	13	23%	7	13%	36	65%	3.70	1.35
BQ5.2	13	23%	11	20%	32	57%	3.39	1.17
BQ5.1	12	22%	17	30%	27	48%	3.30	1.17

As many as 75% of the sample agreed that soccer is highly valued in their community (Item BQ5.5: mean = 4.21, standard deviation = 1.12). Soccer was also the most popular sport at the primary schools of 67% of the sample (Item BQ5.3: mean = 3.89, standard deviation = 1.30). Allied to this societal support for soccer is the fact that sport is seen as a way of 'keeping kids out of trouble' in many communities (Item BQ5.7: mean = 4.07, standard deviation = 1.14). This was confirmed by 71% of the sample. 69% of the sample stated that as they became more successful in soccer, they started getting more respect from their community (Item BQ5.4: mean = 3.89, standard deviation = 1.17).

4.3.6 FINANCIAL SUPPORT

Financial resources are one of the barriers to participation in sport. Financial support is required for athletes to participate in soccer and cater for costs such as club memberships, equipment costs and transportation to sports events. The questionnaire measured the nature and influence of financial support among the respondents. Table 4.16 shows the descriptive statistics of the sample in terms of the sample's responses within the "Financial Support" scale.

Table 4.16 Frequency percentages, means and standard deviations for items within the "Financial Support" scale

Item	1-2 Disagree		3 Neutral		4-5 Agree		Mean	SD
BQ6.8	8	14%	10	18%	38	68%	3.86	1.18
BQ6.1	7	13%	13	24%	45	64%	3.91	1.17
BQ6.5	15	27%	12	21%	29	52%	3.38	1.38
BQ6.7	21	37%	7	13%	28	50%	3.13	1.36
BQ6.2	22	39%	11	20%	23	41%	3.05	1.38
BQ6.3	30	54%	12	21%	14	25%	2.48	1.21
BQ6.6	28	50%	17	30%	11	20%	2.52	1.21
BQ6.4	35	62%	13	23%	8	14%	2.13	1.28

For 68% of the sample, a successful professional soccer career has improved their immediate family's quality of life (Item BQ6.8: mean = 3.86, standard deviation = 1.18). During their early participation in youth soccer, the family was the most important source of financial support for 64% of the sample (Item BQ6.1: mean = 3.91, standard deviation = 1.17). A total of 54% of the sample disagreed that they were dependent on money provided by their club or school, in order to participate in junior soccer (Item BQ6.3: mean = 2.48, standard deviation = 1.21). It was also unnecessary for the players to get a part-time job, so that they could buy everything that was required for them to play junior soccer (Item BQ6.4: mean = 2.13, standard deviation = 1.28). This was confirmed by 62% of the sample.

4.3.7 COACHING

Coaching also has an impact on skill acquisition and talent development. Features such as coaching expertise and the coach-player relationship were analysed. Table 4.17 shows the descriptive statistics of the sample in terms of the sample's responses in the "Coaching" scale.

Table 4.17 Frequency percentages, means and standard deviations for items within the "Coaching" scale

Item	1-2 Disagree		3 Neutral		4-5 Agree		Mean	SD
BQ7.5	8	15%	7	13%	41	73%	3.79	0.99
BQ7.2	7	13%	10	18%	39	69%	3.96	1.04
BQ7.3	8	15%	13	23%	35	63%	3.63	1.02
BQ7.8	3	6%	18	32%	35	62%	3.75	0.94
BQ7.4	9	16%	14	25%	33	59%	3.63	1.23
BQ7.6	8	14%	18	32%	30	54%	3.55	1.19
BQ7.7	16	28%	16	29%	24	43%	3.32	1.27
BQ7.1	10	18%	17	30%	29	42%	3.45	1.13

As many as 73% of the sample indicated that 'fun and enjoyment' were important features of their training sessions in junior soccer (Item BQ7.5: mean = 3.79, standard deviation = 0.99). For 69% of the sample, the coaches demonstrated that they also believed in the player's potential (Item BQ7.2: mean = 3.96, standard deviation = 1.04). As the player developed, the role of the coaches became ever more important. This was confirmed by 63% of the sample (Item BQ7.3: mean = 3.63, standard deviation = 1.02). This increased status of the coach was reinforced by the fact that for 62% of the sample, the coaches were approachable, and the players could discuss any problems with them (Item BQ7.8: mean = 3.75, standard deviation = 0.94).

4.4 CONFIRMATORY FACTOR ANALYSIS FOR SELECTED TALENT DEVELOPMENT FACTORS

In order to fully achieve the research aims stated in Chapter One, it was necessary to perform a confirmatory factor analysis on the selected talent development factors. While the sample size was small, a sufficient number of responses were sourced to perform the confirmatory factor analysis and, thereafter, to arrive at valid and credible findings.

Confirmatory factor analysis is a procedure that allows the researcher to test a factor relationship statistically (Fielding, J. & Gilbert, 2006: 279). In confirmatory factor analysis, the researcher may use theoretical knowledge to determine the number of factors to be tested and the specific items which load on a particular factor (Davies, 2007: 129). This statistical technique was therefore appropriate for testing factors associated with the successful talent development of the South African professional soccer players participating in the study.

Of prime importance was to establish a correlation (factor loading) between each selected factor and the overall factor structure. The factor loadings between each item and its associated factor were also assessed. Factor loadings greater than 0.40 ($\geq$ 0.40) were considered sufficient. Cronbach's alpha coefficients were calculated to determine the reliability of the each factor as well as the overall factor structure. As stated in Chapter Three, for the purpose of this study, the cut-off for Cronbach's alpha coefficient was 0.70.

Appendix D shows the results of the initial confirmatory factor analysis and the initial Cronbach alpha coefficients. The factor structure was then re-specified and tested without the items which had low factor loadings. The results of the final confirmatory factor analysis are presented in Table 4.18. All items loaded on a single factor to a significant extent. Only factors which had sufficient loadings (loadings of $\geq$ 0.40) on the overall factor structure were retained.

As shown in Table 4.18, the following six factors were statistically confirmed as being associated with the successful talent development of the sample:

- Training Environment
- Motivation and Ambitions
- Personal Development
- Family Support
- Cultural Factors
- Coaching

Table 4.18 Final confirmatory factor analysis results and Cronbach's alpha coefficients

	Item	F-Train	F-M &A	F-P Dev	F-Fam	F-Cult	F-Fin	F-Coach	Factors	F - Total
Factor Loadings	1	.821	-.681	.661	.676	---	---	.607	F-Train	.593
	2	.792	-.720	.813	.525	.544	.793	.745	F-M&A	.801
	3	.733	-.684	.608	.640	.594	.573	.705	F-P Dev	.882
	4	.748	-.593	.558	.523	.807	.395	.828	F-Fam	.778
	5	.647	-.544	.720	.690	.835	.594	.720	F-Cult	.656
	6	.446	-.707	.669	.811	.673	.662	.810	F-Fin	---
	7	---	---		.765	.723	.753	.754	F-Coach	.836
	8				.685			.611		
	9				.501					
	10				.584					
% Variance Explained		50%	43%	46%	42%	50%	41%	53%		58%
Cronbach's α		0.80	0.73	0.76	0.84	0.79	0.70	0.87		0.84

These six factors accounted for 58% of the overall variance. The questionnaire had a reliability of 0.84, as measured by the Cronbach alpha coefficient. Given the interpretation of the factor loadings, the explained variance and the Cronbach alpha coefficient values which were empirically found, the reliability of the research instrument can be regarded as "good".

Below are the results of the confirmatory factor analysis of the selected factors:

- **"Training Environment" as a factor**

This factor was retained as it had a factor loading of 0.593 on the overall factor structure. Of the seven items for this factor, six items (BQ1.1 – BQ1.6) had sufficient factor loadings. These items explained 50% of the variance The inter-item reliability was 0.80 as measured by the Cronbach alpha coefficient.

- **“Motivation and Ambitions” as a factor**

“Motivation and Ambitions” were shown to constitute a factor as this had a factor loading of 0.801 on the final factor structure. Six items (BQ2.1 – BQ2.6) out of the initial seven items had sufficient factor loadings. These items explained 43% of the variance. The Cronbach alpha coefficient was 0.73.

- **“Personal Development” as a factor**

The factor loading for “Personal Development” achieved the cut-off level with a loading of 0.882 on the final factor structure. Of the initial seven items, six items (BQ3.1 – BQ3.6) had sufficient factor loadings. These items explained 46% of the variance. A good reliability score of 0.76 was achieved in the Cronbach alpha coefficient.

- **“Family Support” as a factor**

This factor was retained as it had a factor loading of 0.778 on the overall factor structure. All ten items in this factor (BQ4.1 – BQ4.10) had sufficient factor loadings. These items explained 42% of the variance. The inter-item reliability was 0.84, as measured by the Cronbach alpha coefficient.

- **“Cultural Factors” as a factor**

“Cultural Factors” were shown to comprise a factor as this had a factor loading of 0.656 on the final factor structure. Six items (BQ5.2 – BQ5.7), out of the initial seven items, had sufficient factor loadings. These items explained 50% of the variance. The Cronbach alpha coefficient was 0.79.

- **“Financial Support” as a factor**

“Financial Support” was not included in the final factor structure. There was an inadequate factor loading and insufficient evidence to statistically confirm “Financial Support” as being associated with the successful talent development of the sample.

- **"Coaching" as a factor**

The factor loading for "Coaching" achieved the cut-off level with a loading of 0.836 on the final factor structure. All eight items (BQ7.1 – BQ7.8) had sufficient factor loadings. These items explained 53% of the variance. A good reliability score of 0.87 was achieved in the Cronbach's alpha coefficient.

4.5 RESPONDENTS' PERCEPTIONS OF THEIR REASONS FOR SUCCESS AND RESPONDENTS' CAREER HIGHLIGHTS

Two open-ended questions were included in the questionnaire in order to further investigate the talent development process in South African professional soccer players. While the questionnaire items were based on a robust analysis of the literature, it was deemed important to obtain the real-world experiences of the research respondents in their own words. The responses could then be used to qualitatively validate the accuracy of research results; and to allow the researcher to identify potential factors which were not evident from the literature.

Both open-ended questions were answered with ease and the verbatim statements of the respondents were recorded. Inductive coding was used to identify sub-themes and themes arising from the verbatim responses. This was done across the respondents with the aim of gaining a better understanding of the processes by which South African professional soccer players had developed their talent.

4.5.1 THEMES AND SUB-THEMES OF PLAYERS' PERCEPTIONS OF REASONS FOR SOCCER SUCCESS

For the first open-ended question, the respondents were asked:

"In your own words, describe the main reasons for your success in soccer"

A total of 43 respondents answered this question. The full list of statements from the respondents is available as Appendix E of this research study. A structured overview of the themes which emerged from this question is presented in Table 4.19.

Table 4.19 Themes and sub-themes of players' perceptions of reasons for soccer success

QUESTION B8	***IN YOUR OWN WORDS, DESCRIBE THE MAIN REASONS FOR YOUR SUCCESS IN SOCCER.***		
RESPONDENT	**SUB-THEMES**	**THEME**	**Percentage of sample represented in theme**
P1, P2, P3, P4, P5, P9, P11, P12, P14, P15, P17, P18, P20, P22, P33, P35, P37, P39, P42, P46, P48, P49, P50, P56	Commitment, Patience, Perseverance, Determination, Hard work, Dedication, Always wanted to improve, Discipline, Sacrifices, Staying away from fun times	Commitment to training	43%
P9, P13, P14, P15, P16, P20, P21, P26, P49, P50	Following a dream, Having goals, Being positive, Self-belief	Being positive	18%
P2, P4, P7, P10, P13, P22, P41, P45, P50	Passion for the game, Love of the game, Soccer interest	Passion for the game	16%
P1, P2, P22, P23, P24, P35, P41, P55	Family support, Support from friends, Strong family background, Motivation by parents, Soccer as means of social upliftment for the family	Family support	14%
P9, P19, P28, P30, P47	Skill, God-given talent, natural ability	Skill	9%
P8, P24, P30	Monitored training session by coach, Listening to coach, Quality coaches, Working with soccer experts	Coaches	5%
P23, P28, P40	God gives success, faith in God,	Religious faith	5%
P32, P39, P45	Monitored training sessions by coach, Adequate equipment, Support from senior players during training, Playing with the best players	Training environment	5%
P10, P21	Financial support	Financial support	4%

As shown in Table 4.18, nine themes emerged from the data analysis. A count of the number of times that each theme was mentioned was performed for the sample. These counts were then converted into percentages. Below the ten themes are discussed in their order of importance as ranked by the sample:

(i) Commitment to training

Commitment to training was listed as the most popular reason for success in soccer. As many as 43% of the sample mentioned a desire and resolve to persist in their soccer participation over time. The respondents felt that they had displayed great determination and concentration in ignoring distractions and staying with their talent development process - until the achievement of a professional soccer career. This may be seen in the comment of Respondent P35 who described his success in soccer in these terms:

"I think that I have managed to excel mainly as a result of my determination to be better a player and encouragement from family, friends and colleagues"

(ii) Being positive

It would seem that in order to attain an elite level in South African soccer, a player needs to exhibit psychological qualities, such as self-confidence, goal setting and positive self-talk skills. A total of 18% of the sample listed being positive as the main reason for their success in soccer. The respondents stated they had a healthy self-concept and belief in their own ability. This was important when deciding to adhere to soccer participation especially when the respondents had to face challenges on the perceptions of their ability. As stated by Respondent P14:

"I never gave up when things were not going my way. I was always positive in everything I did."

(iii) Passion for the game

When asked about the main reasons for his success in soccer, Respondent P2 stated:

"I think it would be because of the love that I had for the game and also the determination for the game."

This passion for the game was important in the talent development of 16% of the sample. Through their participation in soccer, the respondents were able to demonstrate and develop physical competence, while experiencing enjoyable and positive social interaction with adults and peers. The respondents also mentioned that their love for soccer also reflected in other spheres of their lives as well (for example, enjoying watching soccer on television).

(iv) Family support

As many as 14% of the sample suggested that young soccer players should make use of family support as a useful resource during the talent development process. Family support was expressed in terms of verbal encouragement, financial provision and career advice. A relationship was noted between parental involvement in the talent development process and the respondent regarding his soccer participation as an opportunity to significantly improve the well-being of his family. This is expressed well by Respondent P55 who listed one of the main reasons for his success in soccer as:

"Is to see my family living a better life at the end and to make them proud of me for the things that I achieve in my soccer."

(v) Skill

As stated in Chapter Two, skill in soccer is a complex phenomenon and includes a combination of physical, functional, behavioural and perceptual features. However, 9% of the sample felt that their skill was the main reason for their success in soccer. Participation in youth soccer also allowed the respondents to develop and prepare themselves for the skill demands of professional soccer. As put forward by Respondent P9:

"One has to have a talent in him and have clearly set goals to pursue the career as well as not to have any disturbances."

(vi) Coaches

Coaches fulfilled multiple roles in the talent development of 5% of the sample. Coaches were instructors who helped the respondents to learn and improve their skills, as well as helping them to achieve their goals. Respondent P30 credited his success in soccer to:

"God-given talent and quality coach"

Coaches inspired the respondents to maintain their motivation during the often-difficult talent development process. They also made soccer participation enjoyable.

(vii) Religious faith

The open-ended question on the main reason for success in soccer revealed an interaction between sport and religion. Respondent P40 stated:

"God is number one in my life. I owe all my success to Him."

In total, 5% of the sample mentioned the importance of their religious faith in their talent development and the achievement of a professional career in soccer. This spiritual and religious dimension put sport into perspective and helped the respondents to live a morally sound life.

(viii) Training environment

Only 5% of the sample mentioned the training environment as one of the main reasons for their success in soccer. The respondents suggested that aspects such as an overt club developmental approach, a focus on improving technique, peer learning as well as the provision of all necessary equipment had assisted their talent development. This may be shown by Respondent P32's statement that his success in soccer is due to:

"Inspiration from senior soccer players and adequate equipment during training"

(ix) Financial support

Only 4% of the sample identified financial support as a factor associated with their talent development. While there is no doubt that financial resources are required in soccer participation (for example, to pay for equipment and transportation), financial support received a low rating as a stand-alone factor. Financial support was mentioned within the context of parental financial support. Respondent P10 mentioned one of the main reasons for his success in soccer as:

"Support in terms of finance from parents"

Eight of the nine themes identified through the open-ended questions were discussed as factors or items in the research questionnaire. "Skill" and "Religious faith" were the only themes which were not addressed in the research questionnaire. As explained in Chapter Two of this research study, "Skill" was not discussed as this attribute was considered to be an anthropometric variable.

4.5.2 THEMES AND SUB-THEMES OF PLAYERS' PERCEPTIONS OF CAREER HIGHLIGHTS

For the second open-ended question, the respondents were asked:

"In your own words, list the highlights of your career since you started playing soccer"

A total of 46 respondents answered this question. A structured overview of the themes which emerged from this question is presented in Table 4.20.

Table 4.20 Themes and sub-themes of players' perceptions of career highlights

QUESTION B9	***IN YOUR OWN WORDS, LIST THE HIGHLIGHTS OF YOUR CAREER SINCE YOU STARTED PLAYING SOCCER***		
RESPONDENT	**SUB-THEMES**	**THEME**	**Percentage of sample represented in theme**
P2, P6, P11, P14, P15, P19, P28, P37, P40, P41, P42, P46, P49, P50	Playing professional soccer, Playing in the PSL, Playing for a particular club, To progress through the junior teams until professional status, First match in PSL	Becoming a professional player	25%
P2, P7, P9, P17, P19, P23, P26, P32, P33, P37, P35, P40, P49, P50,	Representing my country, Getting my first national call-up	Representing a national team	25%
P3, P6, P8, P16, P20, P22, P32, P40, P50, P52, P56	Playing for the junior team in my community, Playing in the junior ranks of my current club, Being a part of junior provincial teams	Representing junior teams	20%
P2, P3, P17, P19, P23, P24, P30, P37, P39	Winning league title, winning a cup title, Promotion to PSL, Winning NFD playoffs, League runners-up	Team achievements	16%
P5, P13, P18, P33, P40, P48, P55,	Being selected as player of the tournament, Being chosen as top goalscorer, Number of goals scored in a season, Man of the Match Award	Personal performance-related awards	13%
P10, P11, P22, P41, P45, P55	Playing in finals of a cup competition against a "big team", Playing against a European team	Playing against popular teams	11%
P1, P22, P26	Playing professional football overseas, Participation in international tournaments	Playing football overseas	5%
P1, P4, P12	Financial stability, Providing for my family	Financial stability	5%
P3, P6, P34	Meeting a famous player, Working with high profile coaches	Meeting famous soccer personalities	5%

As shown in Table 4.20, nine themes emerged from the data analysis. A count of the number of times that each theme was mentioned was performed for the sample. These counts were then converted into percentages. Below the nine themes are discussed in their order of importance as ranked by the sample:

(i) Becoming a professional player

When asked about his career highlights, Respondent P14 answered:

"As I grew up as a young boy I decided to play football and one day my dream came true when I became a professional soccer player some few years ago"

For 25% of the sample, signing their first contract and becoming a professional soccer player was an important milestone. After investing the time and effort required as youth soccer players, the respondents were desperate to make it in the professional game. Therefore, when they became a professional player, this experience was a career highlight. The fact that not all who want to become professional players achieve that status, made the accomplishment even more significant.

(ii) Representing a national team

A total of 25% of the sample listed representing a national South African team as a career highlight. The respondents had great pride in playing for South Africa and placed an immense value on their national caps. This can be noted in the statement of Respondent P23, who listed as his career highlights:

"Playing for Bafana Bafana at Gold Cup 2005 and winning ABSA Cup with Swallows"

Their selection for a national team meant that the players could also compete against other international professional soccer players in important tournaments and qualifiers. Besides being psychologically rewarded with the notion that they were contributing to a national goal, playing for the national team also served as a platform for exposing their abilities to a greater international audience.

(iii) Representing junior teams

Respondent P22 looked back on his career and listed his career highlight as:

"It was when we won the Nike junior tournament and went overseas for the first time and when I scored 2 goals against Kaizer Chiefs."

A total of 20% of the respondents agreed that representing junior teams was a career highlight. Participation in organized junior teams gave the respondents an identity as soccer players and the necessary stimulation to pursue their dreams of becoming professional players. Many players were in resident programmes where they lived with their team and formed strong lifelong bonds with fellow junior players. Some of the respondents also praised the lessons they were taught in these junior teams. Coaches and club official gave direction and instruction on the skills that were required for success in soccer.

(iv) Team achievements

In team sports, such as soccer, player success is inextricably linked to team performance and achievements. While there may be individual successes even when the team does not perform well, this personal success is usually followed by a move to a better performing team. As such, 16% of the players mentioned team achievements as a career highlight. Respondents mentioned the various championships and tournaments that they had won during their careers. Respondent P17 considered these team achievements as career highlights:

"Called up for Bafana Team, ABSA Cup champions, Telkom Cup Runners-up, League Runners-up"

(v) Personal performance-related awards

Only 13% of the sample mentioned the recognition that was afforded through personal performance-related awards as being career highlights. Respondent P13 listed the following personal performance-related awards as his main career highlights:

"I was the Vodacom promotional playoffs' Goalkeeper of the Tournament. I got the man of the match award on debut against Moroka Swallows as well as against SuperSport United."

Regardless of the age when the awards were received, they served as overt proof of the player's ability. As such, the awards promoted learning, performance, enjoyment and persistence in sport. The respondents mentioned that these extrinsic rewards enhanced their motivation for a task that was already intrinsically motivating.

(vi) Playing against popular teams

Professional soccer players in South Africa take an active interest in soccer from a young age. This early interest leads them to become supporters of various South African soccer clubs. When they turn professional, most players aim to play for the popular South African clubs. No matter the status of their current club, the players look forward to playing against those clubs which are admired and well-supported. That is why when he was asked about his career highlights, Respondent P10 simply stated:

"Beating Kaizer Chiefs and Orlando Pirates"

However, only 11% of the sample also agreed that playing against popular teams had been a career highlight.

(vii) Playing soccer overseas

Only 5% of the sample mentioned playing soccer overseas as a career highlight. Respondent P26 mentioned his career highlight as:

"Played in Turkey"

While there were different formats of foreign soccer participation (for example, playing for a South African team in an international competition or playing in a foreign league), all the pertinent respondents valued being exposed to international competition. Their participation confirmed that they had attained a level of international excellence. In some cases, the respondents under review had the opportunity to compete in internationally-recognized competitions such as the UEFA Champions League or the UEFA Europa League in Europe.

(viii) Financial stability

The financial stability offered by a professional soccer career was also appreciated by 5% of the sample. The start of a soccer career was linked with the achievement of financial independence. Upward individual mobility occurred through the rewards and opportunities that professional soccer offered. As noted by Respondent P1:

"I had a lot of opportunities to see the world, I went overseas a lot and it helped me to become financially stable."

In some case, the financial benefits extended to the player's immediate family. The respondents noted a reversal of dependence whereby they now supported financially the family network which had provided sustenance and encouragement during the years of their junior soccer participation.

(ix) Meeting famous soccer personalities

Playing professional soccer also presented the respondents with an opportunity to meet famous soccer personalities. A total of 5% of the sample treasured meeting famous players who had served as their role models during their youth. It was also inspiring to meet other leading persons in soccer such as administrators and officials. The fact that these famous personalities (who they might only have seen on television and in magazines) now regarded the respondents as important figures in soccer also served as a form of achievement validation. This is why when asked about his career highlights, Respondent P4 remembered that he had met one of the members of Bafana Bafana team which what on the 1996 African Cup of Nations and could only say:

"Meeting Hans Vonk"

4.6 CONCLUSIONS

This research study has aimed to determine the relevance of selected factors associated with successful talent development in South African male professional soccer players competing in the 2008-2009 ABSA PSL season. Secondary objectives of the study were to test the selected factors by using a quantitative measure and to perform a confirmatory factor analysis in order to establish the loading of the questionnaire items on the selected factors. As such, Chapter Four has given details of the statistical analysis and empirical results of the study.

The results obtained from the sample were analysed in terms of their descriptive statistics and a confirmatory factor analysis was performed. The descriptive statistics focused on the biographical information of the sample in order to test concepts such as deliberate practice, early specialization and the '10-year rule'. The mean values and standard deviations for the most noteworthy questionnaire items in the selected talent development factors were highlighted.

Finally, responses to open-ended questions in the questionnaire were also analysed. This was done in order to validate the accuracy of the findings and to compare the results with the published literature.

The following six factors were statistically confirmed as being associated with the successful talent development of the sample: Training Environment, Motivation and Ambitions, Personal Development, Family Support, Cultural Factors and Coaching. These six factors accounted for 58% of the overall variance. The questionnaire had a reliability of 0.84, as measured by the Cronbach alpha coefficient.

The implications of these findings will be explored in the next chapter.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION
DISCUSSION AND CONCLUSIONS ON TALENT DEVELOPMENT THEORY
EMPIRICAL CONCLUSIONS ON FACTORS ASSOCIATED WITH SUCCESSFUL TALENT DEVELOPMENT IN SOUTH AFRICAN SOCCER PLAYERS
IMPLICATIONS AND RECOMMENDATIONS FOR TALENT DEVELOPMENT IN SOUTH AFRICAN SOCCER PLAYERS
LIMITATIONS OF THE STUDY
RECOMMENDATIONS FOR FUTURE RESEARCH

5.1 INTRODUCTION

This research study aims to determine the relevance of selected factors associated with successful talent development in South African male professional soccer players competing in the 2008-2009 ABSA PSL season. A brief overview of the format of this research study is outlined in the following paragraphs.

Chapter One introduced the research aims, the background to the proposed study and the purpose of the research. The research objectives were also outlined and a brief analysis of the research design and methodology were presented.

Chapter Two introduced and explained the literature concerning talent development and its different dimensions. In this chapter, talent development was defined and explained in order to evaluate its importance and relevance in South African soccer. Additionally, contemporary research on talent development models and factors associated with successful talent development were outlined. After the theoretical base was established, the researcher selected the factors of successful talent development which would be tested empirically.

The methodology of the research study in pursuit of the research objectives was presented in Chapter Three. Chapter Three highlighted the research design of the study and provided details of the defined population, its chosen sample and the questionnaire design. Issues and choices surrounding the sampling technique and the questionnaire format were also motivated and explained.

Chapter Four documented and reported the empirical results of the data analysis. Effect was given to the steps taken to achieve the research aims and objectives. The research results in the data analysis were mainly outlined by means of descriptive statistics. Confirmatory factor analysis established six factors as being associated with the successful talent development in the sample.

This final chapter contains a brief synopsis of the main conclusions drawn from the research results. The empirical results are discussed here and evaluated in relation to the aim and objectives of the study. The strategic implications and recommendations for the talent development process in South African soccer are offered, based on the research findings. These should be adopted with due consideration of the stated limitations of the study. Suggestions for future research are also presented.

5.2 DISCUSSION AND CONCLUSIONS ON TALENT DEVELOPMENT THEORY

This research study has focused on determining the relevance of selected factors associated with successful talent development in South African soccer players. Several important conclusions were reached with regard to talent development theory.

5.2.1 RELATIVE AGE EFFECT

In general, the 'relative age effect' theorizes that there is a biased distribution of elite athletes' birthdates, with an over-representation of athletes born close to the cut-off date, and an under-representation of players born at the end of the relevant year. In modern soccer, most federations use 1 January as the cut-off date. Thus, it is theorized that most players in elite teams are born in

the first quarter of the year (January - March), while players born in the last quarter (October – December) are under-represented.

In this study, 32% of the sample (18 respondents) were born in the first quarter of the year. The third and fourth quarters had the lowest representation with 25% of the sample coming from each quarter. While it is noteworthy that the first quarter had the highest representation in accordance with the 'relative age effect', the small sample size meant that the researcher was not able to test whether the difference in the first quarter (32%) and the final quarter (25%) was statistically significant.

When the birth quarter distribution was analysed according to the age frequency distribution, the first quarter (January to March) had the highest representation in the age range of 17 to 20 years. In the age ranges of 21 to 27 years and 28 to 35 years, the birth quarter distribution was more even across the four quarters. While there is no definite statistical evidence, it may be suggested that the 'relative age effect' is more noticeable at the junior levels of talent development. As the players get older, there seems to be greater variability in the birth quarter distribution. This increased variability may demonstrate that those athletes who are born in the later part of year may be able to 'catch up' and reach an elite level of performance if they are provided with similar opportunities.

As stated previously, the collective result of the relative age effect is achieved through the notions of physical developmental advantage, socialization and the self-fulfilling prophecy (Glasmer & Vincent, 2004: 33). The 'relative age effect' manifests itself in soccer through a bias towards players who are physically mature and perform better than their peers, who are born later in the selection year. These players are more easily identified by their coaches and fellow players as being more "talented" or "skilled".

However, consistent with the approach of this study, it may be necessary to forego excellence at junior levels. "Skill" was only noted by 7% of the sample as the main reason for success in soccer and thus, it ranked 5th in terms of contributing to elite performance. So, even if a player benefits from the 'relative age effect' and demonstrates great skill at a young age, this is no

guarantee for achieving the professional level later on in life. There has to be a distinction between performance and talent (as defined in Chapter One). This is especially true in soccer, a sport in which there is wide variance in height and weight at the professional level.

Consequently, suggestions are made which would lead to a more rigorous assessment of the 'relative age effect' in South African soccer talent development. Firstly, the 'relative age effect' should be analysed using a longitudinal approach. This would be done in order to trace the evolution of the 'relative age effect' in South African soccer from year to year. Using a similar database as the one utilized for its "Wonke Wonke programme", SAFA would monitor the birthdates of players who are part of South African youth soccer programmes. This database could be used to track the influence of players' birthdates on talent development drop-out and the attainment of professional elite performance.

Match-based variables should also be included in any future studies which aim to assess the 'relative age effect' in South African soccer. In this study, the birthdates of South African players registered with clubs participating in the 2008-2009 season of the ABSA PSL were noted. The study attempted to determine the 'relative age effect' by only focusing on a player's inclusion in the club squad. However, match-based variables (such as the number of selections for matches within a season or the number of minutes played per match) are valuable when considering the 'relative age effect'. These variables provide a more reliable indication of the relative age effect in soccer (Vaeyens et al., 2005: 748).

5.2.2 DELIBERATE PRACTICE AND SPECIALIZATION

The theory of deliberate practice advocates that expertise results from the development of domain-specific knowledge skills acquired through practice and an adaptation to practice. This view that long and intensive periods of training are seen as a precursor to the attainment of expertise has received considerable support across various domains (Morgan & Giacobbi, 2006). The substantial role of practice and the environment in achieving elite performance is crucial. As suggested by Ericsson et al. (1993), there is a quality element to practise activities on the path towards elite performance.

This study has provided evidence that deliberate practice is relevant in South African talent development. The most popular perceived reason for success in soccer among the sample was "commitment to training" (43% of the sample listed this reason). It may be argued that this "commitment to training", rather than any innate ability or initial skill level accounted for the achievement of the elite level of performance. This means that the players dedicated themselves to their training and devoted themselves physically and mentally to the talent development process and its specific activities. In addition, there were no immediate financial rewards and their participation in junior soccer meant that the players and their families had to make numerous sacrifices. Training was purposeful and goal-directed; directed at improving their skill.

This is why "Becoming a professional player" (25% of the sample) was also listed as the most popular career highlight. Signing a professional contract was seen as the deserved prize of all the effort invested in junior soccer activities, which may not have been inherently enjoyable.

To add to this complex interaction of deliberate practice and elite performance, the sample also listed "passion for the game" (16%), "skill" (7%) and "training environment" (5% of the sample) as reasons for soccer success. These observations point to the need for junior soccer clubs and academies to be centres where all junior players with basic motor skills and an interest in soccer are provided with an optimal learning and training environment for the realization of their talent.

The role of specialization in the development of sport expertise is a much-debated issue among sport researchers. While extensive and high-quality involvement is necessary before expert levels of performance can be achieved, this research found no evidence to support early specialization in South African soccer. There was no evidence that athletes who had a diversified sport background were disadvantaged, when compared with athletes who specialized in soccer from an early age.

As many as 27 respondents (48% of the sample) indicated that they had played in at least one other sport besides soccer during their formative years, playing for the school team or better. Table tennis was the most popular sport amongst the respondents (48% of the respondents under consideration). This observation illustrates the point that in South Africa, different sport codes

are competing for the same pool of young athletes. Although their sport is not popular in South Africa, the South African Table Tennis Board has a dedicated talent identification and development programme which uses South African schools to introduce table tennis to potential young players (South African Table Tennis Board 2006). Talent development models and processes in South African soccer have to be aware of this 'scramble for young athletes'.

However, SAFA should not seek to find young players who play soccer exclusively. This study suggests that the professional soccer players who participated in other sports during their formative years benefitted from the transfer of learning. While expertise is typically domain-specific, most of the sports listed by the sample (such as table tennis, cricket, hockey and volleyball) were 'ball sports', in which some identical movement, perceptual or conceptual elements between the sport tasks could be transferred. For example, hockey and soccer share a perceptual element since each player has to interpret environmental cues and make good performance-related decisions. Learning how to accurately interpret the actions of an opponent in hockey can be transferred to soccer.

The fact that some of the sports mentioned (for example, softball and cricket) were also 'team sports' may have assisted the professional soccer players in learning how to work in a team environment, thereby further assisting their soccer talent development.

By assessing the highest participation level for respondents who played other sports besides soccer during their formative years, we are able to theorize on the supportive function of diverse sport participation. As illustrated in Figure 4.7, as many as 74% of the respondents under consideration only played at a school team level in their other sport. Six respondents (or 22% of the respondents under consideration) played at provincial level while one respondent played for a national age group team in another sport. Those respondents who played diverse sports were able to "sample" a different sport at an appropriate level of competition, thereby developing the intrinsic motivation required for the deliberate practice activities of their soccer talent development.

It is the position of this study that soccer is a late specialization sport. Early specialization in soccer may have costly consequences in terms of the soccer talent development drop-out rate and in terms of lifelong participation in soccer. After having participated in diverse sports, the mean age at which the evaluated sample started their soccer specialization was 13.78 years (standard deviation = 2.32 years). The frequency distribution of the sample in terms of the age at which soccer specialization started was indicated in Table 4.6. The largest group was between the ages of 12.51 and 15 years (48% of the respondents).

The age at which soccer specialization started in the sample is consistent with the "specializing years" of Côté's stage model of sport participation. Côté proposes that between the ages of 13 to 15 years, athletes should choose one or two sports and focus on developing their skills with more structured practices (Wolfenden & Holt, 2005: 109). The sample's mean soccer specialization of 13.78 years is also in line with the "training to train" stage of Balyi's six-stage LTAD model. This third stage of the model emphasizes sport-specific skills while the coach assumes greater importance in the athlete's future development (Balyi, 2001: 4).

Specialization should also be assessed in relation to other life events and life transitions, especially when examining youth soccer. While it is widely expected that high school students progress to university, there were no respondents in the sample with a university-type qualification. It would seem that it is very difficult to pursue a professional career as a soccer player, as well as to engage in tertiary studies. The mean age at which the respondents made their PSL debut (mean age =19.87 years; standard deviation = 2.73 years) also coincides with the age range when South African students complete high school.

Moreover, SAFA does not have any structured leagues which focus on age-governed participation after the Under-19 age group. Thus, any junior players interested in a professional career would aim to join one of the semi-professional or professional leagues immediately after high school - with no time left for other pursuits.

5.2.3 THE '10-YEAR RULE'

The '10-year rule' proposes that "a 10-year commitment to high levels of quality training is the minimum requirement to attain an elite level of expertise (Baker & Horton, 2004: 215). Bailey and Morley (2006: 212) state that the '10-year rule' and the need for 10 000 hours of training is applicable to a wide range of activities including science, sport and music. Furthermore, the role of practice in high-level sport performance has been well documented. Thus, in addition to the quality, type and intensity of training (as advocated by the theory of deliberate practice), the '10-year rule' suggests that the quantity of specialized training is also important in talent development.

This study has assessed the quantity of specialized training that the research sample received. Consistent with the definition of talent development put forward in Chapter One, the quantity of specialized training was measured from the time that the players started playing for youth soccer clubs outside school, up until they made their PSL debut. It is assumed that talent development took place through the provision of (and as a result of participation in) an optimal and structured training environment.

The mean age at which the respondents started playing for a youth team outside school was 10.09 years (standard deviation = 2.67 years). The mean age at which the respondents made their PSL debut was 19.87 years (standard deviation = 2.73 years). Therefore, the respondents had a mean period of 9.78 years in which they invested in practice and other deliberate efforts to improve their soccer talent. This finding is consistent with the '10-year rule' and suggests that the attainment of a career as a professional soccer player in South Africa was a function of the respondents' extended prior preparation in organized junior soccer structures.

The respondents themselves seem to credit their current status to the quantity and quality of training. The most popular reason for success in soccer among the respondents was "commitment to training" (43% of the sample).

While the ‘10-year rule’ seems to advocate an early specialization approach to sport talent development, this is not consistent with the findings of this study. The findings support the notion that soccer players may benefit from early diversification in sport participation and large amounts of deliberate play. The mean age at which the respondents first played soccer at home was 6.09 years (standard deviation = 1.71 years).

The respondents then proceeded to play soccer at school at a mean age of 9.36 years (standard deviation = 2.30 years). It may be important to acknowledge this informal learning that took place before the players participated in more structured training environments. It was through playing at home and school that the players learnt the motor demands of soccer and developed the “passion for the game”. “Passion for the game” was ranked third as a main reason for success in soccer. As such, ‘deliberate play’ seems to be relevant in South African soccer talent development.

In terms of specialization, enrolment in a structured junior soccer programme (and its associated deliberate activities) did not mean that the respondents had to participate in soccer exclusively. The mean age at which the respondents started playing for a youth team outside school was 10.09 years (standard deviation = 2.67 years). However, the mean age at which the evaluated sample started their soccer specialization was 13.78 years (standard deviation = 2.32 years).

This means that there was a mean period of 3.69 years in which the respondents participated in at least one additional sport at the start of their soccer talent development process. It would seem that in the sample, early specialization did not offer any advantages in terms of the attainment of elite performance. Indeed, participation in an additional sport may have assisted the players to develop more flexible perceptual-motor and perceptual-cognitive skills in soccer.

5.2.4 TALENT DEVELOPMENT MODELS

As mentioned in Chapter Two, talent development models comprise part of the scientific evidence that has been used to identify and nurture talent in sport. Yet, this study has shown that the multi-dimensional nature of talent and talent development makes it difficult to establish a

single talent development model which can guarantee future elite performance. All six talent development models analysed in the literature review were impressive, but did not address all aspects of the talent development process.

After having performed the empirical research, it is the author's view that, at best, researchers can only devise principles to guide the formulation of a talent development model.

Firstly, there can be no doubt that any talent development model needs to emphasize the acquisition of basic and fundamental motor skills as the basis of training. It is the view of this study that through learning a variety of motor skills under different conditions, a young athlete can develop an effective set of movements that can be transferred from one sport to another. Any talent identification and talent development needs to be preceded by activities which develop fundamental motor abilities. In a late-specialization sport such as soccer, deliberate play in all physical activities should be encouraged before any predictions are made on the potential for elite performance.

As shown in the study, participation in a talent identification programme is not a prerequisite for future elite performance. A total of 47% of the sample did not participate in a talent identification programme. Their non-attendance means that there was no discrete event where a battery of tests was used to assess their potential to become a professional soccer player. However, the respondents still made it to the top of their sport! The key is to make junior soccer participation as inclusive as possible with players of all abilities interacting with each other and their support system.

As such, the concepts of talent identification and talent development are complementary rather than mutually exclusive. A good talent development model should show talent identification and talent development as allied practices that emphasize direction and development instead of the speculative selection and elimination.

A talent development model solely based on anthropometry or physiology does not accurately reflect the requirements of talent development. Talent identification and development procedures

must be considered in a holistic developmental framework. Talent identification and development should incorporate all the various factors which have a bearing on the player's path from junior novice to elite professional. That is why "religious faith" and "skill" could both be listed as reasons for success in soccer by the sample in this study.

While it may appear simpler, a minimalist or reductionist approach is misguided. There is a need for all-encompassing models which prioritize the establishment of a systematic and holistic long-term talent development process, with an on-going talent identification strategy. Factors associated with successful talent development in South African soccer should include all those variables which influence players to learn and consolidate their skills.

In this study, the following six factors were statistically confirmed as being associated with the successful talent development of the sample: Training Environment, Motivation and Ambitions, Personal Development, Family Support, Cultural Factors and Coaching.

It has to be emphasized that talent development is not a closed process. Talent development has a longitudinal dimension and it represents a period of structured learning. Skills shown at a young age do not automatically translate into talent development and performance. In the same manner, talent may be lost or never recognised - because of the lack of opportunities. Soccer talent does not develop automatically and it does not develop at the same rate for all young players. A talent development model should be flexible and therefore allow the emergence of talent.

In this study, among the eight players who played for Bafana Bafana, none of them played for all the junior representative sides during their talent development. They were not always rated or perceived as the best but they reached the top of their sport.

SAFA should ensure that there are developmental opportunities at all stages of a player's career. Three respondents in the sample indicated that they had represented "Other national sides". Two of these respondents had played for the senior development national team which participated in continental competitions without any official national caps being awarded. Carefully selected

senior developmental sides should participate in continental competitions and prepare players for Bafana Bafana.

One tournament which SAFA needs to take more seriously is the Africa Nations Championship (CHAN) which is organized by the Confederation of African Football (Confederation of African Football 2011). This bi-annual tournament is designed exclusively for footballers playing in their domestic leagues without any official international caps being awarded. Bafana Bafana would greatly benefit if promising young players in both the ABSA PSL and the lower leagues were exposed to international competition through continental competitions, such as CHAN. The level of competition and a familiarity with playing in challenging conditions might assist in any future performances for Bafana Bafana.

The assumption that the individual performing best in any one age group is the individual with the best chance of becoming a professional player is unfounded. The 'relative age effect' has possibly resulted in many promising players being overlooked, because they suffered from a 'relative age' disadvantage in their early childhood. The selection and retention of only the best players in a certain age group tends to encourage other players to drop out, thereby prematurely eliminating those players whose talent may be revealed only at later stages of talent development.

Soccer institutions which use a particular talent development model must be aware of concepts such as 'the relative age effect'. They should ensure that all talent development opportunities are the same for all players regardless of their present ability.

Additionally, the chronological ages in any talent development model should only be indicative. There may be large variations in maturity levels and coaches need to determine the player's most appropriate developmental stage. The athlete's overall characteristics (and not age) should determine the necessary training, the methods required to develop those characteristics and the requisite support. Transitions from one stage of talent development to the next are then characterized by task completion, the characteristics developed and by learning.

The emphasis on chronological age ranges in the talent development models of researchers such as Bloom and Côté remains a weakness which compromises the application of these talent development models.

It is also debatable whether talent development happens in an ordered and step-wise manner. Current talent development models stress the transitions of talent from one level to the next (Balyi & Hamilton, 2003; Wolfenden & Holt, 2005). There is also an expectation that soccer players in structured leagues should "rise through the ranks" and play in the lower leagues before playing in the highest league. However, no respondents in the sample had played in all three semi-professional and professional lower leagues before playing in the ABSA PSL.

Those who did play in the lower leagues only had short tenures. Of those respondents who played in the SAFA Vodacom Promotional League, the highest grouping (89% of the respondents under consideration) was that of players who had played for only one season. A total of 75% of the sample also stated that they occasionally played in older age groups, so that they could get more competition (Item BQ1.6: mean = 3.93, standard deviation = 1.13). Therefore, players want to play (and may benefit from playing) in the highest league as soon as possible.

However, this phenomenon should be carefully managed. In order to assist players who prematurely enter the ABSA PSL and struggle to make the grade, there should be player loan partnerships between ABSA PSL clubs and lower league clubs.

5.3 EMPIRICAL CONCLUSIONS ON THE SELECTED FACTORS ASSOCIATED WITH SUCCESSFUL TALENT DEVELOPMENT IN SOUTH AFRICAN SOCCER PLAYERS

The pertinent conclusions of this study regarding factors associated with successful talent development in South African players are set out below. These conclusions collectively address the research aim as set out in section 1.3.1 of Chapter One.

5.3.1 TRAINING ENVIRONMENT

It has been the view of this study that a player's development is largely dependent on his environment, and the manner in which the player interacts with his environment. The very definition of talent development calls for the provision of a suitable learning environment for athletes so that their talent can be realised.

Therefore, the first factor retrospectively analysed the training environment of the sample as they participated in junior soccer. Under scrutiny were environmental catalysts such as adequate training resources and the provision of sports support services. "Training Environment" was retained as a factor as it had a factor loading of 0.593 on the overall factor structure. Of the seven items for this factor, six items had sufficient factor loadings. These items explained 50% of the variance.

In their training environments, as many as 75% of the sample occasionally played in older age groups, so that they could get more competition. This shows that coaches should assess a player's ability and place him in the appropriate environment – one which is stimulating and supportive. Without the 'correct' environment, namely one in which the player is encouraged and supported, and has the opportunity to learn and practise, optimum performance will never be obtained.

The quality of practice is more important than the quantity. A total of 54% of the sample stated that their soccer clubs had a training environment in which 'the best facilities were reserved for the senior and older teams'. The lack of suitable facilities is a real constraint. Clubs and academies in South African should seek partnerships with local institutions (such as municipalities) so that they have increased access to facilities of a good standard for all their teams.

A total of 68% of the sample had had no access to support staff, such as physiotherapists and sport scientists as junior soccer players. There was also minimal monitoring of training aspects, such as player diets and general health. This is surprising, especially for a sport code which has

prioritised the establishment of a national database founded on players' physiological profiles. Support should be given to players as they develop - in order to prevent injury and to ensure that the players receive the nutrition necessary for their talent development process.

5.3.2 MOTIVATION AND AMBITIONS

"Motivation and Ambitions" was shown to be a factor as it had a factor loading of 0.801 on the final factor structure. Six items in the scale explained 43% of the variance. The "love of the game" served as the primary motivation for 84% of the sample when they started playing soccer. By extension, it would seem that young players practise more when they have a keen interest in the sport. Junior soccer players have to enjoy soccer before they engage in 'deliberate practice'.

As many as 78% of the sample also agreed that 'becoming a professional soccer player was my dream career from a young age'. Further motivation was provided by meeting 'important people' as a result of participation in junior soccer. It would seem that current soccer personalities can serve as role models for future soccer stars. The influence of parents and coaches on the junior player's motivation is also high. Coaches and parents determine the motivational environment. They are crucial in allowing young players to develop to their full potential.

As the player progresses, there is a greater focus on the fame and on the rewards. As stated by some of the respondents, career highlights included "playing against popular teams" and "meeting famous soccer personalities". Good competitive balance and consistent marketing will ensure that players are motivated to perform well in the ABSA PSL. "Team achievements", "personal performance-related awards" and "financial stability" were perceived as being of great value by the sample. Financially, the ABSA PSL is well-funded by sponsors. Performance-based team and individual rewards should be consistently reviewed, in order to assist player performances.

5.3.3 PERSONAL DEVELOPMENT

Soccer players have to learn how to organize their lives and how to function in their societies. This is especially true for the young soccer players as they make their transition into adulthood

while part of a talent development programme. Many careers have been cut short due to a player's lack of discipline or involvement in unlawful activities. The factor loading for "Personal Development" achieved the cut-off level with a loading of 0.882 on the final factor structure. Six items explained 46% of the variance in the sample.

Any talent development process should aim to develop the athlete holistically. Sufficient time and training should be dedicated to the development of personal characteristics, such as confidence and discipline. Players should strive to improve not only on the soccer field, but in all spheres of their lives. Initially, junior players should be given guidelines on dealing with various pressures that come along with their participation in sport. ABSA PSL clubs and soccer academies should provide a variety of psycho-educational workshops and activities for their junior players. These workshops should be held regularly and cover aspects such as goal setting, time management, effective communication, self-esteem and dealing with injury rehabilitation. It would also be advisable to employ the services of a sport psychologist in the club. A total of 68% of the sample stated that their training environment lacked support staff such as a sport psychologist.

As pointed out in this study, deliberate practice activities may not be intrinsically enjoyable. The young player should be assisted in coping with the demands of his development. The player also needs to have the correct mental approach. This is why "being positive" was listed by the sample as a main reason for soccer success. A total of 75% of the respondents stated that their "determination" was a major reason for their success in soccer. Participation in junior soccer leagues also requires some sacrifice. 65% of the respondents agreed that they had definite goals which they wanted to achieve in soccer. Additionally, 74% of the sample also stated that their commitment towards their sport and the associated goal-setting meant that the players sometimes chose to miss parties and other social events because of their involvement in soccer.

Ultimately, successful talent development in South African soccer should result in the emergence of professional players with the necessary skills, attitudes and behaviours required to succeed in their chosen career.

5.3.4 FAMILY SUPPORT

The relationship between family support, family structure and talent development outcomes has not been extensively examined in South Africa. Although no specific statistical test was performed, this study suggests that the presence of at least one biological parent is required in order to give the junior soccer player the necessary family support. As many as 66% of the sample lived with both biological parents during their formative years in youth soccer, while 96% of the sample lived with at least one biological parent. Parental behaviour may be crucial to talent development - through encouragement, the provision of opportunities, expectations and financial support.

In this study, financial support was equated with family support. As a result, there was insufficient evidence for "Financial Support" to be a stand-alone factor associated with talent development in South African soccer.

When the sample's sibling structure was analysed, the mean number of siblings was 3.14. The mean number of brothers per respondent was 1.64, while the mean number of sisters per respondent was 1.50. The mean number of older siblings was 1.75. This may suggest that the presence of siblings was beneficial for the respondent's deliberate play activities. When the respondents started playing soccer at home (or informally) at a mean age of 6.09 years, this participation would probably have occurred with the involvement of their siblings. Soccer was a game that was played between siblings – with a brother or sister as a teammate or opponent. As such, the siblings' deliberate play activities were enjoyable and probably provided the respondents with the added stimulus to engage in more purposeful practice activities at school, or at a youth soccer club.

"Family Support" was established as a factor, as it had a factor loading of 0.778 on the overall factor structure. All ten items in this factor had sufficient factor loadings. These items explained 42% of the variance. There is an acknowledgment among 82% of the sample that their family had always cared for them in times of need. As many as 66% of the sample also received

significant advice from a family member before deciding to pursue a professional career in soccer.

Family members also stated that they were confident that the then-junior player had the potential to become a professional soccer player. This was the case for 66% of the sample. The family seems to have been a constant source of support for the respondents during their talent development. As such, 87% of the respondents expressed that they had a good relationship with their family at the time of the research.

5.3.5 CULTURAL FACTORS

Bafana Bafana's sporting success requires more than the infrastructure of an elite sport system. Soccer has to be a part of South Africa's social and cultural fabric. In this study, "Cultural Factors" was shown to be a factor, as it had a factor loading of 0.656 on the final factor structure. Six items out of the initial seven items had sufficient factor loadings. These items accounted for 50% of the variance.

A total of 75% of the sample agreed that soccer is highly valued in their community. Soccer was also the most popular sport at the primary schools of 67% of the sample. However, all the respondents in the sample were Black, White or Coloured. Thus, 69% of the sample stated that as they became more successful in soccer, they had started getting more respect from their community. The lack of respondents from the Indian and other ethnic groups was not a failing of the sampling technique but an accurate reflection of the lack of professional South African soccer players from these ethnic groups.

There seems to be no encouragement for young players from these communities to participate in soccer. They have no role models from a similar ethnic background and there is potential loss of talented players due to the lack of cultural support.

Sport is seen as a way of 'keeping kids out of trouble' in many communities. This was confirmed by 71% of the sample. Therefore, SAFA should offer soccer as a positive extracurricular activity

in all communities. Those young players who are interested in playing at higher levels should be given the opportunities and support to do so. There is a national interest in soccer and a national expectation for Bafana Bafana to do well. As such, SAFA should adopt a more expansive and systematic approach to talent development. Soccer participation and talent development cannot be left to chance as this would reinforce the *status quo* with the same ethnic groups providing the bulk of professional players in South African soccer.

SAFA needs innovative and multi-faceted approaches to promoting soccer participation among all South Africans. Attention should be paid to community-based approaches which emphasise soccer's social and cultural relevance and encourage community ownership of soccer programmes.

5.3.6 COACHING

The factor loading for "Coaching" achieved the cut-off level, with a loading of 0.836 on the final factor structure. All eight items had sufficient factor loadings. These items explained 53% of the variance. While optimal coach behaviours would necessarily vary under differing circumstances, the study revealed some positive coaching characteristics.

Overall, 73% of the sample indicated that 'fun and enjoyment' was an important feature of their training sessions in junior soccer. This interaction of the "Coaching" and "Training environment" factors created an atmosphere of fun and motivation. These positive early experiences led to the respondents' committed involvement in soccer and the talent development process. For 69% of the sample, the coaches demonstrated that they believed in the player's potential. These are coaches who seem to have consistently prioritized the player's long-term aims while implementing coaching methods which had a long-term developmental focus.

Such an approach minimises the risk that those young players with potential are missed or deprived of opportunities. Through formal and informal coach-player interactions, both the coach and the players would be able to discuss the player's progress. So, 62% of the sample said that their coaches were approachable and that the players could discuss any problems with them.

This study has revealed that as the players developed, the role of the coaches became more important. However it is still important for the coach to integrate and use external influences such as parents, schools and the community as a whole. This would ensure that a coherent message is being given to the player concerning his current abilities and future prospects in professional soccer. Although soccer is a team sport, the growing influence of the coach over each junior player's talent development should also mean that the junior player is receiving more personalised attention, programmes and feedback. Every player has different needs and a successful coach has to assist each of the players according to the individual player's needs.

Finally, it is apparent that coaches themselves have to be developed. The development of the coaches is also an important facet of any talent development process. Seminars and workshops should be conducted with the coaches in order to keep them at the forefront of advancements in their sport. The coaches can also assist each other in the tension between "coaching to win" and "coaching for learning."

5.4 IMPLICATIONS AND RECOMMENDATIONS FOR TALENT DEVELOPMENT IN SOUTH AFRICAN SOCCER PLAYERS

This section attempts to highlight the most important implications and recommendations for soccer talent development.

As there is such a massive interest in soccer among the South African male youth, an interactional approach to talent development would be beneficial in South African soccer. Local talent development programmes should harness the youth's interest, aim to increase participation at all levels and put in place the platform to allow young players of all standards to realise their potential. With this inclusive philosophy in mind, it is proposed that the programmes should have a stronger focus on the non-physical aspects of talent development. No matter the height, weight or even speed of the young player, there should be appropriate development processes to assist the achievement of adult success through the most efficient use of the available resources.

Table 5.1 highlights some recommendations for South African soccer drawn from this research study in relation to the talent development factors identified in the study.

Table 5.1 Recommendations for improving and managing talent development in South African soccer

	"Training Environment" in soccer talent development
1.	SAFA should introduce regulations for academies and clubs in order to ensure that the training environment for young players is safe and supportive. The regulations would govern aspects such as mandatory facilities, minimum numbers and qualifications of compulsory staff positions as well as guidelines on player welfare.
2.	Emphasis should be placed on motor-skill development, building confidence and fun in the early stages of a talent development programme.
3	At all stages of the talent development process, training must be directed at developing the necessary skills for elite performance, rather than merely testing performance levels.
4.	Training should not be limited to physical activities on the field, but should include all relevant activities which assist skill acquisition. Depending on the stage of talent development, activities such as video training, visualization and one-on-one coach instruction should be included in the talent development process.
	"Motivation and Ambitions" in soccer talent development
1	Clubs and academies need to understand what motivates individual players. It is then necessary to create the optimum conditions which would allow each player to develop his talent.
2	Training sessions and other activities for young players need to include appropriately challenging and varied tasks. Players should be encouraged to consistently try to do their best and to persist, even when they initially experience difficulties.
3	Coaches should talk to young players about the need for both effort and ability when playing in youth soccer. Effort and persistence are required from all players in order for them to derived maximum benefit from their soccer participation.
4	The young players' motivational climate includes groups (such as family, teammates, coaches and officials) which have an impact on the young player's self-perception and goal-oriented behaviour. Clubs and academies need to regularly communicate with these groups and work together in creating an environment in which the young player is motivated to continue participating in soccer.

	"Personal Development" in soccer talent development
1	Participating in soccer talent development programmes should provide players with opportunities for enhancing their psycho-social growth and development. The programme should have organized social activities which allow the players to experience other positives activities in the team environment.
2	Through their participation in the talent development programme, young players should develop interpersonal skills and learn to work in a team environment. Positive qualities (such as discipline, time management and personal responsibility) should be actively taught and promoted.
3	Competition should be kept in perspective. While the players should strive to win, they should understand that the aim of the talent development programme is to develop their skills. The outcome of a single match is not a true indicator of their potential.
4	Not every young player will complete at an elite level. Those who do get to the professional soccer leagues may only have short-lived careers. Thus, it is important that SAFA obligates every young player who participates in a talent development programme to complete at least his Matric qualification. The pursuit of excellence in the classroom should be prioritized in the same manner as the pursuit of excellence on the soccer field.
	"Family Support" in soccer talent development
1	Clubs and academies should regularly communicate with the family of each player involved in their talent development programmes. Parents and the immediate family can influence a player's motivation, perceived competence and enjoyment of sports.
2	The home environment has an impact on the young player's participation and motivation. Players who do not receive the necessary family support should be assisted by the club or academy.
3	Parental expectations and their perceptions of their child's potential and progress should be carefully managed. Parents should be aware that their son's participation in the talent development programme does not guarantee that he will become a professional soccer player. Players should also understand the developmental approach of the club or academy.
4	It is also important that as the player develops in his soccer ability, he also becomes more self-reliant. The family's active involvement in the player's career tends to have less importance as the player develops and the player should increasingly be able to make his own decisions. The family should assist and allow this transition.
	"Cultural Support" in soccer talent development
1	SAFA should promote soccer in all communities and population groups and at all levels. Facilities, participation structures and support should be provided even in areas which have not traditionally been known for producing football players. Concrete efforts today will allow the best soccer players of the future to emerge from any place in South Africa.

2	Professional soccer leagues, as well as amateur leagues, in South Africa should be well-managed so that soccer is portrayed as a viable career option. This would lead to greater cultural acceptance of the disruptions and sacrifices that are necessary as a player develops.
3	Academies and clubs seek community involvement when implementing their talent development programmes. Young soccer players are more likely to dedicate themselves to their sport when they are supported by the collaborative efforts of social and cultural institutions, such as families, schools and churches.
4	SAFA needs to have regular marketing and public relations campaigns which highlight the achievements of diverse role models in the Bafana Bafana squad. These campaigns should allow all South Africans to identify with Bafana Bafana and challenge them to support the team as an expression of national pride and self-esteem.
	"Coaching" in soccer talent development
1	SAFA should develop a coach licensing system which develops the skills that coaches need at the various levels of soccer participation. This licensing system should prioritize the continuous development of coaches. For example, youth coaches would be required to complete a minimum number of hours of in-service training annually and attend workshops on issues affecting youth soccer and talent development.
2	Academies and clubs should ensure that there are well-trained coaches at all levels of their coaching structure. This would assist both the youth players and the senior teams as players would receive optimal coaching all through the player development pathway.
3	Youth coaching should be based on the long-term development of individual players, rather than on the short-term success of youth teams.
4	Coaches should possess good management and organisational skills. Considerable time should be spent on planning practices, as well as understanding the individual players.

The limitations of the study will be discussed in the following section.

5.5 LIMITATIONS OF THE STUDY

This study has certain limitations that need to be taken into account when considering its contributions.

- The small sample size used in this research study and the lack of more extensive statistical analysis means that the research findings cannot be generalized. However, the study raises some important questions and it provides an interesting set of conclusions on the factors associated with the successful talent development in South African professional soccer players.

- The research study did not seek the opinion of individuals who had dropped out of talent development programmes in South African soccer or failed to play in the ABSA PSL. In order to clearly distinguish successful talent development from unsuccessful talent development, the research study could have included these individuals in the sample.
- The research study offers no indication as to the relative importance of these identified factors and the nature of their interaction. Further inquiry is required in this regard.

In conclusion, the research study has been an exploratory investigation. The aim and objectives of this study, as stated in Chapter One, were met.

5.6 RECOMMENDATIONS FOR FUTURE RESEARCH

Amongst other research possibilities, the following areas of inquiry would be useful:

- The influence of a player's birth date on national team selection in South African soccer;
- The influence of early specialization on the drop-out rate and lifelong participation in South African soccer;
- Identification of the characteristics of South African soccer at youth level;
- A comparison of the talent development process between South Africa and other African nations, which are successful in international soccer;
- The factors associated with the successful talent development of soccer players participating at the 2014 FIFA World Cup Brazil™

The following recommendation from Pain and Harwood (2007), who examined the performance environment of the England youth soccer teams, is an appropriate statement with which to conclude this study:

In closing, it is perhaps unsurprising that the performance environment ... reflects a complex blend of factors that require both a multi- and inter-disciplinary approach by the organization and its support staff. With the benefit of such sport-specific information gathered for each factor, future research should aim to quantify the impact of these factors to enable a more tangible assessment of the quality of the environment created.

Pain and Harwood (2007: 1323)

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APPENDIX A

COVER LETTER TO RESEARCH RESPONDENTS

Dear respondent

You are being asked to participate in a research study. We will provide you with the necessary information to assist you to understand the study and explain what would be expected of you (the participant). These guidelines would include the benefits and your rights as a study subject. Please feel free to ask the researcher to clarify anything that is not clear to you.

To participate, it will be required of you to provide written consent that will include your signature, date and initials to verify that you understand and agree to the conditions.

You have the right to query concerns regarding the study at any time. Telephone numbers of the researcher are provided. Please feel free to call these numbers. Queries with regard to your rights as a research subject can be directed to the Research Ethics Committee (Human) you can call the Director: Research Management at (041) 504-4536.

Participation in research is completely voluntary. You are not obliged to take part in any research. If you do partake, you have the right to withdraw at any given time.

This research study requires you to complete a questionnaire regarding factors that you feel influenced your talent development in soccer. Although your identity will at all times remain confidential, the results of the research study may be presented at scientific conferences or in specialist publications. However, your identity will in no way be revealed in any form of distribution of the results.

This informed consent statement has been prepared in compliance with current statutory guidelines.

Yours sincerely

Solomon Mudege
Researcher

Professor R. Du Randt
Supervisor

APPENDIX B

INFORMATION AND INFORMED CONSENT FORM

NELSON MANDELA METROPOLITAN UNIVERSITY

INFORMATION AND INFORMED CONSENT FORM

Title of the research project	**FACTORS ASSOCIATED WITH SUCCESSFUL TALENT DEVELOPMENT OF SOUTH AFRICAN SOCCER PLAYERS**
Principal investigator	Solomon Mudege
Address **Postal Code**	Village 5 Flat 11 NMMU Post-Graduate Village NMMU Summerstrand South Campus 6031 Port Elizabeth
Contact telephone number	041-5042518

A. DECLARATION BY OR ON BEHALF OF PARTICIPANT (Person legally competent to give consent on behalf of the participant)		**Initial**
I, the participant and the undersigned		
I.D. number		
OR		
I, in my capacity as		
of the participant		
I.D. number		
Address (of participant)		

A.1 I HEREBY CONFIRM AS FOLLOWS:	
1. I, the participant, was invited to participate in the above-mentioned research project that is being undertaken by Solomon Mudege of the Department of Human Movement Science and Sport Management in the Faculty of Health Sciences of the Nelson Mandela Metropolitan University.	
2. **The following aspects have been explained to me, the participant:** 2.1 **Aim:** The researcher is investigating the factors associated with successful talent development of South African soccer players The information will be used to assist soccer clubs to improve talent development programmes in South Africa.	
2.2 **Procedures:** I understand that I will be asked to complete a questionnaire in order to gather information on my talent development as a professional soccer player.	
2.3 **Risks:** There are no risks associated with participation in this study.	
2.4 **Possible benefits:** As a result of my participation in this study, I will be contributing towards soccer development in South Africa.	
2.5 **Confidentiality:** My identity will not be revealed in any discussion, description or scientific publications by the investigators.	
2.6 **Access to findings:** Any new information or benefit that develops during the course of the study will be shared with me.	
2.7 **Voluntary participation/refusal/discontinuation:** My participation is voluntary ☐ YES ☐ NO My decision whether or not to participate will in no way affect my present or future care/employment/lifestyle ☐ TRUE ☐ FALSE	
3. The information above was explained to me/the participant by Solomon Mudege in English and I am in command of this language. I was given the opportunity to ask questions and all these questions were answered satisfactorily.	
4. No pressure was exerted on me to consent to participation and I understand that I may withdraw at any stage without penalisation.	
5. Participation in this study will not result in any additional cost to myself.	

A.2 I HEREBY VOLUNTARILY CONSENT TO PARTICIPATE IN THE ABOVE-MENTIONED PROJECT

Signed/confirmed at		on		2008

Signature	Signature of witness
	Full name of witness

B. STATEMENT BY OR ON BEHALF OF INVESTIGATOR(S)

I, Solomon Mudege (Zimbabwe Passport BN472580) declare that

- I have explained the information given in this document to the participant
- he/she was encouraged and given ample time to ask me any questions;
- This conversation was conducted in English and no translator was used.

Signed/confirmed at		on		2008

Signature of interviewer	Signature of witness
	Full name of witness

C. IMPORTANT MESSAGE TO PARTICIPANT

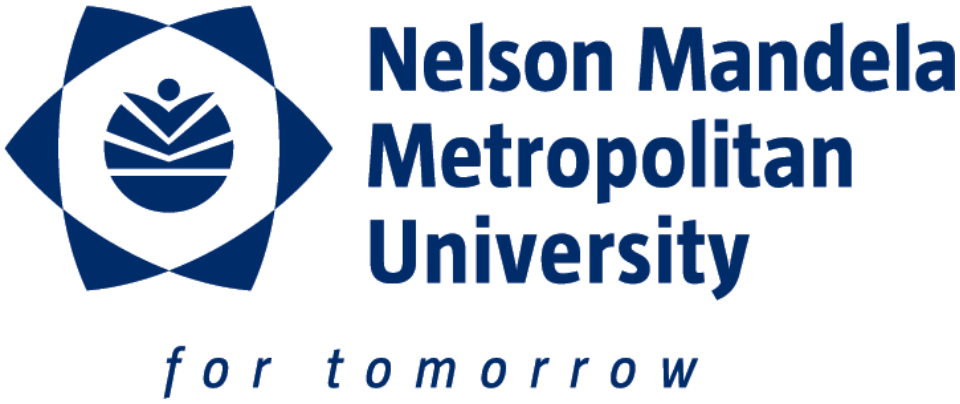
Dear Participant

Thank you for your participation in this study. Should you, at any time during the study, require any further information with regard to the study

Kindly contact at telephone number	Solomon Mudege
	041-5042518

APPENDIX C

RESEARCH QUESTIONNAIRE



The information provided by the questionnaire will be regarded as strictly confidential and will be used for research purposes only.

SECTION A

GENERAL BIOGRAPHICAL INFORMATION

Please complete by placing a cross (X) or tick (√) next to the appropriate response.

1. Please indicate your *age*: _____ *years* and date of birth dd/ mm/ yyyy/

2. Please indicate which *population group* you belong to:

	Tick Here	*For Office Use Only*
Black		*1*
White		*2*
Coloured		*3*
Indian		*4*
Other: *Please specify*		*5*

3. Please indicate the highest educational qualification that you have achieved?

	Tick if applicable	*For Office Use Only*
Did not complete high/secondary school		*1*
Matric qualification		*2*
Postmatric qualification (e.g. certificates/diplomas)		*3*
University-type qualification (e.g. degree)		*4*

4. Are you an only child? Yes No

If not, how many brothers and sisters do you have? ____ Brothers ____ Sisters

If applicable, how many of your brothers and sisters are older than you? ____

5. In your formative years as a young soccer player, you stayed with:

	Tick if applicable	
Both of your parents		*1*
Your father		*2*
Your mother		*3*
Your father and stepmother		*4*
Your mother and stepfather		*5*
Other: *Please specify*		*6*

6. At what age did you start playing soccer?

	Age in Years
At home/informally	
For a school team	
For a youth team outside school	

7. As a young soccer player, I attended a talent identification programme. Yes | No

8. Please indicate the year in which you first played in the Premier Soccer League: _____

9. Please indicate if you played in any of these lower leagues before playing in the Premier Soccer League *(you may tick more than one response)*:

	Yes	*How Long?*		*For Office Use Only*	
SAB Regional League			season(s)	*1*	
SAFA Vodacom Promotional League			season(s)	*2*	
National First Division			season(s)	*3*	

10. Please indicate your current ABSA PSL club: _____

11. Please tick the national sides that you have represented in full internationals (*you may tick more than one option*):

	Tick if applicable	*For Office Use Only*
Under 17		*1*
Under 20 "Amajita"		*2*
Under 23 "Amaglug-glug"		*3*
Senior National Side "Bafana Bafana"		*4*
Other: *Please specify*		*5*

12. Please indicate any other sports that you have participated in competitively and the highest level of participation achieved:

	Sport Code (e.g. Cricket)	Highest level of participation (e.g. U17 provincial team)	Age at which you stopped participating
1.			
2.			
3.			
4.			
5.			

SECTION B
EXPERIENCES & PERCEPTIONS REGARDING FACTORS ASSOCIATED WITH SUCCESSFUL TALENT DEVELOPMENT IN SOCCER

Please indicate to what extent you agree/disagree with the following statements, by placing a cross (X) on the appropriate response.

(1) Strongly disagree
(2) Disagree
(3) Neutral
(4) Agree
(5) Strongly agree

		Strongly Disagree				Strongly agree
1.1	My junior team had good training facilities such as training fields and change rooms.	1	2	3	4	5
1.2	We always had adequate training equipment such as balls and cones at our training sessions.	1	2	3	4	5
1.3	As a junior soccer player I had access to support staff such as physiotherapists and sport scientists.	1	2	3	4	5
1.4	When I played in junior soccer, all aspects of my training including my diet and general health were monitored.	1	2	3	4	5
1.5	I was regularly involved in structured league competitions as a junior soccer player.	1	2	3	4	5
1.6	I sometimes played in older age groups so that I could get more competition.	1	2	3	4	5
1.7	At my soccer club, the best facilities were reserved for the senior and older teams.	1	2	3	4	5

		Strongly disagree				Strongly agree
2.1	As a junior player, I was always striving to improve my performance.	1	2	3	4	5
2.2	When I started playing soccer, I was motivated by my love for the game.	1	2	3	4	5
2.3	As a junior player, I had clear goals of what I wanted to achieve within soccer.	1	2	3	4	5
2.4	In competitive soccer matches I was more concerned with personal improvement than winning.	1	2	3	4	5
2.5	I met important people as a result of my participation in junior soccer.	1	2	3	4	5
2.6	Becoming a professional soccer player was my dream career from a young age.	1	2	3	4	5
2.7	The financial rewards of playing soccer became more important as I progressed in my career.	1	2	3	4	5

		Strongly disagree				Strongly agree
3.1	I developed personal skills such as time management and leadership as a result of playing junior soccer.	1	2	3	4	5
3.2	As a junior player, I had definite goals which I wanted to achieve in soccer.	1	2	3	4	5
3.3	I have achieved success in soccer due to my determination.	1	2	3	4	5
3.4	I was committed to school work as much as I was committed to soccer.	1	2	3	4	5
3.5	As a result of my participation in soccer, I was more mentally mature than my peers.	1	2	3	4	5
3.6	I sometimes chose to miss parties and other social events because of my involvement in soccer.	1	2	3	4	5

		Strongly disagree				Strongly agree
4.1	My family encouraged me to play soccer in my youth.	1	2	3	4	5
4.2	My family provided me with the equipment and financial support that were required for me to participate in soccer.	1	2	3	4	5
4.3	My siblings (e.g. brother) were also involved in soccer when I was playing junior soccer.	1	2	3	4	5
4.4	At least one of my family members regularly attended my soccer matches.	1	2	3	4	5
4.5	My family members were confident that I had the potential to become a professional soccer player.	1	2	3	4	5
4.6	When I was feeling frustrated with my progress as a soccer player, there was a family member with whom I could share my frustrations.	1	2	3	4	5
4.7	My family made sacrifices so that I could pursue my soccer career.	1	2	3	4	5
4.8	A family member (e.g. mother) gave me significant advice before I decided to become a professional soccer player.	1	2	3	4	5
4.9	My family has always cared for me in times of need.	1	2	3	4	5
4.10	I currently enjoy a good relationship with my family.	1	2	3	4	5

		Strongly disagree				Strongly agree
5.1	I was equally talented in other sports besides soccer.	1	2	3	4	5
5.2	I was encouraged by my friends to pursue a career as a soccer player.	1	2	3	4	5
5.3	The most popular sport at my primary school was soccer.	1	2	3	4	5
5.4	As I became more successful in soccer, I started getting more respect from my community.	1	2	3	4	5
5.5	Soccer is highly valued in my community.	1	2	3	4	5
5.6	As a junior soccer player there were soccer players of my own ethnic background whom I wanted to imitate.	1	2	3	4	5
5.7	In my community sport is seen as a way of keeping kids out of trouble.	1	2	3	4	5

		Strongly disagree				Strongly agree
6.1	My family was my most important source of financial support.	1	2	3	4	5
6.2	I sometimes could not attend training sessions because I did not have money for transportation.	1	2	3	4	5
6.3	In order to participate in junior soccer, I was dependent on money provided by my club or school.	1	2	3	4	5
6.4	I had to get a part-time job so that I could buy everything that was required for me to play junior soccer.	1	2	3	4	5
6.5	I sometimes played with inferior soccer boots because I could not afford better equipment.	1	2	3	4	5
6.6	I regularly received a transport allowance from my club as a junior soccer player.	1	2	3	4	5
6.7	My family did not provide all I needed for soccer because there were other financial responsibilities which were more important.	1	2	3	4	5
6.8	My success as a soccer player has improved my immediate family's quality of life.	1	2	3	4	5

		Strongly disagree				Strongly agree
7.1	At junior level my coaches were experts and knowledgeable about soccer.	1	2	3	4	5
7.2	When I played in junior soccer I had coaches who believed in my potential.	1	2	3	4	5
7.3	As I developed the role of my coaches became more important.	1	2	3	4	5
7.4	My coaches assisted me in setting goals in my soccer participation.	1	2	3	4	5
7.5	Our training sessions were fun and enjoyable.	1	2	3	4	5
7.6	My coaches possessed good management and organisational skills.	1	2	3	4	5
7.7	My coaches assisted me in maintaining a balance between my academics and my soccer participation.	1	2	3	4	5
7.8	My coaches were approachable and I could discuss any problems with them.	1	2	3	4	5

8. In your own words, describe the main reasons for your success in soccer.

_____

_____

_____

_____

9. In your own words, list the highlights of your career since you started playing soccer.

_____

_____

_____

_____

APPENDIX D

INITIAL CONFIRMATORY FACTOR ANALYSIS AND CRONBACH'S ALPHA COEFFICIENT STATISTICS

INITIAL CONFIRMATORY FACTOR ANALYSIS RESULTS AND CRONBACH'S ALPHA STATISTICS

	Item	F-Train	F-M &A	F-P Dev	F-Fam	F-Cult	F-Fin	F-Coach
Factor Loadings	1	.825	.697	.661	.676	.060	.086	.607
	2	.795	.713	.813	.525	.544	.772	.745
	3	.740	.674	.608	.640	.595	.535	.705
	4	.752	.584	.558	.523	.806	.440	.828
	5	.625	.550	.720	.690	.832	.600	.720
	6	.434	.701	.669	.811	.677	.678	.810
	7	-.186	.186		.765	.722	.753	.754
	8				.685		.254	.611
	9				.501			
	10				.584			
% Variance Explained		43%	37%	46%	42%	43%	32%	53%
Cronbach's α		0.72	0.69	0.76	0.84	0.71	0.63	0.87

APPENDIX E

RESPONDENTS' STATEMENTS FOR OPEN-ENDED QUESTIONS

QUESTION B8: "IN YOUR OWN WORDS, DESCRIBE THE MAIN REASONS FOR YOUR SUCCESS IN SOCCER." (n= 43)

RESPONDENT	STATEMENT
P1	In working hard and always trying to be the best when I go onto the field, and with my support from family and friends.
P2	I think it would be because of the love that I had for the game and also the determination for the game .The support from and friends that give the edge to go all the way.
P3	Hard work and determination.
P4	The determination to succeed was one of the reasons and my love for the game.
P5	Hard work, responsibility, focus.
P6	Hard work, determination, hunger to succeed and to help my parents and live a better life.
P7	Passion for the sport.
P8	Inspirational soccer experts with whom I got training from.
P9	One has to have a talent in him and have clearly set goals to pursue the career as well as not to have any disturbance.
P10	Support in terms of finance from parents, zeal to play soccer.
P11	I think that patient and you must work hard.
P12	I worked hard for me to be where I am today it was not easy but I did not give up.
P13	There is nothing better than a job that you enjoy doing and having thousands of people screaming for you. I believed in myself.
P14	I never gave up when things were not going my way, I was always positive in everything I did, I was determined, disciplined, dedicated in order to achieve my goal.
P15	My commitment to soccer and passion also confidence believing in myself.
P16	When I was young always playing soccer in street and that liking keep me going that why I am here.
P17	Determination, Discipline, dedication.
P18	Lifestyle
P19	One of the main things I was brought to this world to do. It's the only way to get out of the townships.
P20	My determination and belief in achieving.
P21	Family background, Finance, determination, discipline.
P22	It's hard work and the love of the game and the support that you get from your family.
P23	My faith in God and support from my family.
P24	My parents, coaches, friends.
P26	It was my dream so I followed it with determination.

P28	Natural ability.
P30	God given talent and quality coach.
P32	Inspiration from senior soccer players and adequate equipment during training.
P33	Dedication, determination, and discipline.
P35	I think I have managed to excel mainly as a result of my determination to be a better player and encouragement from my family, friends and colleagues.
P37	I think personally I achieved because of my determination and hard work.
P39	Playing alongside best players in my team and also the fact that in my team we are always determined to be at the top.
P40	God is number one in my life. I owe all my success to him.
P41	Parental support and passion.
P42	Discipline and determination to improve as a soccer player.
P45	Monitored training session by our coach and watching UEFA Champions league and other soccer shows.
P46	Determination.
P47	Skill.
P48	My perseverance and determination.
P49	Believing on my potential. My family background keeps me going strong.
P50	I love the game and with that came the hard work. Discipline and dedication and also belief in yourself to become successful.
P55	Is to see my family living a better life at the end and to make them proud of me for the thing that I achieve in my career soccer.
P56	Hard work was the main reason.

QUESTION B9: ***"IN YOUR OWN WORDS, LIST THE HIGHLIGHTS OF YOUR CAREER SINCE YOU STARTED PLAYING SOCCER." (n= 46)***

RESPONDENT	STATEMENT
P1	I had a lot of opportunities to see the world, I went overseas a lot and it help me to become financially stable.
P2	Making it to the top flight league in the country and also getting the opportunity to represent my country. Making the national team. Playing in the PSL and winning it twice.
P3	ABSA Cup winner, SA under23 caps, Telkom final, meeting Ivans Vonk.
P4	A lot of things have change cause I could provide for my family.
P5	21 goals for Free State stars in 2007.
P6	Playing for Walter Stars, representing my country at junior levels, qualifying for world U20 youth Cup and playing for Kaizer Chiefs and working with high profile coaches.
P7	2 national team caps (Bafana Bafana)
P8	Playing for Under 23 national team.
P9	Playing for Under 23 national team.
P10	Beating Kaizer Chiefs and Orlando Pirates.
P11	I didn't think that I would be signed by Moroka Swallows and I was playing big games like Pirates and Chiefs. I expected to sign this season.
P12	Being able to support my family, people in my community liked me.
P13	I was the Vodacom promotional playoffs goalkeeper of the tournament. I got the man of the match award on debut against Moroka Swallows as well as against Supersport United.
P14	As I grew up as a young boy I decided to play football and one day my dream came through when I became a professional soccer player some few years ago.
P15	Playing my first game for Moroka Swallows.
P16	When I was at school I represent my school team in the high level so that was highlights of my career.
P17	Called up for Bafana Bafana team, ABSA Cup Champions, Telkom Cup Runners-up, and League Runners-up.
P18	Score goals
P19	Turning pro at a young age. Being involved with the national team set-up. Winning the COSAFA Seniors Cup with well-known players.
P20	Community soccer where ideas to video shoot me playing.
P21	Making the national team of SA, making the African best eleven, captaining the SA side, winning some important awards in my career.
P22	It's when we won the Nike Tournament and went overseas for the first time and when I scored two goals against Kaizer Chiefs.

P23	Playing for Bafana Bafana at Gold Cup USA in 2005 and winning ABSA Cup with Swallows.
P24	Runners up in the League 2007/2008 season.
P25	Not applicable.
P26	Playing 13 games for Bafana Bafana and played in Turkey.
P28	Becoming professional.
P30	Gaining promotion with Bay United.
P32	Playing for under 17 and under 20 national teams.
P33	Playing for the senior national team, most improved sports personality, man of the match 1998.
P34	I was played with famous players.
P35	Playing for under 23 National team.
P37	Scoring my first goal, getting selected to play for SA Under 17, winning the Nedbank Cup.
P39	Promotion.
P40	Scored 48 goals in a season. Made U12 National team. Getting Amajita call up. Signing for Cosmos.
P41	Florida Atlantic University(USA), scoring goals against big teams in the PSL.
P42	Playing for Moroka Swallows.
P45	Playing in Europe especially Barcelona.
P46	My first goal as a professional soccer player.
P48	Being team top goal scorer and playing for Under 23.
P49	Representing my country and playing professional soccer.
P50	To join Ajax Football Club as a youngster in eth reserve side and got promoted to the first team and played good and got a Bafana call up.
P52	I started soccer when I was 12 years old, I played soccer at streets and I started to play for the clubs in my community.
P54	No highlights for me.
P55	To be a top goal scorer at the tournament, to play in the final of Nedbank with a bigger team, to be a player of the tournament.
P56	Playing for Orlando Pirates seniors. They had good coaches.