

EXPLORING HOW GIFTS ARE DISCOVERED AND
WHY TALENTS DEVELOP IN SPORT

A thesis submitted for the degree of Doctor of Philosophy
awarded by Brunel University

By

Peter Tranckle

Department of Sport Sciences

Brunel University

June 2005

Brunel University
Uxbridge
Department of Sport Sciences
Peter Tranckle

Exploring How Gifts are Discovered and Why Talents Develop in Sport

2005

PhD

ABSTRACT

This thesis has attempted to advance knowledge and understanding of giftedness and talent in sport. Difficulties concerning conceptual clarity and issues concerning the origin of talent have slowed the advancement of this field of inquiry. By recognising the divisions that have occurred within the literature due to approach and presupposition, Gagné's (2000) Differentiated Model Of Giftedness and Talent was applied to reorganise the literature and establish a more sturdy conceptual base from which to launch new research.

From this view, it became more appropriate to divide and describe talent as the discovery of giftedness and the development of talent. By reorganising previous research with this distinction, previous questions became inappropriate and new avenues of approach were revealed. In the past, research had questioned how talents develop and how gifts could be used to predict talent. However, it now became appropriate to consider how gifts are discovered and why talent develops.

To this end, phenomenological interviews were conducted with expert coaches, gifted individuals and their families in an effort to explore how gifts were discovered and why individuals committed themselves to developing talent. This approach facilitated the reconstruction of subjective experience which was necessary to explore the multidimensional and interdependent nature of talent.

The results gave a deep insight into the views and experiences of people who were, or who understood giftedness and talent. To express these findings, a new empirically based model has been proposed to explain how gifts are discovered and why talents develop.

ACKNOWLEDGEMENTS

I have been fascinated by giftedness for as long as I can remember. Although my interest made this research satisfying, it was also very hard work. Meeting this challenge was made possible by the direct and indirect involvement of a number of people. I should like to take this opportunity to express my thanks to them.

My family and friends have been very understanding about the amount of time I have had to devote to this research. Their support and encouragement has played a crucial part in my being able to complete my thesis. Jane, a dear friend and dedicated archer, has not only been understanding about the time this has taken from her coaching, but has also worked tirelessly as my proof reader. Other friends who made extra efforts to help me included my transcribers: Alex; Daryl, Jane, Jenny, Kelly; Michelle; Roz; and Sheila. Having transcribed many of the interviews myself, I know how hard they must have worked. Additional thanks are also due to Leigh and Alex who took on a lot of my responsibilities, giving me much needed time in the latter stages of drafting.

In addition, my supervisory team of Doctors Chris Cushion and Jim Denison, and Professor Peter Radford of Brunel University deserve thanks for their encouragement and patience in advising and guiding me throughout this research.

Lastly, I should like to acknowledge the gifted individuals I have been privileged to meet through coaching and my research. Together with their coaches and families these people have been a powerful source of inspiration that initiated my involvement in this study and helped me to maintain my motivation. Contact with these rare and special people has changed my view of the world by opening my eyes to their existence and potential.

Thanks you all.

CONTENTS

	Page
INTRODUCTION	1
Talent	1
Talent in Sport	1
Current State of Knowledge	2
Issues with Talent in Sport	3
The Problem	4
Addressing the Problem	4
Research Questions	5
LITERATURE REVIEW	7
Introduction	7
Overview	8
<i>Definitions</i>	8
<i>The Nature/Nurture Debate</i>	10
<i>Experimental Studies</i>	11
<i>Exploratory Studies</i>	15
Key Research	16
<i>Bloom (1985)</i>	16
<i>Gagné (1985)</i>	18
<i>Walters & Gardner (1986)</i>	26
<i>Csikszentmihalyi et al. (1993)</i>	31
<i>Ericsson et al. (1993)</i>	36
<i>Howe et al. (1998)</i>	40
<i>Côté (1999)</i>	43
<i>Hyllegard et al. (2001)</i>	47
<i>Australian Institute for Sport (2001)</i>	48
<i>Brown (2002)</i>	51
<i>Abbott & Collins (2004)</i>	52
Current Knowledge & Understanding	54
<i>An Explanation of Talent</i>	54
<i>Discovering Gifts</i>	56
<i>The Developmental Process</i>	60

<i>Intrapersonal & Environmental Catalysts</i>	63
<i>Intrapersonal Catalysts</i>	63
<i>Environmental Catalysts</i>	64
<i>Chance</i>	67
Advancing Knowledge & Understanding: A Research Agenda	67
<i>Exploring Coach Perspectives</i>	68
<i>Exploring the Perspectives of Gifted and Talented Individuals</i>	68
<i>Exploring the Perspectives of Families</i>	69
<i>A New Approach</i>	69
Conclusion	71
RESEARCH PHILOSOPHY	73
My Research Experience	73
Evolution	73
Philosophical Repositioning	74
<i>Paradigm</i>	77
<i>Inquiry Aim</i>	77
<i>Quality Criteria</i>	78
<i>Knowledge Accumulation</i>	78
<i>Managing Values and Presuppositions</i>	79
<i>Influence of Values</i>	79
<i>Controlling Values</i>	79
<i>Phenomenology</i>	80
<i>Exploring Presuppositions</i>	82
<i>Experience in Sport</i>	82
<i>Involvement with Talent</i>	83
<i>Nicholas' story</i>	84
<i>Heidi's story</i>	86
<i>Aaron's story</i>	87
<i>Reflecting on the stories</i>	89
<i>My presuppositions</i>	90
METHOD	92
Introduction	92
Participants	92

<i>Approach to the Selection of Participants</i>	92
<i>Criterion for Selecting Coaches</i>	93
<i>Criteria for Selecting Gifted Individuals</i>	93
<i>Criteria for Selecting the Relevant Family Members</i>	94
<i>How the Participants were Found</i>	94
<i>How the Study was Designed</i>	96
<i>How the Participants were Known</i>	99
<i>Corey's Case Study</i>	101
Interviews	102
<i>How the Interviews Were Arranged</i>	102
<i>How the Interviews Were Conducted</i>	103
Data Analysis	107
<i>Organising the Descriptive and Interpretive Material</i>	107
<i>Analysing the Descriptive and Interpretive Material</i>	107
Transferability & Trustworthiness	110
<i>Transferability</i>	110
<i>Enhancing the Quality of the Research</i>	111
ANALYSIS & DISCUSSION	113
Chance	114
<i>How Coaches Came into the Sport</i>	116
<i>Lucky (right place, right time)</i>	117
Natural Abilities	118
<i>Understanding Talent</i>	121
<i>Talent as Raw Material</i>	121
<i>Talent as an End Product</i>	122
<i>Talent as an Exoteric Term</i>	123
<i>Multidimensional Nature of Talent</i>	124
<i>Prevalence of Giftedness</i>	126
<i>Rarity</i>	126
<i>Levels of Giftedness</i>	127
<i>Recognising Giftedness</i>	128
<i>Extraordinary</i>	128
<i>The Ability to Copy</i>	129

<i>The Ability to Adapt</i>	130
How Giftedness is Perceived	131
<i>Coach Intuition</i>	132
<i>Immediately Apparent</i>	133
<i>Experience</i>	134
<i>Trying to Qualify What They See</i>	134
<i>Visions of the Future</i>	136
<i>Reaction</i>	137
<i>Subjectivity</i>	138
<i>Parents Noticing a Specialness</i>	140
Why Coaches Search for Giftedness	141
<i>The Notion of Talent Being Something Beautiful</i>	142
<i>Coaches' Past Experiences</i>	143
<i>Coach Values</i>	144
<i>Helping People</i>	144
<i>Doing Things Properly</i>	145
<i>Talent</i>	146
<i>The Idea That Giftedness is Out There and Must be Found</i>	146
How Individuals can be Affected by their Own Giftedness	148
<i>How does it feel to be Gifted?</i>	149
<i>Awareness of Giftedness</i>	149
<i>Feeling Like They Were Made for Something</i>	151
<i>Feeling Special Because of Their Gifts</i>	152
<i>Status</i>	153
<i>Do Gifted Individuals Behave Differently?</i>	153
<i>Subconscious Desire or Need to Use Their Gifts</i>	154
<i>Poor Behaviour</i>	155
<i>Gifted Individuals Can be Lazy</i>	156
The Affect that Giftedness can have on Other People and the Environment	158
<i>How Gifted Individuals Affect Coaches</i>	159
<i>What it is Like to Work With Gifted Individuals</i>	159
<i>How Contact with Giftedness or Talent Changes the Coach</i>	162
<i>Wasting or Losing the Opportunity to Develop Talent</i>	163

<i>Belief in a Gifted Individual</i>	165
<i>Talent Will Out</i>	167
<i>How the Coaches Tried to Affect the Environment for Gifted Individuals</i>	168
Intrapersonal Catalysts	169
<i>Motivation</i>	171
<i>Desire to be Better</i>	172
<i>Enjoyment</i>	174
<i>Personality</i>	176
<i>Charisma</i>	176
<i>Competitive Spirit</i>	177
<i>Being a Good Person</i>	178
<i>Values</i>	180
<i>Confidence</i>	183
<i>Trusting Their Coaches</i>	184
<i>Trusting Themselves</i>	185
<i>Courage</i>	186
<i>Self-Management</i>	187
<i>Concentration</i>	187
<i>Wanting Challenge</i>	188
<i>Taking Sport Seriously</i>	190
<i>Dedication</i>	191
<i>Aspirations for the Future</i>	191
<i>Work Ethic</i>	192
<i>Taking Control</i>	195
Developmental Process	197
<i>Early Learning</i>	198
<i>Response to Training</i>	199
<i>Stages of Learning</i>	201
<i>Important Steps</i>	203
<i>Flow</i>	204
How Talent Development has Affected the Gifted Individuals	206
<i>Negative Affects</i>	207
<i>Obsessive Behaviour</i>	207

<i>Concern for the Costs of Talent Development</i>	209
<i>Positive Affects</i>	211
<i>Friends</i>	211
<i>Experiences</i>	211
<i>Health & Fitness</i>	213
<i>Personality</i>	213
<i>Developing an identity within the sport</i>	213
<i>Character</i>	214
<i>Good person</i>	215
<i>Self worth</i>	216
<i>Building confidence & optimism</i>	218
<i>Self-Management</i>	219
<i>Discipline & organisation</i>	219
<i>Learning to work</i>	220
<i>Self-reliance</i>	221
<i>Transferable skills</i>	224
<i>Solace</i>	225
<i>Giving Something Back to Sport</i>	226
<i>Environmental Catalysts</i>	227
<i>Milieu</i>	228
<i>Milieu Affecting the Discovery of Giftedness</i>	229
<i>Milieu Affecting the Development of Talent</i>	230
<i>Family Background</i>	231
<i>Social Status</i>	232
<i>Persons</i>	232
<i>Coaches</i>	233
<i>Critical encounters</i>	233
<i>Coach behaviour</i>	234
<i>Connecting with coaches</i>	236
<i>Family</i>	238
<i>Family's role in socialisation</i>	238
<i>Extra effort for their child</i>	239
<i>Coach / performer relationships</i>	240

<i>Parental behaviour- coach perspectives</i>	242
<i>Knowing their role</i>	245
<i>Parental behaviour – gifted individuals’ perspectives</i>	246
<i>Parental values</i>	247
<i>Others</i>	253
<i>Role models</i>	253
<i>Provisions</i>	254
<i>Events</i>	255
How the Environment Affects Intrapersonal Factors	257
<i>Self-Esteem</i>	257
<i>Determination</i>	259
How Talent Affects Gifted Individuals	260
<i>Alone</i>	261
<i>Pride & Identity</i>	262
CONCLUSION	264
Enhancing the Understanding of Giftedness and Talent	264
<i>The DMGT</i>	264
<i>A New Model</i>	265
<i>Aptitudes or Gifts</i>	267
<i>Developmental Process</i>	267
<i>Detection</i>	268
<i>Realisation / Awareness</i>	268
<i>Intrapersonal Qualities</i>	268
<i>Pride & Identity</i>	269
<i>Other People</i>	269
<i>Environmental Factors</i>	270
The Discovery of Gifts and the Development of Talent: An Alternative View	270
<i>The Future of Giftedness and Talent</i>	271
<i>Implications for Practice</i>	271
<i>Summary</i>	272
<i>Future Research</i>	273
REFERENCES	274

APPENDICES

Appendix 1 – Case Studies	286
Appendix 2 – General Information	291
Appendix 3 – Background Information and Written Consent	293
Appendix 4 – Transcript Agreement	294

TABLES

	Page
Table 1	97
<i>Example of a stereotypical case study</i>	
Table 2	97
<i>Participants in Noah's story</i>	
Table 3	97
<i>Participants in Kira's story</i>	
Table 4	97
<i>Participants in the talent identification meeting for trampolining</i>	
Table 5	98
<i>Participants in Billy-Joe's story</i>	
Table 6	98
<i>Participants in Corey's story</i>	
Table 7	98
<i>Participants in Della's story</i>	
Table 8	98
<i>Participants in James' story</i>	
Table 9	99
<i>Participants in Daryl's story</i>	
Table 10	99
<i>Other coaches who participated in the study</i>	
Table 11	108
<i>Example of how transcript text was reduced into meaning units</i>	
Table 12	108
<i>Example of how meaning units were coded</i>	
Table 13	109
<i>Example of how themes evolved from clusters of similar meaning units</i>	
Table 14	113
<i>Higher order themes from the interview data</i>	

FIGURES

<i>Figure 1.</i> Gagné’s Differentiated Model of Giftedness and Talent (2000).	21
<i>Figure 2.</i> Abbott & Collins’ Multidimensional and Dynamic Concept of Talent (2004).	53
<i>Figure 3.</i> Côté and Hay’s Stages of Sport Participation from Early Childhood to Late Adolescence (2002).	63
<i>Figure 4.</i> Relationships that Link the Participants from Gymnastics and Trampolining.	100
<i>Figure 5.</i> Relationships that Link the Participants from Archery.	100
<i>Figure 6.</i> Example of how related themes were clustered together into higher order themes.	110
<i>Figure 7.</i> Data themes relating to chance.	116
<i>Figure 8.</i> Data themes relating to natural abilities.	121
<i>Figure 9.</i> Data themes relating to how giftedness is perceived.	132
<i>Figure 10.</i> Data themes relating to why coaches search for giftedness.	141
<i>Figure 11.</i> Data themes relating to how individuals can be affected by their own giftedness.	149
<i>Figure 12.</i> Data themes relating to the affects that giftedness can have on other people and the environment.	159
<i>Figure 13.</i> Data themes relating to intrapersonal catalysts.	171
<i>Figure 14.</i> Data themes relating to the developmental process.	198
<i>Figure 15.</i> Data themes relating to how talent development has affected the gifted individual.	207
<i>Figure 16.</i> Data themes relating to environmental catalysts.	228
<i>Figure 17.</i> Data themes relating to how the environment affects intrapersonal qualities.	257
<i>Figure 18.</i> Data themes relating to how talent affects gifted individuals.	261
<i>Figure 19.</i> Adapted version of Gagne’s (2000) DMGT, showing how gifts are discovered and why talents develop.	266

INTRODUCTION

Talent

Talent is a rare and valuable resource that maintains and advances society. It exists in the few individuals who have the necessary capabilities to make a difference in a given field of human endeavour, whether it is academia, arts, leisure, sport, social action, technology or business (Gagné, 2000). Indeed, “for a society concerned about survival, no issue is more important than cultivation of its talented young, no outcome more devastating than the loss of talented individuals” (Gardner, 1993; cited in Csikszentmihalyi, Rathunde, & Whalen 1993, p. 310).

However, it can be argued that an individual’s talent does not exist solely to benefit society and that unearthing and developing talent is more than merely ‘turning flesh into gold’ (Lloyd, 1995). For the individual concerned, neglecting or ignoring gifts, could lead to regret that could linger for the rest of their life (Csikszentmihalyi et al., 1993).

Talent in Sport

The impact of talent upon society and the individuals concerned is seldom more apparent than within the context of the sporting arena where capabilities are challenged and accomplishments celebrated. Due to the visual nature and competitive structure of sport, talented individuals are regularly on display via the media, participating on a national and international stage. However, this is not to suggest that talent is any less rare or valuable within sport. Indeed, the Australian Institute for Sport (AIS, 2001) for example, noted that there is an active need to unearth talent in order for nations to remain internationally competitive.

Notwithstanding the political drive for sporting excellence, national governing bodies (NGBs) and their respective coaches have a vested interest to understand talent. For the NGBs, talent is a product of the sporting business. Reputation for excellence and international status rests upon the performances of their talented competitors. Furthermore, the finance behind elite level sport demands that performance remains at the front line of international competition.

For coaches, unravelling the mystery of talent detection and development holds the promise of numerous rewards. Not only are there the personal benefits that come with the prospect of a good career and reputation for excellence, but also the satisfaction of helping individuals realise their potential.

Talent research has been sporadic despite its centrality to the past, present and future of sport. Furthermore, there is still much to be learnt and a great deal that is not well understood about this phenomenon. Régnier, Salmela & Russell, (1993) showed their surprise that such an engaging enterprise as talent detection had received so little research attention, particularly as they felt that the prediction of future performance underlies the competitive process.

Current State of Knowledge

In 1996, Kozel summarised the state of knowledge regarding talent in sport. Arguably, the following summary is still representative of what is currently known:

“Talent is an extremely complex attribute; genetically determined, complicated in structure and subject to environmental conditions. It is for this reason that there is no consensus of opinion, nationally or internationally, regarding the theory and methodology of talent identification, selection and training in sport, although sport science research continues to identify the required characteristics for elite performance. Generally, it is still the coach’s eye and expert’s judgment which is decisive in the talent screening and selection process.”

(Kozel, 1996, p.5)

This summary highlights three crucial points. First, talent is a complicated phenomenon and as such, its interdependent nature has made it difficult to pursue a greater understanding. Second, Kozel indicated that current sport science knowledge cannot be relied upon to detect talent. Instead, the judgement of coaches continues to be relied upon for detecting talent. This leads to the final point, which suggests that current subjective judgements of expert coaches are more reliable than current objective assessments.

Issues with Talent in Sport

Although Kozel (1996) offered a succinct summary, there are more issues which hinder the advancement of knowledge. The field of education also has a vested interest in a better understanding of talent detection and development. A comparison of sport with the field of education reveals a clearer picture as to why issues in sport have remained unrecognised and researching talent has been so difficult. Unfortunately, the fields of sport and education have had to tackle common issues in isolation from each other, such as agreed terminology and the nature/nurture debate. Indeed, even within their respective fields there is a considerable lack of continuity and progression, due mainly to these two unresolved issues (Tranckle & Cushion, 2005). By combining what is known within the fields of education and sport, a more complete picture can be formed that illustrates the pitfalls and possible pathways to studying talent.

It would seem that the definition and very use of the word talent is an initial complication. When asked, most people would recognise the word talent, and have a grasp of what it means. Difficulties occur when comparing the use of the word talent. It would appear that 'talent' has been used to describe both potential as well as performance (Tranckle & Cushion, 2005; Abbott & Collins, 2004; Gagné, 1985) or used interchangeably with other terms associated with talent, such as gift, aptitude or potential (Tranckle & Cushion, 2005; Gagné, 1996). Recent research has highlighted how coaches within the same sports can hold very different meanings for the word talent (Tranckle & Cushion, 2005). Furthermore, research into talent has either assumed a universal appreciation of the word talent by not offering definitions (e.g. Abbott & Collins, 2004) or by simply listing the properties of talent (e.g. Brown, 2002; Howe, Davidson, & Sloboda, 1998). Due to its exoteric nature, it would seem that the precise definition of talent has been neglected.

A further complication for research relates to where talent originates. Although society grows ever stronger with the continued discovery and development of talented individuals, the origins of these talents remains a mystery or, at best, a topic for heated debate. This controversy is commonly known as the nature/nurture debate over whether talent is born or engineered. Researchers and practitioners remain divided on this topic, adopting neutral positions as well as those at each extreme end of the nature/nurture spectrum. Arguably, such philosophical diversity is reflected in equally diverse approaches and underlying assumptions concerning the debate, which can leave the field appearing as if it lacks continuity and progression.

The Problem

A lack of understanding and knowledge about the nature of talent, and a failure to grasp what makes people motivated enough to develop it means that a great deal of potentially valuable human talent is wasted in every generation (Csikszentmihalyi et al., 1993). Terminological ambiguity, coupled with controversy over the nature/nurture debate (Howe et al., 1998) has limited the understanding of talent (Tranckle & Cushion, 2004). Furthermore, by using a one word fits all approach to describe both raw material and the end product of a developmental process, levels of learning become confused with the rate of learning. This raises concerns over whether talent identification programmes are selecting individuals who perform well or those with the potential to perform better and whether this was the underlying intention.

Addressing the Problem

Although the main problem is that potential talent is being wasted, an equally important and immediate concern is the state of knowledge and understanding within the field of talent. Advancing knowledge in order to tackle the waste of potential talent would be extremely difficult unless continuity and progression can be brought to the field of study.

Fortunately, a firm foundation can be constructed by combining the knowledge which exists in the literature of both the fields of sport and education. This foundation is arguably more suitable than one constructed purely from sports knowledge because of the manner in which the field of education has already tackled the issues of terminology and the nature/nurture debate. Such a combined review of the literature needs to consider clarity, continuity and progression in order to launch new research in a direction that impacts on the understanding of talent in sport. Clarification is required as to how and why the current sports literature suffers from a lack of continuity and progression. Therefore, it is important to present an overview in order to discuss definitions, issues and approaches and to ensure that this research shows an appreciation for continuity and progression.

With regard to definitions, Gagné's (2000) Differentiated Model of Giftedness and Talent (DMGT) has the potential to bring terminological and conceptual clarity to the field of study (Tranckle & Cushion, 2004). This is achieved by using the DMGT to distinguish

between the studies that focused upon raw materials and those that focused on the end product of a developmental process. By making this distinction, the talent literature becomes split into two, highlighting gaps in the understanding of raw materials (i.e. giftedness) and the end product (i.e. talent). To avoid terminological laxity (Gagné, 1996) and establish clarity, Gagné's (2000) definitions have been adopted throughout this study.

Consistent with the desire to show continuity and progression, it is also important to show how strands of knowledge have evolved over time, often in isolation, which presents numerous incomplete pictures of current knowledge. This requires a review of the key studies over the years in a chronological order to show the links between theories and philosophical approaches to the study of giftedness and talent.

With a more holistic sense of clarity, it then becomes possible and necessary to bring continuity to the literature by presenting a coherent view of current knowledge. This is where Gagné's DMGT becomes relevant in reorganising and presenting a more complete view of current knowledge which combines the sport and education based research.

Finally, it is important that the knowledge and understanding of giftedness and talent moves forward. By bringing clarity and continuity to the talent literature, gaps appear within the current knowledge presenting opportunities for further exploration and a means of progressing the field. Thus it becomes relevant to consider what has already been learnt from the approaches used in previous research. Certainly Kozel's (1996) summary indicated a need for a more exploratory approach, utilising more qualitative methods to understand the complex nature of talent. It is interesting to note that by reviewing the literature in this way; very different questions reveal themselves to those that have previously been posed within sport.

Research Questions

From the view that has been reconstructed from this combined knowledge, the study of talent becomes more appropriately divided and described as the discovery of giftedness and the development of talent. By reorganising previous research with this distinction, old questions become inappropriate and new ones are revealed. In the past the questions have been how do talents develop and how can gifts be used to predict talent. However, it now becomes appropriate to consider how gifts are discovered and why talent develops.

As a prelude to this research, Tranckle and Cushion (2004) made a case for focusing on the experience of gifted individuals, their coaches and their parents to understand how they

discovered their gifts and why they developed their talent. Phenomenological interviews were advocated as a means of gaining access to their reconstructed experiences (Seidman, 1998) and interpretations, while retaining the sophistication to peel away the layers of complexity to understand giftedness and talent (Tranckle & Cushion, 2005). This study is based on phenomenological interviews which provided a rich source of material from which recommendations as to the way forward have been made.

LITERATURE REVIEW

Introduction

This review aims to present a clear understanding of the literature that will highlight how the study of giftedness and talent can move forward. What will follow may appear to differ from previous reviews (e.g. Durand-Bush & Salmela, 2001; Williams & Reilly, 2000; Régnier et al. 1993) because it intends to blend together knowledge from the fields of sport as well as education. The result is arguably a more complete picture that guides the reader through the evolution of knowledge, highlighting the issues that have contributed towards the apparent lack of continuity and progression amongst the literature. To this end, three clear objectives have been set in pursuit of this aim.

It is first necessary to explain how and why the literature appears to lack continuity and progression. This objective has been addressed by presenting an overview to discuss definitions, issues and approaches that have concerned the study of giftedness and talent (pp. 8-15). By highlighting the ambiguity and diversity within these definitions, issues and approaches, the challenge of continuity becomes understandable. However, to bring continuity to the field of study, the key pieces of literature over the years is then critically reviewed in chronological order with a more informed view of the issues that have kept them apart (pp. 16-54). This shows how strands of knowledge had previously evolved in isolation and arguably presents a broader and more stable base from which to launch new research. Furthermore, because the sum of knowledge is being reconstructed to show continuity, it takes a different shape to previous reviews (e.g. Durand-Bush & Salmela, 2001; Williams & Reilly, 2000; Régnier et al. 1993) and consequently shows new directions in which to pursue a greater understanding of giftedness and talent.

As a secondary objective, it is then necessary to present a coherent summary of current knowledge. This serves to illustrate the view of giftedness and talent from the platform of knowledge that has been restructured to show continuity. Gagné's DMGT is used to organise and present this view of current knowledge which has combined sport and education based research (pp. 54-67).

Having established a firm foundation upon which to base new research, it now becomes necessary to take the next logical step in order to bring progression to the field of study. This has been addressed by reflecting upon the previous sections to identify areas for exploration

with the potential to enhance our understanding of giftedness and talent (pp. 67-71). In so doing, the rationale for the research question is completed and the direction in which to progress the field of study is made apparent. By reviewing the literature in this way, very different questions were revealed to those that had previously been posed within sport.

Overview

Definitions

Gagné (1996) suggested that the current state of terminological laxity is in part due to the nature/nurture debate and that conceptual progress will be hindered unless a clear definition can be agreed upon. Evidence of ambiguous and conflicting uses of the terms giftedness and talent can be found throughout the world in dictionary definitions (e.g. Webster's 1970; Chambers 1995), scientific literature (e.g. Abbott & Collins, 2004), literature for practitioners (e.g. Brown, 2002), Government Reports from the USA (Marland, 1972; and the UK OFSTED's report on providing for gifted and talented pupils, 2001). All of these examples either failed to define the terms they used or proposed terms that were contradictory to others already in use within their own field (e.g. Youth Sports Trust, 2003; and OFSTED, 2001).

Within sport, when the subject of defining talent has arisen, discussion turns to Howe et al's (1998) list of properties associated with talent, which is reviewed later in more depth (see p. 40). Although insightful, the list of properties does not actually explain what comprises talent. However, the list of properties has been referred to as a definition by Durand-Bush & Salmela (2001) and even retrospectively by Howe et al (1998) in response to peer commentaries.

In one of the most recent contributions, Brown (2002) also reflected upon dictionary definitions, describing the word talent as "a special, natural ability" (p. 3) and "a capacity for achievement or success" (p. 3). Brown recognised the absence of a definition that suited the sporting domain and suggested that these dictionary definitions were vague and imprecise. Like Howe et al. (1998), instead of offering a definition, Brown (2002) made observations related to the properties associated with talent and how it could be manifested.

One of the most universally applicable definitions came from Csikszentmihalyi et al. (1993) who stated that "Talent is a social construction: It is a label of approval we place on

traits that have a positive value in the particular context in which we live” (p. 23). Their definition acknowledged the value of talents which has been more implicitly alluded to within others. Even though Csikszentmihalyi et al. (1993) captured the inescapable reality that giftedness and talent are valued differently depending on the context, there are also those who still oppose this position. For example, Gagné considered incorporating a value system in a definition as elitist and refused to categorise talents by their value to society (Gagné, 1993). He felt that there were more people who deserved the label of gifted or talented than just the exclusive preserve of those who excelled in more intellectual fields. Although it might be equitable to respect all forms of giftedness and talent, ultimately they will only earn such a label in a sympathetic environment that has value for them.

The commonality between these definitions is that both the terms gifted and talented refer to human abilities and have a normative meaning (i.e. above average), as well as indicating that the individuals concerned are atypical because of their outstanding behaviours (Gagné, 2003). Gagné proposed his own definitions in 1985 and refined them in 2000. He defined gifted as “...the possession and use of untrained and spontaneously expressed natural abilities (or aptitudes), in at least one ability domain, to a degree that places a child at least among the top 10% of his or her age peers” (Gagné, 2000; p. 67). Only if natural abilities (or aptitudes) are judged to be within the top 10% of their generation can they be described as gifted according to Gagné (2003). At the other end of the spectrum, Gagné described the end product of a developmental process as ‘talent’ and defined it as “...the superior mastery of systematically developed abilities (or skills) and knowledge in at least one field of human activity (talent field) to a degree that places a child’s achievement within at least the upper 10% of age peers who are actively in that field or fields” (Gagné, 2000; p. 67). Therefore, people who are not within the top 10% would be judged as having aptitude (if undeveloped) or having skill (if developed). Within the top 10%, Gagné (2000) described levels of prevalence as moderately (top 1%), highly (top 1:1000), exceptionally (top 1:10,000) and extremely (top 1:100,000), which can be applied to both gifted and talented (p. 82).

Surprisingly, Gagné’s definitions to distinguish between raw materials and the end product of talent have not been universally adopted and seldom acknowledged. This was evident by the absence of Gagné’s work from literature reviews (e.g. Régner, et al., 1993; Durand-Bush and Salmela, 2001) and some of the more recent articles (e.g. Abbott & Collins, 2004; Hohmann & Seidel, 2003). In his 2003 study, Gagné noted that the term gifted is rarely used in a sporting context as the word talent is more often used as a common expression which

encompasses both potential and achievement (e.g. UK Youth Sports Trust, 2003). Arguably, the casual and frequently misleading use of the word talent has perpetuated the continual confusion of raw materials with the end product of a developmental process (Tranckle & Cushion, 2005).

Howe et al. (1998) suggested that it is perhaps more important to formulate a working definition that would allow attention to focus on how talent can be maximised in the lives of performers. Arguably, the lack of conceptual clarity has exacerbated the problem of wasting talent by hindering research. As stated earlier (see p. 5) for the purpose of this research, Gagné's definitions have been adopted. However, there are multiple definitions in operation throughout sport and education which will be highlighted within the course of this study. Nevertheless, Gagné's terms will be used when reviewing the literature and discussing the results so that a distinction between raw materials and an end product of a developmental process can remain apparent. Certainly, the lack of such a distinction has contributed to the literature seeming imprecise and speculative (Tranckle & Cushion, 2005).

When Howe et al. (1998) proposed their definition of talent, they discovered that many theorists held very strong views about what talent was and where it comes from. So much so, that a number of theorists reopened the nature/nurture debate (see p. 10) when responding to Howe et al's work. Indeed, Durand-Bush and Salmela (2001) noted that the origins of talent have tended to preoccupy researchers in the past. If issues relating to the nature/nurture debate continue to be problematic then there is surely a need to examine how the debate is affecting the acceptance of a universal definition.

The Nature/Nurture Debate

It could be argued that the absence of a universally recognised and accepted definition of talent relates to beliefs regarding its origin. Theorists within sport and education seem divided on their philosophical assumptions regarding talent in its various domains. These philosophical positions can be described as genetic determination, environmental determination and those who believe in the contribution of both genetic and environmental factors. Csikszentmihalyi and Robinson (1986) pointed out that the common belief that talent will develop, even in the absence of a supportive environment, reflects the more extreme end of genetic determinism. Such a position was criticised by Howe et al. (1998), describing it as the talent account where high achievement and expert performance are attributed to and

explained by an individual's innate talent. However, others believe that talent is simply the reflection of hard work and early training (e.g. Bloom, 1985; Ericsson & Charness, 1994). This environmental deterministic position was heavily criticised by Detterman et al. (1998) who described it as 'absurd environmentalism' (p. 411) because it did not acknowledge the influence of genetics.

There are also theorists who take a more neutral position in the debate, believing that talent "involves both personal qualities based on innate differences, and social opportunities, supports, and rewards" (Csikszentmihalyi, 1998, p. 411). This neutral position does not seem to draw adverse criticism because it acknowledges both genetic and environmental factors, thus enabling the advancement of knowledge from theory to application, as Durand-Bush and Salmela (2001) suggested. However, it is also worth noting that Howe et al.'s position was interpreted as a radical environmentalist stance by Gagné (1999) and received considerable criticism.

Although beliefs in the origins of talent are still vigorously defended, the most forceful objections occur when the irrelevance of either nature or nurture is purported (e.g. Howe et al., 1998). Given the growing support and appreciation for the contributions of both nature and nurture, a more neutral position would seem to be the most reasonable basis for advancing knowledge.

Despite the relevance of the nature/nurture debate, it distracts from the problems of detecting talent in sport. Certainly the debate managed to over shadow the central message of Howe et al.'s (1998) talent account which intended to address such problems (see p. 40).

In addition to the controversial influence of the nature/nurture debate, different approaches to research also seem to have further divided the advancement of knowledge within the understanding of giftedness and talent (Régnier et al., 1993). However, this is not to suggest that different approaches are necessarily a problem, rather that the contributions from one approach can be over looked by the other. These differences in approach relate to the underlying philosophies that influence whether a study is experimental or exploratory in nature.

Experimental Studies

The more experimental studies were those that held the assumption that the researchers had the answers to questions and testing would prove if they were correct. This resembles the

underlying assumption of some of the early work into talent detection where models were formed and subsequently tested to isolate variables that could predict if an individual had what was necessary to develop talent.

There have been numerous attempts to detect talent in sport since the 1970s (e.g. Ackland, Bloomfield, Elliott & Blanksby, 1990; Bar-Or, 1975; Bartmus, Neumann & de Marées, 1987; Bulgakova & Voroncov, 1978; Geron, 1978; Gimbel, 1976; Harre, 1982; Havlicek, Komadel, Komarik & Simkova, 1982; Jones & Watson, 1977; Kerr, Dainty, Booth, Gaboriault & McGavern, 1979; Montpetit & Cazorla, 1982; Régnier & Salmela, 1983; Régnier, Salmela & Alain, 1982; Salmela & Régnier, 1983). Durand-Bush and Salmela (2001) pointed out that researchers during this period were typically concerned with developing models for talent detection. This reflected the interest at the time in trying to predict talent from numerous variables.

In 1975, Bar-Or conceived a five step approach to talent detection, involving; the evaluation of morphological, physiological, psychological and performance variables; the comparison of data with a developmental index to account for biological age; the evaluation of reactions to training through a brief training program; the evaluation of family history; and the use of a multiple regression analysis to predict performance from the results of the first four steps. Durand-Bush & Salmela (2001) noted that Bar-Or's approach seemed plausible, however they also pointed out that the model was never tested within a longitudinal field study across sports. Although Bar-Or's multidimensional approach seems appealing, the depth of detail perhaps did not facilitate its wider application.

Jones and Watson (1977) then developed a procedure using psychological variables to predict performance. Although their work was considered valuable at the time (Durand-Bush & Salmela, 2001), no models were produced and univariate studies would later receive criticism from Régnier et al., (1993). Univariate designs were considered useful for in depth investigations of a specific aspect of performance (Régnier et al., 1993). However, they lacked the global perspective necessary to uncover the complex network of factors underlying sports performance (Régnier et al., 1993). This position has been supported more recently by Abbott and Collins (2004) who recognised the need for a more multidimensional and dynamic approach to the study of talent.

In 1976, Gimbel proposed an analysis of talent from physiological, morphological, trainability and motivational variables. According to Gimbel, talent could be divided into internal factors, like genetics and external factors, such as environmental conditions. He was

one of the few theorists at the time to take a neutral position in the nature versus nurture controversy and embrace the importance of both innate talent and environmental factors. In addition, Gimbel was one of the earlier theorists who suggested that elite level performance required approximately eight to ten years of training. This concept was developed by Ericsson, Krampe and Tesch-Römer (1993) with their theory of deliberate practice.

Two years later, Geron (1978) proposed a similar model to Gimbel's (1976). However, Geron's model used the profiles of elite performers to help identify the relevant variables. Geron concluded that such profiles were not sufficient to predict talent, as there were differences between the early qualities required to become a champion and the actual qualities of a champion. Thus highlighting a distinction between the raw materials and systematically developed skills which Gagné (1985) defined as giftedness and talent.

Undeterred by Geron's (1978) findings, Montpetit and Cazorla (1982) attempted to refine Geron's earlier study by placing more emphasis on morphological variables. They suggested from their study of swimmers that the evolution of underlying performance factors, and thus performance itself, could be predicted.

Further talent detection models in the 1980s were more sceptical of the extent to which giftedness could be used to predict success. Harre's (1982) model was based on the assumption that talent could only be assessed through training. Therefore, the first step in Harre's model was to put as many children as possible through training programmes. In the same year, Havlicek et al. (1982) recognised the multidimensional nature of sport performance with a multidisciplinary approach to talent detection. However, contrary to Harre (1982), their study called attention to factors such as height and general morphology, stating that it would be a mistake to rely on such factors. Consequently, they gave a lower priority to variables that would be subject to change during maturation.

By 1987, Régnier (1987) had developed a talent detection model, based on earlier work by Jones and Watson (1977), but with a more multidisciplinary and multivariate design. This model was used in talent detection research in gymnastics and baseball throughout numerous studies (e.g., Jancarik & Salmela, 1987; Régnier & Salmela, 1987; Salmela, Régnier & Proteau, 1987; Régnier, 1987).

After the 1980s, talent detection models began to lose favour in the academic community due to a number of criticisms and concerns. On scientific grounds, Régnier et al. (1987) reminded the academic community of Heilbrun's (1966) thoughts of human potentiality. "In defining human potentiality, we refer to that which exists in possibility, not actuality. Whereas

in testing procedures we evaluate that which exists in actuality, not in possibility” (Régnier et al., 1993, p. 290). This was also reflected in Geron’s (1978) findings where she realised that what it took to become a champion was different from what it was to be a champion. In addition to this, Bartmus et al. (1987) found that deficiencies in one area of performance could be compensated for by high levels in another, bringing in a ‘compensation phenomenon’, which added to the difficulty of identifying reliable variables. These observations suggest that the use of detection models in the prediction of talent would be complex at best.

Since a symposium on talent detection in 1987 (Bartmus et al., 1987), the validity and usefulness of talent detection models have become highly questionable. Many theorists have stated that giftedness cannot be used to predict future levels of performance (Bartmus et al., 1987; Bloom, 1985). At the 1987 symposium, a number of theorists stated that scientifically valid methods did not exist and that the coaches’ judgement was currently the best solution for detecting or identifying giftedness (e.g. Mocker; 1987; Ulmer, 1987). It is also worth noting that some evidence has been advanced to substantiate the ability of expert observers to detect talent (Thomas & Thomas, 1999). This suggests that the experience of coaches could be a rich source of qualitative information that is yet to be tapped.

In addition to scientific criticism of detection models, ethical concerns have also been raised. For example, Régnier et al. (1993) raised concern over ‘talent elimination’. They suggested that talent selection efforts may eliminate or discourage individuals from participating. In addition, Malina (1997) indicated that talent selection programs have problems related to decision making, exclusion, economic discrimination, and discrimination along maturation lines. Howe et al. (1998) also raised the concern more vehemently, suggesting that young people who were not identified as talented were likely to be denied the help and encouragement they would need to attain high levels of competence. This raised ethical concerns about talent detection if the consequences are demotivating and disregard those who are not selected (Howe et al., 1998).

Another aspect of concern, raised by Régnier et al. (1993) related to models making false negatives. That is, individuals who were judged incorrectly as not being gifted. Although Gimbel (1976) acknowledged the possibility of ‘false positives’ being individuals who were identified as gifted but never fulfilled their potential, the possibility of false negatives was rarely entertained.

In 1996, Kozel summarised the state of knowledge within the area of talent in sport, which also reflected the extent of the lessons learnt from experimental research

(see p. 2). It was suggested that experimental research was ill equipped to grasp the complexity of talent (Tranckle & Cushion, 2004). Mocker (1987) and Ulmer (1987), Régnier et al. (1993) and Williams and Reilly (2000) also came to a similar conclusion, suggesting that it would be worth exploring what pertinent dimensions experts detect when they assess talent.

Exploratory Studies

The more exploratory studies were those that held the assumption that the answers to questions lay with the experts, such as coaches, as well as gifted and talented individuals. This approach resembles more of a ‘what can we learn from them?’ rather than an ‘is this right?’ philosophy.

Exploratory approaches have tended to gather participants who were assumed to be gifted or talented. This was the case with studies conducted by Bloom (1985), Csikszentmihalyi et al. (1993) and Ericsson, Krampe and Tesch Römer (1993). Bloom (1985) and Csikszentmihalyi et al.’s (1993) participants were drawn from a range of contexts such as musicians, artists, mathematicians, scientists as well as sports performers, while Ericsson et al.’s original work was based on musicians.

Even though the findings from these studies were not exclusively based on participants from a sporting context, they were still favourably reviewed within Durand-Bush and Salmela’s (2001) review of literature on talent development. More so, the findings of Ericsson et al.’s (1993) study were also reflected in a range of other contexts (Simon & Chase, 1973; Sosniak, 1985; Gustin, 1985; Monsaas, 1985; Kalinowski, 1985; Wallingford, 1975) and have been widely accepted within sport and other areas of human endeavour. This illustrates a demand for greater knowledge and understanding of giftedness and talent as sport seems ready to look further a field to learn from other contexts.

Indeed, the education domain has devoted a great deal of attention to the study of giftedness and talent (e.g. Colangelo & Davis, 2003; Heller, 2000). However, to date, the works of such educational theorists as Walters and Gardner (1986) and Gagné (1996) had gone largely unnoticed in the sports domain (i.e. the absence of their work from Durand-Bush & Salmela, 2001; and Régnier et al.’s, 1993 literature reviews). This suggests that the work of such theorists may be favourably received to enhance the understanding of talent as was the case with Ericsson et al.’s (1993) work.

Although it can be argued that what is learnt within one field can facilitate understanding in others, it is surely a fair assessment that their contexts have distinct differences. The shorter competitive career of sports performers was one of the motives behind Côté's (1999) reconsideration of Bloom's (1985) 'phases of learning' in talent development. Factors such as this must be considered when transferring the findings from one field to the next. It is therefore necessary to explore further what has been theorised in other fields through careful examination of the relevant works and then conduct similar research within sport.

Key Research

This section reviews the work of some of the pioneers of gifted and talented research whose contributions have developed theory (e.g. Bloom, 1985) and sometimes informed practice (e.g. Ericsson et al., 1993). The objective for this chronologically organised section is to address the lack of continuity in the literature (see pp. 7-16) by examining the contrasts and similarities between the theorists and how their theories evolved to make the links more explicit. Whilst comparing and contrasting the studies, issues concerning terminological laxity and the nature/nurture debate are highlighted. Attention is paid to how the researchers studied their subject, developed theories, offered contributions, and used terminology, as well as the assumptions and beliefs which these reflected.

Bloom (1985)

Over a period of four years, Benjamin Bloom (1985) and a team of researchers from the University of Chicago studied the development of talent in young people. They interviewed "120 immensely talented" (front cover) concert pianists, sculptors, research mathematicians, research neurologists, Olympic swimmers and tennis champions. Follow up interviews were also conducted with parents and teachers.

Bloom's work was very important, as it became the foundation for many of the current theories in talent development e.g. Côté (1999). Perhaps the most well known contribution from Bloom were the phases of learning, which proposed that over a 10 to 15 year period, children pass through 'the early', 'middle' and 'later years' of talent development. Indeed, the notion of 10 to 15 years to develop expertise was later reflected in the work of Ericsson et al. (1993).

Although Bloom's work was extremely valuable in the study of talent, it was not specific to the context of sport. Côté (1999) felt this was a limitation when applying Bloom's phases of learning to sport. 14 years later this resulted in Côté producing his own three stages of talent development that were specific to sport, these are considered in detail later in the chapter (p. 42-45).

Other important features of Bloom's work were his assumptions and beliefs regarding talent. For Bloom, talent meant unusually high levels of demonstrated ability, achievement or skill in a field of study. This view was similar to Gagné's (1985) definitions, as used within this study, but remarkably different from others of the time who were equating talent with natural gifts or aptitude (e.g. Bompa, 1985).

Bloom believed that there must be enormous human potential available in each society, which could either be developed or neglected depending on the environmental conditions. He theorised that only a very small amount of this human potential was ever fully developed. Although he suggested that society could vastly increase the number of talented children produced, he conceded that potential for talent development was probably far greater than any single society could support.

The environmental deterministic position (see p. 10) was very evident in Bloom's writing as he frequently made strong links between talent and society, stating that talent development was dependent on opportunities and encouragement from society. In addition, Bloom suggested that societies that emphasised only minimal standards of competence were likely to produce only minimally talented individuals. His underlying philosophy seemed to be that talent needed society and society needed talent. Csikszentmihalyi et al. (1993) (see also p. 32) later reflected this idea in their definition of talent by purporting that talent must be valued by society to be considered a talent.

Bloom's environmentalist position was further fuelled by the findings of his research. He concluded that further opportunities to develop were attributed to early achievements, rather than any evidence of giftedness and that parents and teachers rarely gave instruction because they felt the child had any unusual gifts. Although some teachers observed an ability to learn rapidly, this was attributed to early experience in the field of study. This was contrary to Gagné (1985) who advocated that rapid learning is an indication of natural ability. Indeed, it seems that rapid learning is associated with talent, but whether it implies natural ability or early experience seems to be a matter for philosophical debate.

Like most theorists in the field of giftedness and talent, environmental determinists like Bloom (1985) recognise the problem of wasted opportunities to develop human potential. However, Bloom (1985) chose to address the problem by focusing on the process of talent development, rather than talent detection, which is arguably at the very core of the problem. Bloom did not stand alone in his view of talent development, with Ericsson and Charness (1994) later adopting a strong environmental deterministic stance (see p. 11). It may be socially and politically appealing to believe that excellence is possible for such a large number of individuals (Baron-Cohen, 1998). However, this extreme position later came under attack from Csikszentmihalyi (1998), Bates (1998) and Detterman, Gabriel and Ruthsatz (1998) who, despite their own different views, were all vehemently against a purely environmental deterministic account.

Bloom's environmental deterministic philosophy seemed to prevent him from acknowledging the signs of giftedness. When accelerated learning was observed, he attributed it to prior learning. However, Gagné (1985) did not share this attribution of accelerated learning. Instead, Gagné (1985) saw such accelerated learning as evidence of natural abilities in the development of talent. Whereas Bloom presented an environmental deterministic view in support of nurturing talent, Gagné presented a more neutral position, supporting the impact of both nature and nurture in the development of talent. Gagné's criticism of more radical environmentalist positions was evident in his work and in stark contrast to Bloom's work.

Gagné (1985)

Since 1985, Gagné has argued for greater conceptual clarity in the study of giftedness and talent in education. Dissatisfied with how the raw materials of talent are often confused with the end product in a one word fits all approach, Gagné has fought for the acceptance of clear definitions that recognise such a distinction. His particular concern was the laxity with which the terms gifted and talented were applied. Considering the central role that these terms play, Gagné (1995) argued that they should have been defined more precisely to establish a shared meaning. Gagné (1996) also suggested that when concepts lack a clear and agreed definition they become open to a plethora of individual viewpoints, which has become the case in the field of gifted education. More recently, Tranckle & Cushion (2005) suggest that such confusion over terms and meanings create problems with talent selection.

However, the terminological laxity which Gagné declared was not just within his chosen field of gifted education. He also reported confused dictionary definitions, ambiguity in the scientific literature and undifferentiated use in national policies. Webster's dictionary (1970) defined 'gifted' as "possessing natural talent" (p. 162; cited in Gagné, 1985), using one word to explain the other as if their precise meaning was exoteric (Tranckle & Cushion, 2004). Furthermore, the scientific literature (e.g. Gallagher, 1979; and Torrance, 1980) contributed to the problem by using the terms gifted and talented interchangeably as if they were synonyms. One of the more damaging oversights was the US Commissioner of Education's report to Congress (Marland, 1972; cited in Gagné, 1985) which failed to differentiate between the two terms. Gagné (1985) summarised this problem by drawing attention to Richert, Alvino and McDonnell (1982) who spoke of a "labyrinth of seemingly conflicting definitions in use in the United States" (p. 103).

Most researchers in the field of giftedness and talent seek to inform the processes of talent detection or identification (e.g. Côté, 1999; William & Reilly, 2000; Abbott & Collins, 2004). However, Gagné's intention has always been to seek to clarify the terminology. Although Sternberg and Davidson (1986) produced an overview of the diversity of these definitions in their compendium of theories and models, Gagné hoped to unite the field with a universal definition. Certainly sport could benefit from an agreed definition (Tranckle & Cushion, 2004) and coming to a consensus would establish a solid base from which to progress conceptually (Gagné, 1996). This would generate a more powerful movement to bring together those individuals dedicated to talent development across all domains (Gagné, 1996).

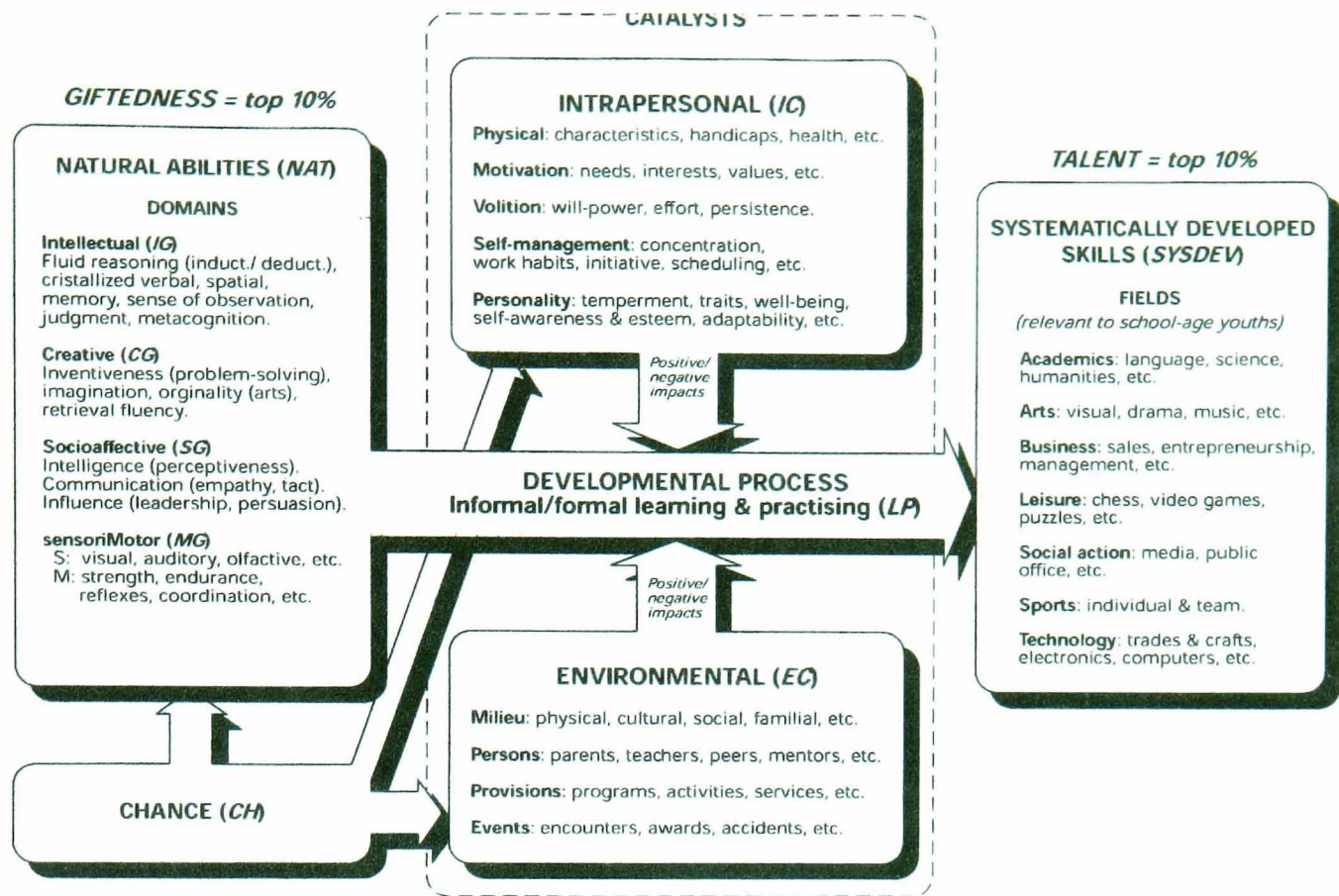
The difficulty which Gagné faced was that the terms gifted and talented had become exoteric (Tranckle & Cushion, 2005), with distinctions being made more or less implicitly by both lay persons as well as experts in numerous fields (Gagné, 1985). Gagné, Motard & Belanger (1991) even conducted a study as to the different perceptions that people held of the terms. The commonalities between the terms gifted and talented were that they both refer to human abilities that are above average (Gagné, 1995). The difference between the terms is at polar ends of the developmental process, which transform natural abilities into systematically developed skills (Gagné, 1995). As stated earlier (see p. 5), Gagné suggested that aptitudes (or gifts if exceptional) refer to the raw material, while skills (or talents if exceptional) refer to the end product of a developmental process (Gagné, 1985; 1993).

Gagné purposely excluded reference to descriptive characteristics and context in his definition in the hope of unifying the fields of expertise in gifted and talented research. He also felt that gifts and talents deserve recognition as such regardless of their context.

Talent is a distinctly superior performance no matter what the field of activity is. Giftedness is superior natural abilities whichever way they will be developed, in the same way that a knife remains a knife whether it is used to cut bread or maim people. (Gagné 1993, p. 80).

His ideals are contrary to Tannenbaum's (1983) who subdivided developed talents into four categories: a) scarcity talents (e.g. revolutionary thinking in science, medicine, social science), b) surplus talents (e.g. arts), c) quota talents (essential skills for a society to continue providing goods and services), d) anomalous talents, further subdivided into amusing talents (e.g. trapeze artist), extinct talents (e.g. stone cutter) and even socially disapproved talents (e.g. pick pocket). Although it can be argued that giftedness and talent deserve recognition for their exceptional nature, different cultures will value the development of different talents.

Gagné presented his Differentiated Model of Giftedness and Talent (DMGT) in 1985 as he felt that other models and definitions did not acknowledge other domains of giftedness besides the intellectual. Foster (1981) produced a model based on the integration of those of Renzulli (1979) and Cohn (1977; 1981) which Gagné (1985) felt failed to recognise that the emergence of talent involves a number of different aptitudes. Thus Gagné created the DMGT which allowed for multidirectional and not merely bidirectional connections between abilities and expertise and evolved through three versions of the model (1985; 1993; 2000).



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

Figure 1. Gagné's Differentiated Model of Giftedness and Talent (2000).

Gagné's (1993; 2000) model (figure 1), outlined four broad domains of natural ability, which he called intellectual, creative, socioaffective and sensorimotor. Within the DMGT, these natural abilities or aptitudes are only granted the title of gifts if they are in the top 10% of peers. Gagné also suggested that aptitudes of gifts can be recognised more easily and directly in young children because environmental influences and systematic learning have only exerted a limited influence. However, he also claimed that they can still show themselves in older children and adults through the facility and speed with which they acquire new skills in any given field (Gagné, 1995).

Gagné maintained that in any field of expertise any given combination of these elements might be important. This notion was originally presented in opposition to Renzulli's (1979) view that creativity was a vital component for the formation of talent. Gagné argued that developing talent in certain fields did not depend on creativity (e.g. swimming). The suggestion that no aptitude could be considered a prerequisite for the emergence of every talent relates to what would later be called a compensation phenomenon (Bartmus et al., 1987). Therefore, the notion is that a talent can be constructed in different ways from different components.

However, Gagné proposed these natural abilities in their raw form have yet to undergo formal or informal training towards the development of systematically developed skills. The developmental process to achieve this would consist of maturation, daily use in problem solving situations, informal training and practice, and formal training in a particular field of activity (Gagné, 1993). Recently, Gagné (2003) suggested the degree of contribution made by these processes, stating that "...the major developmental agent for gifts is maturation, closely followed by informal learning. In the case of talents, it is the opposite, with formal institutional learning accounting for most of the developmental impact" (p. 64).

In terms of systematically developed skills Gagné broadly categorised academic, arts, business, leisure, social action, sports and technology as areas where expertise could be developed, however, this was not intended as an exhaustive list. These systematically developed skills or expertise are the end product of the developmental process and may be recognised as talents if they reach the top 10% in that field.

Impacting on the developmental process are three forms of catalyst that can have positive or negative effects on the process. Gagné called these intrapersonal catalysts, environmental catalysts and chance. However, Gagné (1995) noted that aptitudes are the constituent elements of talents, while intrapersonal and environmental factors are contributive (not constitutive) elements.

Intrapersonal catalysts are subdivided into physical and psychological factors i.e. motivation, volition, self-management and personality. However, Gagné (2003) noted that the psychological constructs associated with talent are so numerous that it would take many pages to list them all. Gagné's view of physical and psychological factors as secondary to natural abilities for learning is distinctly different from those who would treat these factors as if they were stable variables (e.g. Jones & Watson, 1977). He also recognised that the difference between some natural abilities and intrapersonal catalysts is a grey area (Gagné, 1995). For example:

...the casual direction of influence is not always clear. For instance, does self-confidence cause talent, by supporting the individual during his process of skill development, or is it an effect brought about by the satisfaction of having achieved competence in a field of talent (Gagné, 1993, p. 74).

Environmental catalysts were portrayed as including milieu, provisions, significant people and events. Gagné (1993) noted that the role of significant persons is one of the best documented sources of impact on talent development (p. 74). However, this is not to underrate

the impact of significant events related to specific moments in the life of individuals that have a lasting impact on their decisions and choices. Additional emphasis was later placed upon the importance of such events by Walters & Gardner's (1986) with their notion of 'crystallizing experiences' (see p. 26).

Gagné presented both the intrapersonal and environmental catalysts in such a way that it is difficult to challenge or disagree with his suggestions. It is purported that any of the intrapersonal or environmental catalysts could impact upon the developmental process in either a positive or negative way, with various degrees of influence. From this position, Gagné discounts nothing, but does suggest that they affect the development of talent rather than determining it.

The link between chance and natural abilities relates to Gagné's belief that gifts are genetically determined. Similarly, 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. The final link with chance is to environmental catalysts within which chance had a more modest mention in Gagné's 1993 version of the model. This relates to the chance of an individual being born within a certain culture, surrounded by certain people, having access to provisions and the effects of positive or negative events in their lives. Indeed this point is emphasised by Atkinson's (1978) claim that "all human accomplishments are due to two crucial rolls of the dice which cannot be controlled i.e. accidents of birth and background" (p. 221).

When Gagné revised his model in 2000, he gave far more emphasis to chance. Gagné (2000) explained that chance is spontaneously associated with the environment; however, its influence also manifests itself in both natural abilities and intrapersonal components. In addition, he also limited the natural abilities to intellectual, creative, socio affective and sensorimotor (see figure 1). Originally, Gagné also acknowledged the domain of paranormal abilities in his DMGT (1993) as also recognised by Berger & Berger, 1991; Broughton, 1991). Unfortunately, the omission of this domain from the 2000 version was not rationalised.

Although the DMGT remains unchanged since 2000, Gagné (2003) has suggested that the arrows which appear as unidirectional are in reality bidirectional. If Gagné envisaged a bidirectional relationship between gifts, the developmental process, the catalysts and talent from the outset, he only recently made this proposition explicit (2003). This was based on unreferenced empirical evidence (Gagné, 2003; p. 68) which would suggest that the concept of

giftedness and talent is far more complex and dynamic than previous thought. Gagné stated that:

no casual component stands alone. They all interact with each other and with the learning process in complex ways; and these interactions will differ significantly from one person to the next. Individual talents emerge from complex and unique choreographies between the five groups of casual influences. (Gagné, 2003, p. 69).

The complexity of these casual influences has yet to be explored and could well show a dynamic nature and more interdependent view of talent development (Tranckle & Cushion, 2004).

Furthermore, Gagné (2003) proposed a hierarchy to influence the various components of the DMGT which he summarised with the acronym CGIPE (Chance, Giftedness, Intrapersonal catalysts, development Process and Environmental catalysts). The principle ranking of chance was reflected in Atkinson's (1978) roll of the dice analogy. However, with a prevalence of 75% of the US population having a supportive environment (Rowe, 1994), environmental catalysts should not be considered unimportant despite having been ranked last in the hierarchy.

Gagné's position within the nature/nurture debate is crucial when appreciating how the DMGT has been presented and received. He subscribed to the belief that both genetic and environmental components contribute equally in explaining individual differences in aptitude and expertise. Yet, this is not to suggest that environmental factors alone could create giftedness or ultimately lead to talent. In fact Gagné, maintained that "...every talented individual is necessarily gifted although the inverse is not true; a gifted individual is not necessarily talented" (Gagné, 1985, p. 108). "High natural abilities are the constituent elements of talents, one cannot become talented in any field without possessing at the gifted level the natural abilities prerequisite for that particular field" (Gagné, 1995, p. 106). However, more recently Gagné (2003) acknowledged that high aptitude can also develop into talent, rather than strictly stating that giftedness is the prerequisite for talent.

Over the years, Gagné has vehemently opposed radical environmentalist positions, attacking Howe and Sloboda's (1991) work in 1999 as well as their article on 'the talent account' with Davidson in 1998. The origins of this strongly defended position lie in the following quote, which outlines Gagné's frustration with the view that talent can be created without the prerequisite genetics:

One major hurdle to a more general acceptance of a distinction between natural and developed abilities before the 1980s was the 'political correctness' of acknowledging the existence of 'natural' abilities which had a genetic origin and, consequently, the partly hereditary foundation of observed individual differences among children and adults. In other words, the reign of environmentalism of the 1960s and 1970s totally refusing to accept the existence of inequalities that could be corrected by any form of social intervention. (Gagné, 1993, p. 76)

However, as stated already, Gagné believed that genetics and environmental factors play equal roles (Gagné, 2003). This meant that any degree of aptitude or indeed giftedness cannot develop into talent on its own. Therefore, with his reliance on genetics to deliver the raw material and environment to produce systematically developed skills, Gagné's stance within the nature/nurture debate becomes clear. More recently, Gagné (2003) suggested that the nature/nurture debate is settling as few researchers in the social sciences now deny the significant contributions of hereditary factors to human characteristics. However, he also noted that if any contention remains it concerns the relative contributions of nature and nurture.

Although Gagné often suggested the relevance of his work to sports as well as other fields (Gagné, 1993), his DMGT has yet to receive any recognition within sports research or indeed even be considered in the sports talent literature (Tranckle & Cushion, 2004). It also appears that few theorists, particularly those with any close connection to sport, reference Gagné and vice versa. Clearly, Gagné's definitions and DMGT have the potential to bring much needed clarity to talent research and selection processes in sport (Tranckle & Cushion, 2004). However, because Gagné's work has developed in isolation from sport and the main body of talent research, its integration is difficult to say the least.

Despite the insight evident in Gagné's work, a valid criticism is the limited reference to empirical evidence in support of his claims. In particular, the references to the acronym CGIPE and the notion of bidirectional interactions between components of the DMGT are bold propositions that require further attention. A retrospective exploration or longitudinal study of how talents developed is required in order to get an overall view of how the components interacted.

Gagné's view of giftedness and talent has not impacted talent in sport until now. By integrating it into the review at this point and subsequently making the appropriate links to

other theorists, it becomes possible to show how Gagné's theories influence the concept of talent in sport.

Walters & Gardner (1986)

It would seem that retrospective studies are somewhat of a necessity for unearthing the interactions of talent development. A year after Bloom's (1985) work that looked retrospectively at talent development, Walters and Gardner (1986) retrospectively examined the important events in the lives of exceptional people, which they called crystallizing experiences. Their notion of crystallizing experiences was based on 'Multiple Intelligences Theory' (Gardner, 1983) and was defined as:

...remarkable and memorable contact between a person with unusual talent or potential and the materials of the field in which that talent will be manifested. These crystallizing experiences may appear in advance of formal training. In any case, their dramatic nature focuses the attention of the individual on a specific kind of material, experience, or problem. Moreover, the individual is motivated to revisit these occasions for the indefinite future and to reshape his self-concept on the basis of these experiences (Walter & Gardner, 1986 p. 308).

Upon initial inspection, Walters and Gardner's 'crystallizing experiences' may seem very similar to 'flow experience', which would later be explored by Csikszentmihalyi et al. (1993) and Jackson & Csikszentmihalyi, (1999).

Flow is a subjective state that people report when they are completely involved in something to the point of losing track of time and of being unaware of fatigue and of everything else but the activity itself. It is what we feel when we read a well-crafted novel or play a good game of squash or take part in a stimulating conversation. The depth of involvement is something we find enjoyable and intrinsically rewarding. This flow experience is relatively rare in everyday life, but almost everything – play and work, study and religious ritual – is able to produce it, providing the conditions are conducive to deep concentration. (Csikszentmihalyi et al., 1993, p. 14).

Indeed, there appears to be a number of strong similarities between crystallizing experience and flow: the power of the experience; the motivation to revisit it; commitment to developing talent; how the experience brought about change in the individual and the varied

and individual nature of the experiences. The notion that crystallizing experiences, and indeed flow (Csikszentmihalyi et al., 1993), can evoke such changes in an individual has particular relevance for sport because it throws a dynamic variable into the process of talent identification. Walters and Gardner emphasised this changing influence:

A crystallizing experience...is the overt reaction of an individual to some quality or feature of a domain: the reaction yields an immediate but also a long-term change in that individual's concept of the domain, his performance in it, and his view of himself (Walters & Gardner, 1986, p. 309).

This notion also supports Gagné's (2003) suggestion that environmental catalysts can directly influence intrapersonal catalysts. If crystallizing experiences can change an individual then the worth of talent models that fail to recognise the interaction between such environmental and intrapersonal factors becomes questionable.

Unlike the later works of Csikszentmihalyi et al. (1993) and Jackson & Csikszentmihalyi (1999), which were very broad in the potential and application of flow, Walters and Gardner (1986) focused on how crystallizing experiences contributed towards commitment in a talent field, driving an individual towards excellence in performance. What drives an individual to commit to developing talent is not well understood (Csikszentmihalyi et al., 1993) and the exploration of such crystallizing experiences in sport may address this gap in current knowledge (Tranckle & Cushion, 2004).

However, Walters and Gardner (1986) also theorised that although many individuals may initially have powerful experiences in a domain, unless they are sufficiently gifted, it is unlikely that these experiences will crystallize anything sufficiently, to have a lasting effect or redefine their self-concept. This highlights a similarity between crystallizing experiences with Gagné's (2003) notion of aptitudes and significant events as an environmental catalyst.

There are factors that can distinguish crystallizing experiences from flow. Firstly, crystallizing experiences tend to occur before any form of teaching or training, where an individual first discovers the talent field. This is contrary to the reported incidents of flow from expert performers. Secondly, crystallizing experiences can only be fully recognised retrospectively; and only when behaviour has been observed after a crystallizing period can an experience be singled out as having crystallized the ensuing activities (Walters & Gardner, 1986). Differing from crystallizing experiences, flow can be noticed at the time (Csikszentmihalyi, 1999).

Walters and Gardner studied crystallizing experiences by reviewing the biographies and autobiographies of 25 of history's most famous mathematicians, musicians and artists. In addition, they also conducted interviews with some of the leading teachers of these fields to gain their perspectives. These methods were most appropriate because, by their very nature, crystallizing experiences can only be identified retrospectively. Unfortunately, biographies and autobiographies do not allow for the deeper exploration and interactions that are possible with interviews.

As interviews facilitate elaboration Walters and Gardner (1986) were able to find further support for their definition, of crystallizing experiences, (see p. 26) and to discover some more pertinent features concerning crystallizing experiences:

“In our view crystallizing experiences can take various forms. For example, some crystallizing experiences, which we term initial occur early in life and signal a general affinity between an individual and some large-scale domain in his culture...Other crystallizing experiences, which we term refining, occur well after an individual has undergone an initial attraction to a domain. In these refining cases an individual discovers a particular instrument, style, or approach within a field to which he or she is especially attuned” (Walters & Gardner, 1986 p. 309).

Walters and Gardner believed that initial crystallizing experiences occur when an individual makes their first genuine contact with a domain as a child or novice. As already noted, such experiences were found to be in the absence of any formal teaching, often occurring when the individual was alone and engaged in self-instruction. This is consistent with Multiple Intelligence Theory (Gardner, 1983), which suggested that “raw or unmediated intelligence in a specific field should under certain circumstances demonstrate evidence of that intelligence even before they are engaged in any kind of training regimen” (Walters & Gardner, 1986, p. 310). Furthermore, this demonstration of intelligence is also compatible with Gagné's (1993) view of how natural abilities can be expressed through the early stages of the developmental process, when individuals are engaged in informal learning.

In addition, Walters and Gardner proposed that crystallizing experiences are neither necessary nor sufficient for ultimate achievement within a field of expertise. However, the construct does serve to explain how gifts are discovered, leading to commitment to a talent field (Tranckle & Cushion, 2004). Where this is the case, it could be argued that “motivation would be the consequence of giftedness, rather than the explanation of it” (Walters &

Gardner, 1986; p. 328). This is also consistent with Gagné's notion of bidirectional links components, in this case between natural abilities and intrapersonal catalysts.

Walters and Gardner also suggested that a highly supportive environment might remove the opportunity and need for a crystallizing experience. This seems reasonable, as it is difficult to envisage how an individual would pinpoint a crystallizing experience if they had grown up in a domain continuously engaging their talents.

Due to the design of their study, Walters and Gardner were left wondering whether crystallizing experiences were typical or atypical and as they only studied exceptional individuals, it could easily be suggested that their lives and experiences were equally extraordinary. The study also noted that crystallizing experiences could be regarded as 'anomalies, exaggerations, retrospective justifications or rationalizations' (Walters & Gardner, 1986). Although these may be reasonable criticisms, as previously noted, crystallizing experiences can only be identified retrospectively. Therefore, retrospective accounts must be used in the study of such experiences. However, additional accounts from significant observers, such as teachers or parents of talented people, could help to mediate some of the criticism that surrounds retrospective accounts. Another difficulty noted by Walters and Gardner, was that due to the intensely personal and private nature of crystallizing experiences, 'adolescent students may be reluctant to share these with others, even their parents and teachers' (p. 323). This suggested that studying crystallizing experiences in adolescents may require particular measures to gain trust and ensure confidentiality.

Although Walters and Gardner clearly valued the need for innate talent or domain specific intelligence (Gardner, 1983), they concluded their report with some appreciation for the case made later by Howe et al. (1998) against the 'talent account':

...it would seem to be good pedagogy – if not just good common sense – to treat all children as if they have the potential for crystallizing experiences, and to expose them at an early age to materials that may motivate them to explore a domain. It may turn out that there are far more "gifted" children than could have been anticipated from the unplanned encounters that until now have been the chief locus for crystallizing experiences. (Walters & Gardner, 1986, p. 331)

Walters and Gardner's (1986) optimistic view of the potential that exists for talent within society was shared by Bloom (1985) and was later echoed by Csikszentmihalyi et al. (1993). In addition, the view of equal opportunity for all was also shared by Bloom (1985), Csikszentmihalyi et al. (1993) and Howe et al. (1998). The underlying concern from all of the

aforementioned researchers was that potential could be lost if initial assessments ever excluded an individual from talent development. Although Walters and Gardner valued the talent account, it could be argued that their belief in the redefining impact of crystallizing experiences suggested that people can change and that once unpromising students could be transformed into promising students with more viable potential. This theory would explain why Walters and Gardner also advocated an almost environmental deterministic approach to talent development, while maintaining their belief in the 'talent account'.

The work of Walters and Gardner (1986) sits upon the foundation of Multiple Intelligence Theory (Gardner, 1983). This theory highlights seven domains of intellectual accomplishment as: linguistic; musical; spatial; bodily-kinaesthetic; interpersonal; and intrapersonal, which all exist as biological potentials until they manifest themselves in the deployment of symbolic behaviour later in life. Walters and Gardner explored a number of these intelligences in their study, with the noticeable exception of bodily-kinaesthetic, which is centrally important for the development of expertise in sport. Therefore, crystallising experiences and the conditions noted by Walters and Gardner (1986) have yet to be explored within the context of sports.

It had already been noted by Walters and Gardner (1986) that crystallizing experiences often occurred when students were alone. The public, and often interdependent nature of most sports, raise suspicions as to whether individual crystallizing experiences are possible in sporting contexts, in the presence of team mates and coaches. However, as flow has many parallels to crystallizing experiences, it could be suggested that coaches and team mates may contribute towards crystallizing experiences as Csikszentmihalyi et al. (1993) suggested they can with flow.

Given the views of Walters and Gardner and the fascination with identifying giftedness that exists in sport (Brown, 2002); it is possible that the search for future elite performers needs to be approached differently. It could be argued that teachers and coaches should consider identifying people who have had crystallizing experiences, because of their influence upon commitment to talent development, rather than just identifying those with particular gifts.

Walters and Gardner's (1986) work focused upon the problem of how gifts are discovered and why talents develop. Regrettably, it was nearly twenty years before the relevance of their work was proposed for addressing the problems faced within sport (Tranckle & Cushion, 2004). This is another example why it has become advantageous to

include such knowledge from the field of education in the quest to address the problems facing sport.

Csikszentmihalyi et al. (1993)

In 1993 Csikszentmihalyi, Rathunde and Whalen produced a book that embraced the notion of crystallizing experiences and in many ways supported the work of Walters and Gardner (1986). Their book 'Talented Teenagers' reported on a four-year study of 208 talented US high school students. The study was arguably the most significant contribution to the understanding of talent since Bloom's (1985) work. Csikszentmihalyi et al.'s study was similar to Bloom's in that they purposefully selected talented individuals across the domains of arts, sport, music, mathematics and science. The two studies also presupposed that talents cannot develop without nurturing through a developmental process and favourable environmental factors.

However, closer examination reveals how Csikszentmihalyi et al. (1993) contrasted Bloom's (1985) work. An important difference to recognise was how both studies used the word talent. Whereas Bloom used the term to describe an unusually high level of demonstrated skill, Csikszentmihalyi et al. used it in reference to gifts and aptitudes as well as competencies and talents. Furthermore, Csikszentmihalyi et al.'s participants were nominated by teachers who regarded them as gifted, whereas Bloom's participants were selected for their outstanding achievements and therefore talent. Consequently, Csikszentmihalyi et al.'s study focused upon what makes talented teenagers unique and what contributes towards them engaging or disengaging from developing their talents, while Bloom (1985) focused on how successful individuals had developed their talents. Consistent with this focus, Bloom's participants developed their gifts to a talented level, whereas Csikszentmihalyi et al.'s (1993) participants were all identified as gifted but had not yet reached the level of being talented. This meant that Csikszentmihalyi et al. (1993) were able to study how gifted individuals were lost from the process of developing their talents and suggested a new angle on the concept of talent that was distinct from Bloom's.

Arguably, Bloom's work suggested that only those who develop their gifts could be considered talented. By having such a successful group of participants, this impression was hardly surprising. However, Csikszentmihalyi et al.'s (1993) focus on teenagers identified as gifted that continued or discontinued to develop their gifts, suggested that people can have

gifts without using them, which was also purported by Gagné (1985). Even though some teenagers discontinued their development in the talent field, Csikszentmihalyi et al. did not suggest that they were necessarily less gifted than those who continued. Instead, it was implied that they did not receive the same level of support or have the same experiences as those that continued to develop talent.

Csikszentmihalyi et al. also took a more neutral position than Bloom with regard to the origin of talent. They felt that talent was a mixture of both innate gifts and early experiences, whereas Bloom was firmly of the opinion that talents were environmentally determined. However, Csikszentmihalyi et al. agreed with Bloom with regard to the importance of nurturing talent. It would seem that the more extreme environmental and genetic determining positions (see p. 11) were becoming less attractive next to an approach that recognised the contributions of both positions (e.g. Gagné, 2003).

Another similarity between Csikszentmihalyi et al. and Bloom was their appreciation for how crucial society and context is in the consideration of talent. Csikszentmihalyi et al. (1993) extended Bloom's (1985) views on society by offering a definition that linked talent with the values of society. "Talent is a social construction: It is a label of approval we place on traits that have a positive value in the particular context in which we live" (Csikszentmihalyi et al., 1993, p. 23). Therefore, by this definition, a valid audience would be crucial for the identification of talent.

However, the link between talent and society, promoted by Bloom (1985) and Csikszentmihalyi et al. (1993), does not seem to have been recognised in the study of talent in sport (e.g. Brown, 2002; Durand-Bush & Salmela, 2001; and Régnier et al., 1993). However, Gagné (1985; 1993) objected to incorporating a value system as he believed that gifts and talents should be recognised as such regardless of their context. Certainly gifts should be recognised for their own sake, but developing talent requires a nurturing society which also influences the possible talent fields that are available.

Not only did Csikszentmihalyi et al. feel that society is important for defining talent, but that talent is a valuable resource for society. Due to the rarity of exceptional skills, they felt that the disengagement of a developing talent would be a great loss for humanity and for the particular society concerned. This was emphasised by Gardner of Harvard University who reviewed Csikszentmihalyi et al.'s book by stating that: "For a society concerned about survival, no issue is more important than cultivation of its talented young, no outcome more

devastating than the loss of talented individuals” (Gardner, 1993; cited in Csikszentmihalyi et al., 1993, p. 310).

However, Csikszentmihalyi et al. did not just believe that disengaging from talent development was a loss for society. They also believed that the individual concerned should not take neglecting or ignoring gifts lightly, as this could lead to regret that could linger for the rest of their life.

Csikszentmihalyi et al.’s study utilised methods of research that were both unique to talent research and extensive. (G. Bloom, 2002). Whereas Bloom used open interviews to gain retrospective accounts, Csikszentmihalyi et al. used a method called Experience Sampling Method (ESM) which involved each teenager wearing an electronic pager and carrying a report book. The pager would signal at random times for them to report on their activities and feelings in the report book. ESM enabled Csikszentmihalyi et al. to collect the individuals’ subjective views on their lives during the course of their talent development. This attempt at ‘systematic phenomenology’ (Csikszentmihalyi et al., 1993) created a wealth of qualitative data that enabled Csikszentmihalyi et al. to give readers an insight into what it is like to be gifted and what that means to people. Although such insight into the lives of gifted individuals had been absent from the research, it was disappointing that more phenomenological work did not follow.

From the data they collected, Csikszentmihalyi et al. made a number of observations about the typical profile of gifted people. Although these findings have rarely been cited since this study, they provide a valuable insight into the intrapersonal factors that seem to be common among gifted individuals, thus facilitating their detection. Their findings suggested that gifted people:

- must possess traits or skills that are considered useful in their culture;
- have personality traits that are conducive to concentration;
- are open to experiences (that is, they are less sex stereotypical than average teenagers and are thus freer to explore a deeper range of human potentials);
- have learned habits conducive to cultivating talent;
- are more conservative in their sexual attitudes and aware of the conflict between productive work and peer relations;
- have families that provide both support and challenge to enhance the development of talent;

- liked teachers best who were supportive and modelled enjoyable involvement in a field.

Although Csikszentmihalyi et al.'s profile of talented people undoubtedly prompted readers to compare such profiles, which may have correlated with their own experiences, it was a large generalisation. Csikszentmihalyi et al. supported their findings with statistical evidence taken from five different domains to paint a picture of one typical example of talent. The danger of portraying one stereotypical image of talent and using statistics to purport its significance is that it makes talent appear simple. However, Csikszentmihalyi et al. acknowledged the complexity, subjective judgement and cultural specificity of talent. It is accepted that some reduction is necessary when drawing conclusions and summarising findings but it is disappointing that their data was reduced in such a fashion, thus losing the holistic portrait of complexity and diversity. The necessity of statistical evidence and random pager signals for ESM to determine the validity is debatable. Fortunately, Csikszentmihalyi et al. had the luxury of presenting their study within a book, which enabled them to present a lot of rich and diverse qualitative data, before the statistical analysis and subsequent reduction.

In exploring the experiences of teenagers engaging their talents, Csikszentmihalyi et al. found a frequent occurrence of flow (see p. 26). They theorised that talented individuals would have more chance of encountering the conditions that facilitate flow, therefore experiencing flow. Csikszentmihalyi et al. also suggested that the flow experience could explain how an individual became committed to their talent field. "Natural ability is a great advantage in learning to enjoy a field of talent. It is the key that unlocks the potential for flow in activities that others experience as difficult, tedious or boring" (Csikszentmihalyi et al., 1993, p. 177).

It is also worth noting that 74% of Csikszentmihalyi et al.'s participants from the field of sport reported experiencing flow, which was a higher percentage than the participants from other fields. This suggested that sport may facilitate the occurrence of flow experiences. If flow experiences do indeed affect commitment to the talent field, then it is worth exploring further the impact of flow in sport.

In addition to giving a powerful insight into the lives of gifted people, Csikszentmihalyi et al. also highlighted the role of the teachers and coaches in the development of talent, but more interestingly, their role in the facilitation of flow experiences. They suggested that a teacher's skilful and thoughtful attention to a student's interests can precipitate what Walters and Gardner (1986) called a 'crystallizing experience'. Csikszentmihalyi et al. gave an

example of how teachers can prompt flow or crystallizing experiences when they reflected upon the experiences of an art student.

The intuition that prompts a teacher to recommend Coco Chanel is almost certainly not a random occurrence, a shot in the dark. It is the culmination of an extended period of attention by the teacher to the trajectory of that student's developing interests. Further, it expresses the teacher's excitement about the implications of the subject matter for their student's personal development and quality of experience. In turn, the teacher's excitement convinces the student to trust the teacher's judgment and accept a new challenge, even if it does not coincide with her interests at the time (Csikszentmihalyi et al., 1993, p. 190.)

Csikszentmihalyi et al. went on to make a number of observations about the behaviour of what they termed 'flow teachers'. They noted that these flow teachers have distinctive ways of allocating their attention to create safe havens for flow learning; never stop nurturing their own interests or take their skills at conveying that interest to others for granted; and seem determined to help students experience the same rewards that they found in the continued exploration of their domain. This was emphasised when they reported that although:

...talented teenagers did require competence in their instructors, they did not demand omnipotence or the possession of star quality. What teens noticed instead were signs of an adult who had learned to enjoy the expression of talent as one vital ingredient in a meaningful, compelling way of life, one that was worth sharing with others.

(Csikszentmihalyi et al., (1993), p. 195).

In addition to the concept of flow teachers, Csikszentmihalyi et al. also introduced the notion of autotelic environments, which they described as 'flow classes'. These flow classes were described as self-rewarding contexts, where individuals pool their energies in co-operative efforts that enhance the skills and experience of all. It was suggested that such group contexts could facilitate flow experience. In addition, Csikszentmihalyi et al. theorised that, due to their interdependent nature, autotelic environments, such as 'flow classes' are extremely rare. Furthermore, Csikszentmihalyi (1999) later note the rarity of these flow experiences within sport.

A further issue raised from Csikszentmihalyi et al.'s work concerned the abundance of giftedness in society. Csikszentmihalyi et al. and indeed Bloom (1985) theorised that there are more gifted individuals in society than could be discovered. Although this could be regarded as challenging to Gagné's view (see p. 9), their point was simply that the discovery of talent is

rare, whereas the actual endowment of giftedness is more considerable than we have been led to believe. If encounters with flow are instrumental in the discovery of gifts and the development of talents, as crystallizing experiences were thought to be, then we can begin to understand why so few discover their gifts and the relevance of chance. Gagné's DMGT (2000) also recognised the relevance of chance in the more extraordinary interaction between rare gifts and perhaps equally rare flow or crystallizing experiences.

As stated earlier, Csikszentmihalyi et al. (1993) strongly contested the value of talents for society, but, the value of talents to the individual is yet to be explored and could also have relevance to commitment to the talent field. They also noted that teenagers with sporting talent have a much bleaker future than their more academic peers due to the few opportunities in sport beyond their limited careers as performers. Therefore, the exploration of personal meaning and value associated with such talents may have more relevance than cultural values and needs.

Csikszentmihalyi et al.'s (1993) book gave an interesting insight into the experiences of gifted individuals involved in talent development. They realised that it was necessary to explore why people dedicate themselves to talent development in order to address the problem of wasting human potential.

Ericsson et al (1993)

In the same year as Csikszentmihalyi et al.'s study, Ericsson, Krampe and Tesch-Römer (1993) presented a theoretical framework to explain expert performance as the end result of individuals' prolonged efforts to improve performance while negotiating motivational and external constraints. Although Ericsson et al.'s concept of expertise was not based on prerequisite natural abilities, their use of the word expertise fits closely with Gagné's (2000; 2003) use of the word talent as a systematically developed skill. Ericsson et al.'s framework was formulated in light of the unsuccessful search for stable inheritable characteristics that could predict or account for the performances of talented individuals. They argued that expertise was the result of extensive engagement in relevant practices, supervised by teachers and coaches. Furthermore, they purported that individual differences in ultimate performance could be largely accounted for by differential amounts of past and current levels of practice.

As part of their theoretical framework, Ericsson et al. (1993) proposed two important concepts. The first was the notion of deliberate practice and the second became known as the

10 year rule for the development of expertise. They contested that deliberate practice was more than just repetitive rehearsal with a “more of the same” undertone to it and described it as fully concentrating on a special activity to improve performance. The 10 year rule suggested that it would take 10 years of deliberate practice to develop expertise. This notion of 10 years of deliberate practice was based on Ericsson et al’s review of a number of studies into the development of expertise from a wide variety of contexts including: chess (Simon & Chase; 1973); music (Sosniak, 1985); mathematics (Gustin, 1985); tennis (Monsaas, 1985); swimming (Kalinowski, 1985); and long distance running (Wallingford, 1975). These findings, along with their own studies of violinists and pianists, aided the formation of the 10 year rule. However, it should be noted that Ericsson et al. (1993) cited the work of Simon and Chase (1973) in chess to dispel the idea that gifted individuals progressed more quickly in their development of expertise. Perhaps this notion should be tested in other contexts in light of Gagné’s view that gifted individuals do learn more quickly than their less apt peers.

Ericsson et al. (1993) purported that the 10 year rule to the development of expertise was mediated by three major constraints, being resource, motivation and effort. Resource constraints related to the required time and energy as well as access to training materials, facilities and teachers. Motivational constraints were based on the assumption that deliberate practice would neither be pleasant nor immediately rewarding, but necessary to eventually develop expertise. Effort constraints referred to dealing with the demands of deliberate practice while avoiding injury and burnout. These constraints correspond well with Galton’s (1979) work which noted a need for individuals to have adequate power to do a great deal of very laborious work.

Since the original presentation in 1993, Ericsson et al’s 10 year rule and concept of deliberate practice has been well received (i.e. Starkes, 2000) and favourably reviewed (i.e. Durand-Bush & Salmela, 2001). However, concern was raised over Ericsson et al’s (1993) suggestion that deliberate practice would not be enjoyable (e.g. Durand-Bush & Salmela, 2001). In contrast to this notion, Csikszentmihalyi et al. (1993) made the point that teenagers would not develop talent unless they enjoyed working in the talent area. Furthermore, Ericsson et al. (1993) made a distinction between play, which was enjoyable, and deliberate practice, which was necessary, but not enjoyable. This later inspired Côté & Hay (2002) to develop this distinction with their theory of deliberate play.

However, considerably more debate surrounded their environmental deterministic position, which undoubtedly contributed towards the flare up in the nature/nurture controversy

in the late 1990s (e.g. Howe et al., 1998). Ericsson et al. (1993) contested the belief that because expert performance was qualitatively different from normal performance, that expert performers must have been endowed with characteristics qualitatively different from those of normal adults. They believed that many of the characteristics commonly thought to reflect innate talent were actually the result of deliberate practice over 10 years or 10,000 hours. To this end, they cited a number of studies as examples of physical adaptation as a result of exercise and environment (i.e. Salmons & Henriksson, 1981; Williams, 1990; Howald, 1982; Greksa, 1988; Rost, 1987). They went on to suggest that once individuals began deliberate practice it would be virtually impossible to distinguish the role of natural ability from that of acquired skill in their current level of performance.

The notion that anyone can do anything was followed through to its natural conclusion in 1994 by Ericsson and Charness who claimed that the number of hours spent in deliberate practice in a domain would be a significant determinant of the level of expertise attained. This statement was challenged by Singer and Janelle (1999) who stated that practicing for 10 years or more would not guarantee expertise or even near-expertise. Côté, Baker and Abernethy. (2003) supported this stance by proposing that there was more to the development of expertise than just deliberate practice. Further doubt was also cast upon the 10 year rule of deliberate practice by Baker, Coté and Abernethy (2003) who found that expertise in sport could be accomplished with just 4,000 hours of deliberate practice. Singer and Janelle (1999) theorised that such variations within the 10,000 hour rule could be attributed to trainability of skills and adaptation to practice which would be greatly influenced by genetics. However, Ericsson (2003) supported Bloom's (1985) environmentalist position, purporting that all healthy people have the potential to develop expertise. This position was attacked by Detterman et al. (1998), who claimed that the rejection of innate factors is extreme environmentalism.

Although Ericsson et al. (1993) clearly wanted to believe exclusively in environmental determinants, they were perhaps not as naïve as Detterman et al. (1998) suggested. Even though Ericsson et al. (1993) advocated practice over natural ability, they also described individuals who engaged in deliberate practice regularly over months and years as "exceptional" (p. 392) and speculated that several personality factors might differentially predispose individuals towards deliberate practice. Such a strongly contested environmental deterministic position with a subtle acceptance of innate differences would later be echoed in Howe et al's (1998) notion of the 'talent account'. It is possible, that Ericsson et al. (1993) like

Howe et al. (1998) felt that the environmental deterministic position was under represented to the detriment of less talented individuals who strive to develop expertise.

Perceived talent was another notion raised by Ericsson et al (1993), and again by Howe et al. (1998). Ericsson et al's (1993) use of the word talent was in line with Scheinfeld's (1939), who equated it with promise rather than objective evidence of unusual capacity. Ericsson et al. (1993) noted that: "The perception of talent is unquestionably real, and such perceptions motivate parents to provide the time and money to support deliberate practice as well as to encourage their children in a particular domain" (Ericsson et al., 1993, p. 397).

Ericsson et al. (1993) also suggested that perceived talent and the belief of parents and teachers could have motivational and confidence benefits for the individuals concerned. In a study by Parsons, Adler and Kaczala (1982), it was found that children's and adolescents' perceptions of their abilities in mathematics was influenced by parents' beliefs about their abilities, even when past performances and effort were statistically controlled. This was also reported by Bloom (1985) who advocated that there seemed to be at least one central person in the near environment of a promising child who firmly believed that they were special and gifted. Ericsson et al. (1993) also noted that the perception of talent would be relatively immune to disconfirming evidence so long as the gifts were kept general and unspecified.

Perceived talent and the belief in this was not explicitly central to Ericsson et al's (1993) theory. Although deeper discussions concerning the belief in talent could be found elsewhere (e.g. Csikszentmihalyi et al., 1993; Howe et al., 1998; and Côté, 1999), Ericsson et al. speculated as to the importance of such belief along with the social reactions of parents and others in establishing the original motivation for deliberate practice. Ericsson et al. (1993) noted that such information on innate talents during an individual's initial exposure to a domain had not been available and it was still poorly understood why individuals focus their time and energy on deliberate practice. In addition, they also suggested that more careful analysis into the lives of future elite performers would reveal how motivation was promoted and sustained in the development of expertise. This adds further support for the need to understand better how individuals come to commit to a talent field and how they perceive their talent.

1998 saw a major step in the appreciation of talent as a concept over actual endowment in Howe, Davidson and Sloboda's (1998) article entitled "Innate talents: Reality or myth?" which was based on their work with musicians. Although their article discussed innate versus environmental determinants of high level skill acquisition, the underlying strong central concern was the social and educational consequences of using giftedness to account for such accomplishments. They noted that:

A consequence of the belief that innate gifts are a precondition for high achievement is that young people who are not identified as having innate talents in a particular domain are likely to be denied the help and encouragement they would need to attain high levels of competence. (Howe et al., 1998, p. 399).

In the process of arguing their case against using giftedness to account for talent, Howe et al. addressed the issue of defining talent. However, rather than offering their own definition, Howe et al. (1998) assigned five properties to talent for the purpose of their article:

- (1) It originates in genetically transmitted structures and hence is at least partly innate.
 - (2) Its full effects may not be evident at an early stage, but there will be some advance indications, allowing trained people to identify the presence of talent before exceptional levels of mature performance have been demonstrated.
 - (3) These early indications of talent provide a basis for predicting who is likely to excel.
 - (4) Only a minority are talented, for if all children were, there would be no way to predict or explain differential success.
 - Finally, (5) talents are relatively domain-specific.
- (Howe et al., 1998, p. 399-400).

Howe et al. (1998) related talent to natural abilities by describing it as innate talent. Different uses of the word talent and various other terms to describe the end product of a developmental process were also evident throughout the peer commentary that followed the article. This saw theorists from around the world applying their own words to describe talent such as excellence or eminence, which can be seen in the quotes that will follow.

Although there were very few objections to the properties proposed by Howe et al, exception was taken to the idea of advanced indications of talent at an early age. This was raised by Simonton (1998) and Plomin (1998). Simonton noted that: "...talent potential is not a static property but a dynamic transformation. Not only may an untalented child become a

talented teenager, but under certain circumstances a child prodigy may become an adolescent mediocrity” (1998, p. 425).

Supporting Simonton’s claim, Plomin pointed out that the influence of genetics increases with age, from 20% in infancy to 40% in childhood and 60% in adulthood. He stressed that heritability should not be equated with early appearances of gifts. Howe et al. did not contest the point made by Simonton and Plomin in their response. It may appear that these points contest the notion of giftedness as a prerequisite for talent (Gagné, 1993). However, Gagné (2003) acknowledged that giftedness is subject to maturation and that it does not guarantee the development of talent.

Although Howe et al. raised a very valid and important concern related to ‘the talent account’ in high achievement; in doing so, their article ventured into the sensitive controversy of nature versus nurture and stirred up the debate once more (see p. 11). So strong were some of the opinions on this topic that experts in the fields of genetics (Plomin, 1998) and biology (Bates, 1998) responded vehemently to Howe et al.’s arguments. A few theorists also seemed unappreciative of Howe et al.’s concern about the social and educational consequences of the talent label.

Bates (1998) objected strongly to the article, feeling that it suggested that innate individual differences were not part of the talent ensemble. However, despite any undertones to the article detected by Bates, Howe et al. clearly stated that they believed the origins of talent to be genetic. Other supporters of the talent account included Feldman and Katzir (1998), Rowe (1998), Trehub and Schellenberg (1998) and Zohar (1998).

One of the most extreme objections came from Detterman et al. (1998). They attacked the environmental deterministic argument of Howe et al., and that of Ericsson and Charness (1994), accusing them of absurd environmentalism. Howe et al. felt that this response was unjustified, particularly as they had repeatedly insisted on the influence of genetic differences. Freeman (1998) also supported the talent account and was of the opinion that Howe et al. were denying the influence of innate differences.

Arguably, Howe et al. stirred up a hornet’s nest in the way they had touched upon the nature versus nurture controversy. It was suggested by Heller and Ziegler (1998), and Schneider (1998) that Howe et al. had reviewed the literature unfairly, accepting retrospective studies when they supported their argument and discounting them as invalid and unreliable when they did not. Howe et al. admitted that they had been especially critical of some retrospective accounts of child prodigies because the data was also anecdotal.

Csikszentmihalyi (1998) also responded strongly to the article with the assumption that Howe et al. had taken a very environmental deterministic position. He suggested that reopening the nature versus nurture controversy was as useless as flogging a dead horse in the context of talent. He went on to state that claiming environmental causes exclusively for exceptional performance was as misguided as the opposite exclusively genetic explanation.

In contrast, Charness (1998), commended Howe et al. for initiating the debate. Eisenberger (1998) also refuted the amount of weight placed on the 'talent account'. He stated that the emphasis on innate talents underestimated the importance of hard work. Eisenberger gave the example of how some elementary and high school students can be allowed to advance from one grade to the next with the unspoken assumption that they lack the aptitude to do any better and should not be held responsible for their own poor performance. Although this supposes that everyone is capable of the same degree of learning, it does not oppose the proposition that gifted individuals learn more quickly (Gagné, 1993).

In addition to those who shared a similar more environmentally deterministic position, a number of theorists showed a strong appreciation for Howe et al.'s central argument without being drawn into the nature/nurture debate. Baron-Cohen (1998) supported Howe et al.'s work and theory by stating that:

Theirs is not only an eminently balanced position (after all, they do not deny that innate talents may exist), but its implications are altogether far more attractive socially and politically in implying that excellence is in theory accessible to everyone, given the relevant environmental conditions (Baron-Cohen, 1998, p. 408).

Baron-Cohen's views on the argument has particular relevance for practitioners, reflecting the value of promoting optimism in what can be achieved with the development of a good work ethic.

Hatano (1998) also appreciated Howe et al.'s central argument but pointed out disadvantages associated with both the talent account and a learning-related account. Although Hatano shared Howe et al.'s concern with subscribing to the 'talent account', he pointed out that subscribing to the learning-related account meant that failure could easily be blamed on students, educators or parents. If hard work failed to result in achievement, then someone had not worked hard enough, when perhaps such blame would be unfair. Hatano's position was that some individuals are better endowed with relevant aptitudes and the differences were just a matter of degree.

Tesch-Römer (1998) also shared Howe et al.'s scepticism regarding the talent account. Although Tesch-Römer (1998) did not support the idea that high achievements are the result of gifts, he suggested that the belief in aptitude or gifts was very important. He noted that giftedness or the belief in hidden potential might serve to support and give hope to novices in an unknown future. Vitouch (1998) made a similar point. He stated that being "untalented can be a devastating label, but talented can be a stimulating and inspiring one." (p. 429) Tesch-Römer had taken a similar position to Hatano, that attributing successes and failures to talent does have a purpose, even though they did not believe that giftedness ultimately determined success. Tesch-Römer asked "what alternative idea can Howe et al. give to the beginner that is as protective and productive as the belief in talent?" (p. 427). He went on to warn that the rejection of the concept of 'giftedness' would leave a theoretical void that must be filled by a more rational idea that could also serve the same purposes as talent. Howe et al. also acknowledged this as a valid concern. There is a need to explore this concern in sport to ascertain the role of the talent account in the development of sporting talent.

Howe et al. contributed a new dimension to the study of talent. They proposed that talent was being used to explain failure and success with important social and educational implications. Their article generated questions about what such a belief in giftedness or talent could mean to individuals, educators and parents (Tranckle & Cushion, 2004), as well as how that belief could influence their behaviour. Although a significant amount of research has been amassed concerning the identification of talent, Howe et al. (1998) highlighted how little was currently understood about the role played by belief in talent and the need for further exploration. In addition, the peer response to their work also illustrated the problems of the nature/nurture debate for researchers of giftedness and talent. The influence and sensitivities of the debate must be acknowledged in order to advance the understanding of how gifts are discovered and why talents develop.

Côté (1999)

Following on from Howe et al.'s (1998) work concerning the perception of talent, Côté (1999) was able to explore the perceptions of parents while studying the influence of the family in the development of talent. He addressed the need to understand the role of the family and their perceptions of talent by conducting qualitative research with elite sports performers

and their families. From his research, Côté theorised three stages of talent development as the sampling years, the specialising years and the investment years.

Côté purposefully selected four Canadian national level sports performers; two female rowers; a male rower; and a male tennis player. Due to their experience with sport up to national level, it was felt that these four performers and their families would be a rich source of qualitative information to illuminate the influence of the family in talent development (Côté, 1999). Across the four families 15 in depth interviews of the performers, their parents and siblings were conducted. Although Bloom (1985) had also purposefully selected talented performers and interviewed their parents, Côté considered the influence of the whole family, interviewing siblings as well which demonstrated the contribution made by other people in the development of an individual's talent.

Seidman (1998), noted that interviews can be a powerful way to gain insight into the experience of others. Bloom (1985), Walters and Gardner (1986) and Csikszentmihalyi et al. (1993) all gained valuable qualitative information from interviews. Côté's (1999) use of the interview reaffirms the value of this qualitative method for gaining greater insight into the lives of talented individuals (Tranckle & Cushion, 2004).

Côté followed Rubin and Rubin's (1995) guidelines for in depth interviewing by asking a main question, followed by probing questions to deepen understanding of an issue and enhance the richness of the data obtained (Côté, 1999). Follow up questions were used to pursue topics discovered during the interview.

From the interview data, two coders agreed 424 meaning units, which were assembled into 13 dimensions. These dimensions led to the formation of Côté's sampling, specialising and investment years, known as the stages of talent development.

The sampling years generally occurred between the ages of six and 13. The dimensions that formed the basis for this period were: that parents provided opportunities for their children to enjoy sport; all children within the families participated in various extra-curricular activities; parents recognised a gift in their child. Côté and Hay (2002) suggested that children develop basic identities, motivations, values and beliefs about sport during this time. The importance of the early period of sports participation was well made by Kalinowski, (1985), with this summary:

These are crucial years, even more crucial than those that follow, because it is during this period that our subjects became interested and caught up in the sport of swimming. In time that interest became self-motivating. Had there been no

excitement during the early years, and no sense that the young swimmer was very successful; there would never have been a middle or later period (p. 141).

The specialising years were between the ages of 13 and 15 and involved a decrease in various extra-curricular activities and a focus upon one or two specific sports. The dimensions that formed the basis for this period were that performers made commitments to one or two sports; parents emphasised school and sport achievements; parents made financial and time commitments to their child; parents developed a growing interest in their child's sport; and that older siblings acted as a role model of work ethic.

The investment years began around the age of 15. This was when the performer became committed to achieving at elite levels in their chosen sport. The dimensions that formed the basis for this period were that performers increased their commitment to one sport; parents showed great interest in their child's sport; parents helped their child to fight setbacks that hindered training; parents demonstrated different behaviour towards each of their children; younger siblings or twin showed bitterness and jealousy toward their older sibling's achievements. Côté also theorised a fourth stage that could follow on from the investment years, as either a perfection or performance stage, where the performer would maintain and perfect skills.

Côté and Hay (2002) developed the stages of learning by explaining how individuals could disengage from the development of talent to enter the recreational years. This stage was described as regularly participating in a sport without aspiring to reach an elite level of performance.

Furthermore, Côté and Hay (2002) complemented Ericsson et al.'s (1993) theory of deliberate practice by proposing their theory of deliberate play. Although Ericsson et al. proposed that deliberate practice was necessary but not inherently enjoyable, Côté and Hay (2002) contested that deliberate practice would be useless if individuals were not motivated to learn. Therefore, they suggested the concept of deliberate play as something inherently enjoyable to exist alongside deliberate practice as part of the talent development process. Even though deliberate play and deliberate practice are described as opposite ends of a continuum, each stage of learning involves shifting ratios of deliberate play and deliberate practice. Whereas the sampling years are characteristic of a higher ratio of deliberate play, the investment years reflect a higher ratio of deliberate practice. More so, these two complementary theories served to explain more fully the developmental process, as deliberate play would create enjoyment and lead to intrinsic motivation, while deliberate practice would

create the improvements in performance. Within this view, deliberate practice depends upon an element of deliberate play to create the motivation that is required for talent development.

To understand adequately the relevance of Côté's research, it is important to reflect on some of the key pieces of work that preceded and influenced Côté. Primarily, Côté supported the same environmental deterministic position as Ericsson et al. (1993) who spearheaded the work on deliberate practice. Therefore, Côté's work echoed the importance of environmental factors in the development of talent. This preconception was also reflected in the design of the interview guidelines, which focussed attention on the constraints of motivation, effort and resource as noted by Ericsson et al. (1993).

Bloom's (1985) research on developing talent in young people was another important piece of work. Like Côté, Bloom interviewed parents of talented individuals and also formed a theory of three phases of talent development. However, Côté used his interviews with families to create stages of learning that reflect the process of talent development in sport, whereas Bloom's phases were created from interviews with musicians. This was an important contribution to knowledge in sport as it took an accepted theory (i.e. Bloom's phases of learning) and used more appropriate participants to tailor it to the context of sport. Furthermore, Côté's stages are anchored in the theoretical concepts of deliberate play and deliberate practice (Côté & Hay, 2002).

Côté also acknowledged the influence of Hellstedt's (1987; 1995) theories on parental involvement in sport as a continuum from under to over involvement. However, in noting the usefulness of such typologies, he also pointed out that they were not based on in depth analysis of experience and did not include the insights of various family members.

The work of Côté contributed significantly to the understanding of parental involvement in sport. Côté's stages of talent development are now held as a more sports orientated version of Bloom's original and more generic work, being included in various text books (e.g. Brown, 2002) and modern models of talent development (i.e. Abbott & Collins, 2004). Furthermore, Côté also believed that the stages of learning can be used to develop programmes that encourage children to maintain a commitment to sport (Côté & Hay, 2002).

The stages of learning present appropriate guidance for developing talent, but they do not explain how gifts are discovered or why talents develop. However, Côté does show parents to be a rich source of qualitative data that may help to illuminate the understanding of how children find gifts and why they develop their talents.

In 2001 Hyllegard, Radlo and Early undertook further research to test the influence of the talent account following the lively nature/nurture debate sparked by Howe et al. (1998). Whereas Howe et al.'s (1998) theories and subsequent debate had largely surrounded more academic contexts; Hyllegard et al. (2001) brought their notion of the 'talent account' to the field of sport. From questionnaires given to 138 collegiate coaches of divisions I and III of women's volleyball, swimming and tennis teams, they hypothesised that the coaches would attribute sporting expertise (talent) to innate talent (giftedness), rather than practice.

The results unearthed some very interesting findings as to how collegiate coaches explain differences levels of expertise in their performers. It was clear that a very strong consensus and statistical significance was found for innate talent, intrinsic motivation, practice, the ability to absorb coaching (coachability) and motor skills. In fact the first four attributes were ranked within the top four by all of the coaches.

When the coaches indicated that they had indeed valued innate talent over practice in their attribution of talent, Hyllegard et al.'s (2001) concluded that their hypothesis was correct. In keeping with the experimental nature of this research, only the findings directly related to the hypothesis were discussed. Although the importance of motivation has been frequently cited (e.g. Ericsson et al., 1993; Gagné, 2003; Abbott & Collins, 2004) coachability has received insufficient attention or indeed definitions. However, it would seem that the opportunity to appreciate their meaning of coachability was not within the scope of Hyllegard et al.'s research.

Hyllegard et al.'s literature review and interpretations of results proved to be quite revealing and served to highlight the relevance of the nature / nurture debate within the study of talent. Their review of literature focused primarily upon the works of environmental deterministic theorists (i.e. Bloom, 1985; Chambliss, 1989; Ericsson et al., 1993; Schneider, 1993; Krampe & Ericsson, 1996; Charness, 1998; Howe et al., 1998; Lehmann, 1998; Starkes & Helsen, 1998), including only a few from contrary positions (i.e. Detterman et al., 1998; Freeman, 1998; Schneider, 1998) which were all taken from a peer commentary that accompanied the article by Howe et al. (1998).

Furthermore, when discussing the results, Hyllegard et al. (2001) suggested that the coaches were wrong or mistaken to attribute talent to giftedness. "Attributed talent is certainly real, even if innate talents are not (Tesch-Römer, 1998), and since college coaches have little

direct knowledge of the early history of athletes, they may confuse the effects of early learning with assumed talent” (Hyllegard, et al., 2001, p. 203).

It can be argued from these interpretations that Hyllegard et al. were strong supporters of the environmental deterministic position. Their presuppositions and experimental approach to research focused the scope and intention of research upon proving that coaches held a misplaced belief in giftedness. This was surprising given how many theorists (Ulmer, 1987; Mocker, 1987; Régnier et al., 1993; Williams & Reilly, 2000) had recommended paying more attention to the experiences of expert coaches.

Despite these criticisms of their study, Hyllegard et al (2001) were able to find support for their hypothesis and show that the talent account was very much present in the field of sport. They concluded, as Tesch-Römer (1998) had theorised, that the ‘talent account’ had a role to play in maintaining optimism for the gifted and as a socially acceptable rationale for lower achievement among the less apt. However, even though Hyllegard et al. (2001) had shown the existence of the talent account in sport, they did not offer any reasonable alternative, which had been called for by Tesch-Römer (1998).

Hyllegard et al’s (2001) research design highlighted how limiting experimental research can be to gain an understanding of a concept as complex as talent (Kozel, 1996). Their environmental deterministic position was arguably a factor in their interpretation of the results which dismissed the coaches’ value of more natural abilities. Perhaps a more exploratory approach would have reaped more value from the insights of the coaches rather than being content with proving the hypothesis. As indicated by Kozel (1996) and Bartmus et al. (1987), there is a need to pay more attention to how coaches detect talent or individuals with gifts will continue to go undiscovered.

Australian Institute for Sport (2001)

Arguably, the most successful talent detection programme in the western world to date has been the Australian Institute for Sport’s (AIS) ‘Talent Search’. The programme was inspired by Dr Hahn’s successful detection of talent in rowing, which led to the Australian rowers being fast tracked to the 1992 and 1996 Olympics. This was Australia’s first real attempt at what Bompa (1985) called ‘scientific selection’, where individuals were selected for sports, rather than following ‘natural selection’ where they chose their own sport. Bompa (1985) suggested that those who found a sport through scientific selection, progressed far

more quickly than those who self selected naturally because they had qualities matched to the sport. The AIS also noted that natural selection cannot be relied upon to deliver talent to top end sport. To remain internationally competitive, sporting National Governing Bodies (NGBs) actively need to unearth the talent. This seems a reasonable rationale given speculation about the value of discovering gifts (Csikszentmihalyi et al., 1993; and Gagné, 2000) and the quantity of undiscovered gifts in every generation (Bloom, 1985).

Following on from Hahn's success with rowing in 1992, attempts were made by the Australian NGBs of cycling, athletics and canoeing to detect talent in their sports. Although they were quite successful, the individual attempts of numerous different sports was very labour intensive and created a lot of work for the participating schools. This led to the official launch of 'Talent Search' in 1994 as a co-ordinated national effort across sports. The initial goal of Talent Search was to identify and fast track talent for the 2000 Olympic Games, in Sydney. This was a particularly ambitious aim, given that the AIS only had six years to develop expert performers from raw talent. According to Ericsson et al's (1993) theory of deliberate practice, this should take approximately ten years of constructive work to achieve. However, the AIS achieved their goal, which adds some weight to the proposition that the 10 year rule can be reduced with more gifted individuals (Singer & Janelle, 1999).

There were three main phases within the Talent Search programme. In phase one, children between the ages of 14 to 16 were assessed on a battery of physical tests which were conducted in schools, usually by PE teachers, with the guidance of state Talent Search Co-ordinators. Phase one results were compared to the national database. Those students within the top 2% were invited to take part in the second phase, which involved sport specific assessments. Although there was no justification for a 2% cut off, it is consistent with Gagné's (1993; 2000) definition of giftedness (see p. 9), which described those selected for phase two as 'moderately gifted'. Following the results of phase two, those identified with talent for a specific sport were invited to join a talented athlete programme in phase 3, organised by the State and/or the NGB for that sport.

Throughout talent search, the AIS used the word talent to describe both raw abilities and systematically developed skills. As described earlier (see p. 18), the use of one word to describe two distinctly different concepts can be confusing and ultimately problematic if all involved do not share a common understanding of the term.

Nevertheless, Talent Search has become recognised as an international leader in the area of talent identification. The programme also provided support for similar efforts in Malaysia,

the Philippines, Indonesia, Singapore, New Zealand, Mexico, South Africa, Northern Ireland, Canada and the United Kingdom. The National Talent Search Co-ordinator, Gulbin (2001) advised other NGBs to consider the development process before identifying talented individuals.

Since Talent Search's initial work, the programme now operates outside of the Olympic Athlete Programme, which allows for the inclusion of a wider range of sports, not only those represented at Olympic Games. In addition, the age of participants now ranges from age 11 to 20, acknowledging that some sports require more mature individuals for talent development.

Like Régnier et al. (1993), the AIS realised that the multidimensional nature of sport required a multidisciplinary approach to identify potential performers. The initial tests that provided the basis for selection were physical and psychological. Régnier, et al. (1993), raised concern about such talent detection methods suggesting that they could become an invasion of privacy. In addition, they felt that scientific selection involved a loss of choice as the tests determined whether or not an individual was given the chance to participate. However, the AIS purported that Talent Search was all about opportunity and choice. In support of the AIS' view, it should be noted that Bompa (1985) had made the point that the results of scientific selection do not prevent an individual from participating in sport via natural selection.

In Talent Search, after the initial tests, some psychological assessments were included. Although it could be argued that the physical tests were more objective, the psychological assessments were more subjective. One attribute which attracted special interest was 'persistence. Persistence was assessed subjectively by coaches, who looked for 'natural fight or spirit' in an individual. This suggests that the AIS appreciate the value of coach assessments in talent identification (Kozel, 1996). Ericsson et al. (1993) had also noted that individuals needed qualities, such as persistence, in order to endure the amount of deliberate practice, which they theorised as necessary to develop high levels of expertise.

The AIS recognised the importance of considering innate factors in selection. This was evident from their policy of testing and profiling the siblings of elite athletes, assuming favourable genes and a supportive family environment. In addition, the AIS worked with the department of Molecular and Clinical Genetics at the Royal Prince Alfred Hospital in Sydney. Although they admitted that blood tests would not replace traditional physical tests, they remained optimistic that genetics helped to predict natural sporting abilities. Even though Régnier et al's (1993) review of literature made the possibility of predicting future

performance look bleak, research into genetics continues to make significant contributions (such as those reported by Malina, 1986; Plomin and McClearn, 1993).

The AIS (2001) also described the benefits of Talent Search for the individuals involved:

The Talent Search Programme is about empowering talented individuals with the knowledge about their physical and physiological potential. In a metaphoric sense, the door which leads to sporting excellence can (for those who can access it) shut very quickly. That is, those who are fortunate enough to have the 'key' to the door either never get to use it, or they use it at the wrong time. (AIS, 2001).

For the AIS, Talent Search is about showing individuals where their potential lies and giving them the opportunity to strive towards excellence in a domain where they have every chance of achieving. Csikszentmihalyi et al (1993) noted that failing to engage one's talents could lead to regret that could poison the rest of life. Talent Search seems to make every effort to ensure that this does not happen.

Talent Search has proven to be a successful talent detection programme which addresses the problem of missing human potential in sport. However, because Talent Search is an example of best practice rather than research, it contributes little to the understanding of how the individuals experienced the discovery of their gifts and why they chose to develop their talents. What is particularly interesting is how the discovery of gifts through Talent Search led to a commitment to talent development. This raises the possibility that the questions of how gifts are discovered and why talents develop are closely linked. A more in depth exploration with gifted individuals as to how these processes were experienced may reveal what it meant for them to discover they had a gift and why they then dedicated themselves to its development.

Brown (2002)

In 2002, Brown wrote 'Sports Talent', which is currently the only book to appear on talent within a purely sports related environment. Brown's (2002) work was intended as a resource for coaches and talent scouts by sharing the views of these top-level coaches.

There were two main lessons to be learnt from Brown's book. The first relates to terminology. Brown recognised that talent was an extremely complex concept and that terminological ambiguity was a problem. In the first chapter, Brown discussed the difficulties of defining talent and highlighted some of the vaguer dictionary definitions to illustrate the

ambiguity that exists. However, he did not establish adequately what he or the coaches he interviewed meant by the word talent. It was surprising that Brown had not included the definitions of relevant theorists (e.g. Csikszentmihalyi et al., 1993; Gagné, 2000) who could have offered a far more concise definition than that of the dictionaries. This highlights the need for clearly defined terms when discussing giftedness and talent in sport.

The second lesson relates to Brown's approach. As advocated by a number of theorists (Ulmer, 1987; Mocker, 1987; Régnier et al., 1993; Williams & Reilly, 2000) Brown took an interest in the experiences of top-level coaches and explored their knowledge through interviews. Although the data did not contribute towards the understanding of how gifts are discovered and why talent develops, it did highlight some of the training methods employed by the coaches. The work of Brown refreshes the notion of a focus upon the experiences of knowledgeable coaches to explore giftedness and talent in sport.

Abbott & Collins (2004)

Fuelled by dissatisfaction with current practices, Abbott and Collins (2004; 2002) suggested that talent identification processes exclude many talented children as well as prematurely selecting individuals who would fail to develop talent. They argued that one off measures fail to acknowledge the dynamic nature of physical maturity and the influence of previous experience. Taking a similar stance to Régnier et al. (1993) in their criticism of unidimensional models, Abbott and Collins made a case for recognising the multidimensional and dynamic nature of talent. This is similar to Kozel's (1996) view that talent is complicated in structure.

At the heart of Abbott and Collins' (2004) argument against unidimensional models was what Bartmus et al. (1987) described as the compensation phenomenon. The notion that one component could compensate for another would surely negate the effectiveness of unidimensional models. More explicitly, if two talented individuals in the same field could be comprised of different component gifts (as Gagné, 1993 suggested) then the risk of using unidimensional models in selecting false positives and deselecting false negatives becomes very real.

Based on previous research (Orlick, Hansen, Reed & O'Hara, 1979; Gould, Eklund & Jackson 1992), Abbott and Collins (2004) believed that psychological skills are the most prevalent discriminator of the more successful of elite performers. Specifically they made the

bold but arguable statement that “the motivation to commit to high training loads over an extended period is a (if not the) crucial determining factor in acquiring and maintaining expertise” (p.399). Certainly such a position aligns with Ericsson et al.’s (1993) theory of deliberate practice and the need to mediate motivational constraints.

Abbott and Collins (2004) appeared to take a more environmental deterministic position within the nature/nurture debate. Their emphasis upon trainable psychological skills and de-emphasis of physical factors in talent identification reflects their faith in environmental determinism. They also suggested that a child’s own interests are excellent indicators of where they might achieve because of the need for motivation in talent development. Abbott and Collins (2004) stated that “for individuals to achieve their full potential, they must possess and exhibit the motivational and learning strategies to interact effectively with the developmental opportunities offered by the environment (p. 399).”

In an attempt to combine the processes of talent identification and development because of the dynamic and multidimensional nature of talent, Abbott and Collins (2004) proposed their own conceptual model (see figure 2). Their model portrayed the shifting emphasis on transferable, sport specific and psycho-behavioural elements which they saw as the determinants of potential and eventually performance. They used Côté’s (1999) stages of learning to give temporality to the model, augmenting their idea of how these elements shift their emphasis.

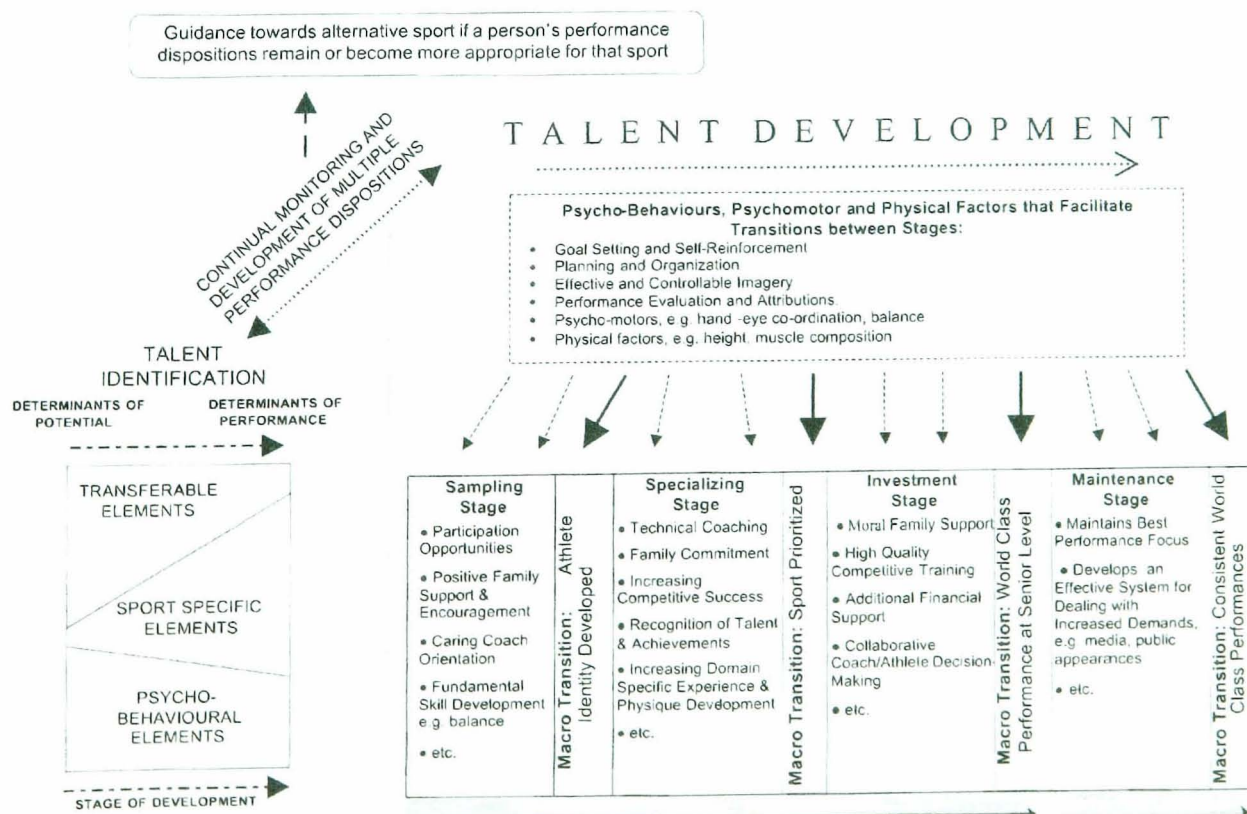


Fig. 2. The role of psycho-behaviours in facilitating the successful negotiation of developmental transitions within a multidimensional and dynamic concept of talent

Figure 2. Abbott & Collins’ Multidimensional and Dynamic Concept of Talent (2004).

Abbott and Collin's (2004) model bears some similarities to Gagné's DMGT in so much as a developmental process being affected by psycho-behavioural, psychomotor and physical factors. However, unlike Gagné's (2000; 1993; 1985) model, Abbott and Collins (2004) do not show the influence of environmental factors, which they themselves acknowledge as crucial but limited resources.

Arguably, Abbott and Collins (2004) have developed the most comprehensive model of talent development in sport thus far. Whether their views gain support or whether their model becomes more widely accepted remains to be seen. Although Côté's (1999) stages of learning, which have been incorporated within the model, were empirically based, the rest of Abbott & Collins' model remains theoretical. Like so many contributions in this field of research, valuable pieces of work are often missed. Although Abbott and Collins' (2004; 2000) cite Durand-Bush and Salmela's (2001) and Régnier et al.'s (1993) very inclusive literature reviews, Gagné's work was either missed or excluded, while other educational theorists were not (i.e. Freeman, 2000). Perhaps if Gagné's work had been included Abbott and Collins would have been able to offer a clear and concise definition of talent, making a clear distinction between what they eventually term potential and performance.

To their credit, Abbott and Collins (2004) recognised that sport is facing a problem where talent is being wasted. However, instead of addressing the question of how gifts are discovered and why talents develop, they focused upon the already well developed question of how talents develop (e.g. Côté, 1999; Ericsson et al. 1993), which does not address the problem. This strengthens the case for greater conceptual clarity and clear definitions within the study of giftedness and talent in order to perceive problems more clearly and formulate constructive questions.

Current Knowledge & Understanding

An Explanation of Talent

The previous section demonstrated that research within giftedness and talent does not always show an sufficient awareness of previous work within a field (e.g. Brown, 2002) and across fields (e.g. Régnier et al., 1993). This has resulted in strands of knowledge developing in isolation from one another (e.g. Gagné, 2000; Abbott & Collins, 2004). Therefore, it is

important to pull together the sources that exist across fields to establish a working base from which to advance knowledge and understanding of giftedness and talent in sport. Although this involves the reiteration of some previously made points, it is crucial to form a clear view from the summit of our knowledge base before daring to advance any further.

In previous research, different and often imprecise definitions have caused considerable confusion and have contributed to the poor progression and continuity which exists concerning the explanation of talent. To avoid terminological laxity (Gagné, 1996) and establish clarity, Gagné's (2000) definitions have been adopted throughout this study because they clearly distinguish between raw materials and systematically developed skills. Furthermore, his definitions also establish a threshold and levels of prevalence within giftedness and talent. Gagné (1993) also omitted any reference to specific characteristics to ensure that his definitions were as applicable to sport as they were to education.

Although Gagné's definitions are very clear and precise, the social dimensions of giftedness and talent are real and cannot be ignored. Due to the particular demands of different sports, considerable variance and contrast can be noticed in their notion of desirable attributes. Different sports or subcultures (Donnelly & Young, 1988) construct their own notions of which favourable attributes can be regarded as gifts. However, these gifts do not exist in a vacuum. In reality, they are relative to a given context, labelled as talent only when valued and approved by the subculture and wider society within which they exist. Considering the relative nature of talent, it would seem that social construction is crucial for defining talent (Tranckle & Cushion, 2004). Therefore, according to Csikszentmihalyi et al. (1993) talent can only exist within a subculture or society within which it is valued.

Although Gagné (1993) opposed the use of such value systems within definitions of giftedness and talent, the field of sport requires a degree of social context. Without the social context, giftedness and talent would go unrecognised. Indeed, Gagné (1993) did not disagree that context is important as gifts and talents are defined by context e.g. gifted at what? talented in what? It was the specific details of context within a definition that Gagné objected to.

In this study Gagné's (2000) work is accepted as providing the most concise definitions. Notwithstanding this position, Csikszentmihalyi et al.'s (1993) notion of social construction and Howe et al.'s (1998) features of talent are also upheld to give further augmentation to Gagné's definitions. However, in adhering to Gagné's definitions it must be accepted that in the absence of universally agreed terminology the sporting community subscribes to various other definitions.

From this clear distinction between gifts and talents, the value of discovering gifts with which to form talents comes sharply into focus. From the literature reviewed thus far it can be seen that the discovery of gifts and commitment to develop talent are not clearly understood. Therefore, the sum of knowledge regarding this area is presented here to form a comprehensive picture of current understanding.

Discovering Gifts

Aptitudes or gifts can be evident in sport at various levels of performance and at different levels of participation, from non-participant to elite performer. As already discussed, different terms have arisen to refer to the interest in these aptitudes or gifts at various stages (see p. 8). Bearing in mind that the sport domain rarely differentiates between gifts and talents, two of the most commonly used terms in the literature are talent identification and talent development.

Talent identification, and sometimes talent detection, has been used to describe when the early indications of talent, such as aptitudes or giftedness are assessed. These terms have largely been used interchangeably to describe the recruitment of gifted people into sport, as well as the identification of gifted people already within a sport. For example, talent identification was used to describe the recognition of gifts in current participants in a number of studies (Williams & Reilly, 2000; Malina, 1997; Kozel, 1996; Prescott 1996). However, further muddying the waters, the recognition of giftedness in current participants has also been described as talent detection (Régner et al., 1993; Bompa, 1985). While Harre (1982) described the recruitment of gifted people into sport as talent detection, talent identification was also used in reference to recruitment of school-aged children by the AIS (2001). Although the AIS used talent identification as an all-encompassing umbrella term, it also used the term talent search to describe the title of its recruitment programme.

The literature has begun to recognise the lack of clarity surrounding the term talent, and in an article about talent identification and development in soccer, Williams and Reilly (2000) attempted to define and make a clear distinction between talent detection, talent identification and talent development, amongst other terms. They described talent detection as “the discovery of potential performers who are currently not involved in the sport in question” (p. 658). Similarly, Hohmann and Seidel (2003) also described talent detection as the detection of talented children based on their initial performances before sport specific training. Linking

these definitions to Gagné's work it can be seen that talent detection is clearly concerned with how gifts are discovered, leading to recruitment based on such gifts.

Williams and Reilly (2000) further clarified their terms by focusing talent identification to mean "the process of recognising current participants with the potential to become elite players" (p. 658). Their work is particularly useful in this case because they made a clear distinction between two methods in which gifts are discovered, giving a more focused meaning to the terms talent detection and identification. Thus, the talent identification process is often the start of talent development, which Williams and Reilly (2000) described as "where performers are provided with a suitable learning environment so that they have the opportunity to realise their potential." (p. 658).

A feature of all three definitions is the particular use of the word 'potential'. This may have been a conscious effort on the part of Williams and Reilly to ensure that their readers would not confuse initial attributes that have not yet been developed, with the reflection of talents in expert performance. In light of Gagné's (1985) distinction between gifts and talents, Williams and Reilly (2000) were still using the terms talent detection, identification and development consistently. The common aim running through all three stages is to produce talented performers (as in Gagné's 2000 definition of talented). Therefore, talent detection, identification and development as defined by Williams and Reilly (2000) aim to detect, identify and develop 'future' talent.

The notion of talent detection has a number of motives, however, the strongest is arguably politically driven. As stated earlier (see p. 1), there is an active need to unearth talent in order for nations to remain internationally competitive (AIS, 2001). In addition, Bompa (1985) suggested that talent detection is beneficial for the individual, as they should achieve more quickly, have a higher chance of reaching international level and should feel more confident because they were chosen for their suitability for the task in question.

How individuals find a domain to express their aptitudes or gifts is of central importance to those who value talent detection (Bompa, 1985; AIS, 2001). Gagné's (2000) model suggested that people hold aptitudes at various levels in intellectual, creative, socio-affective and sensorimotor domains. These aptitudes or gifts, if extraordinary, usually show up as accelerated learning in different tasks (Gagné, 1993). A useful insight when considering the identification of gifted individuals (Tranckle & Cushion, 2004).

As previously noted (see p. 48), the AIS makes use of talent detection through their Talent Search programme which actively assesses and attempts to recruit children from

schools across Australia. Although the AIS maintain that Talent Search is about choice, the very nature of scientific selection means that individuals have their choices narrowed and consequently their opportunities extended within the fields of expertise to which they appear suited.

Scientific selection as a method is used in an effort to predict future success on the basis of prepubescent and adolescent performance data (Hohmann & Seidel, 2003). This paradigm is based on the assumption that underlying factors pre-requisite for sporting excellence exist, and as such researchers have tried to uncover the structures, abilities and traits that might explain performance (Régnier et al., 1993). However, after the 1980s, talent detection models that tried to inform scientific selection began to lose favour in the academic community due to a number of criticisms and concerns (see p. 13).

The validity and usefulness of talent detection models has become highly questionable. Indeed, research suggests that aptitude or giftedness cannot be used to predict future levels of performance (Bartmus et al., 1987; Bloom, 1985). Moreover, it has been argued that scientifically valid detection methods do not exist and that the coaches' judgement remains the best solution for detecting or identifying potential talent (Kozel, 1996; Mockler, 1987; Ulmer, 1987). It is also worth noting that some evidence has been advanced to substantiate the ability of expert observers to detect giftedness (Thomas & Thomas, 1999). In addition to scientific criticism, concerns have also been raised over the ethics of such talent selection. For example, Régnier et al. (1993) raised concern over what they described as 'talent elimination', suggesting that talent selection efforts could eliminate, or discourage, individuals from participating. This concern was also raised by Malina (1997) who indicated that talent selection programmes have problems related to decision making, exclusion, economic discrimination, and discrimination along maturation lines. In addition, Howe et al. (1998) suggested that young people who were not identified as talented were likely to be denied the help and encouragement they would need to attain high levels of competence.

Despite these concerns, scientific selection programmes like Talent Search remain an idealistic convention of interested and well-resourced societies. However, this is not to underestimate the power of individuals. For example, informed recommendations have been made by experienced teachers that have helped individuals to find a field of expertise. Indeed, there are examples of teachers who have intervened in choices or inspired students to try something new because they thought they would find something meaningful (Csikszentmihalyi et al., 1993). Bloom (1985) also stressed the importance of teachers in the

early years of talent development. Although teacher recommendations were not as structured as a national talent detection programme (e.g. Talent Search), they could be far more informed than natural selection.

Bompa (1985) described natural selection as an individual taking part in a sport as a result of local influence, such as school tradition, parents' wishes or peers. Parental influence in natural selection was also found by Côté (1999) who noted that parents were responsible for getting their children involved in sport. Furthermore, Donnelly and Young (1988) theorised that individuals formed preconceptions, often stereotypically about a sport subculture, usually through peers, family or media. If these preconceptions were appealing, they would serve to prepare the individual for the subculture in perhaps a rather naive way, that Donnelly and Young (1988) called pre-socialisation. Whether children found a field of expertise themselves or through their parents, they would probably have been influenced by pre-socialisation. Due to the public image of various sports in the media, pre-socialisation plays an important role in natural selection for sport.

Although talent detection programmes and pre-socialisation offer interesting insight, they do not directly offer an explanation as to why individuals commit to a talent field. Csikszentmihalyi et al. (1993) proposed that gifted individuals were more prone to 'flow' and that such autotelic experiences could motivate an individual to replicate the experience again and again. In addition, Côté (1999) pointed out that "the main reason that adolescents choose to specialise in one activity over others resides in the positive value associated with the experience" (p. 404). Moreover, Côté (1999) also noted the importance of critical incidents in the decision to pursue an activity, such incidents being positive experiences with a coach, encouragement from an older sibling or friends, or simply enjoying the activity.

The notion of critical incidents leading to individuals in various domains committing to a talent field bears some resemblance to Walters and Gardner's (1986) crystallising experiences. Crystallising experiences have yet to be identified or researched in sport, however, it has been theorised that autotelic experiences in sport, such as flow can have personal meaning for individuals that are almost as profound. Walters and Gardner (1986) noted that, unlike flow, crystallising experiences are not always fully appreciated at the time, their impact only being assessed retrospectively. There are two types of crystallising experience, referred to as initial and refining (Walters & Gardner, 1986). Initial crystallising experiences are those that might occur early in life, connecting an individual to a general domain of giftedness, such as sensorimotor. Later, in the development process, a refining crystallizing experience might

draw an individual to a particular talent field. An example of a refining experience might be an individual, developing their sensorimotor gifts, who finds a particular talent field such as football, to express fully their gifts and develop talent. Crystallising experiences in the light of Gagné's (2000) DMGT could facilitate a clearer understanding of the different roles of initial and refining experiences related in particular to identifying gifts.

Despite the discovery of giftedness, talent will not necessarily evolve (Gagné, 2003). Just because an individual possesses favourable attributes does not guarantee their future as a talented performer. Even with giftedness a myriad of favourable intrapersonal qualities and environmental factors must manifest at the right time to facilitate the development of talent (Gagné, 2003). It is for this reason that the journey necessary to transform gifts into talent has been described as multidimensional (Abbott & Collins, 2004).

The multidimensional nature of talent development was recognised by Gagné (1985) and reflected in his DMGT (2000). As a crude explanation, the natural abilities can be thought of as the raw material, with environmental catalysts as the opportunity, intrapersonal catalysts as the application and the learning process as the development. The interaction of these components illustrates how giftedness alone cannot predict talent.

The current knowledge needs to be organised in order to view the multidimensional process of talent development holistically to assess what is known and what has yet to be explored. Gagné's DMGT is arguably the most suitable model through which to see how current research stands within this framework for the following reasons. The DMGT clearly distinguishes between the concepts of giftedness and talent; captures the multidimensional nature of talent development; and has a contributive, rather than deterministic view of talent development. Furthermore, the DMGT is a theoretical model which would be further augmented if supported by empirical research. What follows is an examination of the DMGT with reference to current research, specifically as it relates to Gagné's development process, intrapersonal catalysts, environmental catalysts and the influence of chance.

The Developmental Process

The developmental process is how the transformation of gifts into talent is recognised. Gagné (2003) suggested that this process can take four different forms: maturation; informal learning; formal non-institutional learning; and formal institutional learning. This theory can

be further augmented by reflecting upon the empirically based work of Bloom (1985), Côté (1999) and Ericsson et al. (1993).

Within the understanding of the developmental process, Côté (1999) and Bloom's (1985) works serve to paint a more complete picture of how seemingly simple demonstrations of aptitude can be nurtured into remarkable talents. Furthermore, Ericsson et al. (1993) added a temporal dimension to the development of talent with their 10 year or 10,000 hour rule for the development of expertise. Gagné (2003) noted that Ericsson et al.'s notion of expertise largely overlaps his own concept of talent.

As Bloom's phases of learning were based on the development of musical talent Côté (1999) refined them, making them more sport specific to create his own 'stages of learning'. A particular feature of Côté's (1999) stages was the recognition that the development of expertise or talent in sports usually occurs before the age of 18. This led to Côté's (1999) stages all but superseding Bloom's phases within the understanding of talent development in sport. The popularity of Côté's stages of learning is evident from its prevalence in the literature (Starkes & Ericsson, 2003) and the more recent conceptual model of Abbott & Collins (2004).

Côté's (1999) stages of learning described how gifted individuals move through the sampling, specialising, investment and maintenance years in their quest to develop and maintain talent. Building on the milestone work of Bloom (1985), Côté (1999) distinguished the stages of learning by describing their characteristics as well as estimating the ages at which they might occur. However, Beamer, Côté and Ericsson (1998) recognised that talent development occurs at different times depending on the demands of the sport. Where sports that recruit performers from an early age are concerned (e.g. gymnastics), the occurrence of the sampling and specialising years were also evident, but for a shorter duration. It was found that even in sports involving younger performers, there was a minimum of three years spent in the sampling years and one year in the specialising years (Beamer, et al., 1998).

The ethos of the sampling years was in line with research into children's motives for participation (Gill, Gross, & Huddleston, 1983; Gould & Petlichkoff, 1988) and the early involvement of elite sports performers (Bloom, 1985; Carlson, 1988, 1997; Stevenson, 1990; and Csikszentmihalyi, et al., 1993). The sampling years typically took place between the ages of 6 and 13 years of age. During this time, children experienced fun and excitement through a range of extracurricular activities. Carlson (1988, 1997) noted that a general all round engagement in sport was more important than specialising before adolescence.

Côté and Hay (2002) described the child's active participation during the sampling years as deliberate play, which they noted as being voluntary, pleasurable, providing immediate gratification and developing intrinsic motivation. This emphasis on deliberate play was also noted by Beamer et al. (1998) who characterised the sampling years as involving a lower frequency of deliberate practice and a higher frequency of deliberate play. In light of Gagné's (2000) model the sampling years mediate between the domains of aptitude and the development process, with Côté's (1999) description of the sampling years demonstrating how children exercise their aptitude in various fields. Côté's sampling years also provide a deeper insight into Gagné's (2003) notion about development through maturation and informal learning.

After the sampling years, children tend to narrow the focus of their involvement during the specialising years (Côté, 1999). This stage usually occurs between the ages of 13 and 15 (Côté, 1999) at the early stages of Gagné's developmental process, demonstrating informal and formal learning through practice (Gagné, 2000). Although fun and excitement remain as central elements in the children's participation, growing importance is placed on sport specific skill development. Côté (1999) suggested a need to balance practice and play activities to ensure that the experience remains positive and challenging during this stage. Beamer et al. (1998) also made this point by noting that the specialising years could be characterised by a more equal distribution of deliberate practice and deliberate play.

At the conclusion of the specialising years, involvement in sport narrows to focus on a single sport, in which an individual will become committed to achieving elite levels of performance. This decision typically occurs about the age of 15 years in most sports, which begins the investment years. Within Gagné's model, the investment years would be characteristic of the later stages of the developmental process, leading to systematically developed skills. As such during this time, there would be more importance placed on strategic, competitive and skill development aspects of sport, along with an extremely intense commitment and tremendous amounts of practice (Côté 1999).

Another feature of Côté and Hay's (2002) work was how they accounted for choices during the development of talent. At each stage, they suggested that individuals could choose to continue through the stages, drop out of sport or enter what they called the recreational years (figure. 3). The recreational years were characterised as participation for leisure rather than for the development of talent, with all the sacrifices and dedication that that involves. In relation to Gagné's model, moving into the recreational years would be the achievement of

their level of expertise instead of choosing to continue the developmental process in pursuit of talent. Côté and Hay's (2002) work also included a stage after the investment years, described as the maintenance years, which involve the perfection and maintenance of talent, developed during the investment years. The maintenance years would be associated with the furthest end of Gagné's developmental processes, when expertise had been achieved and talent expressed through systematically developed skills.

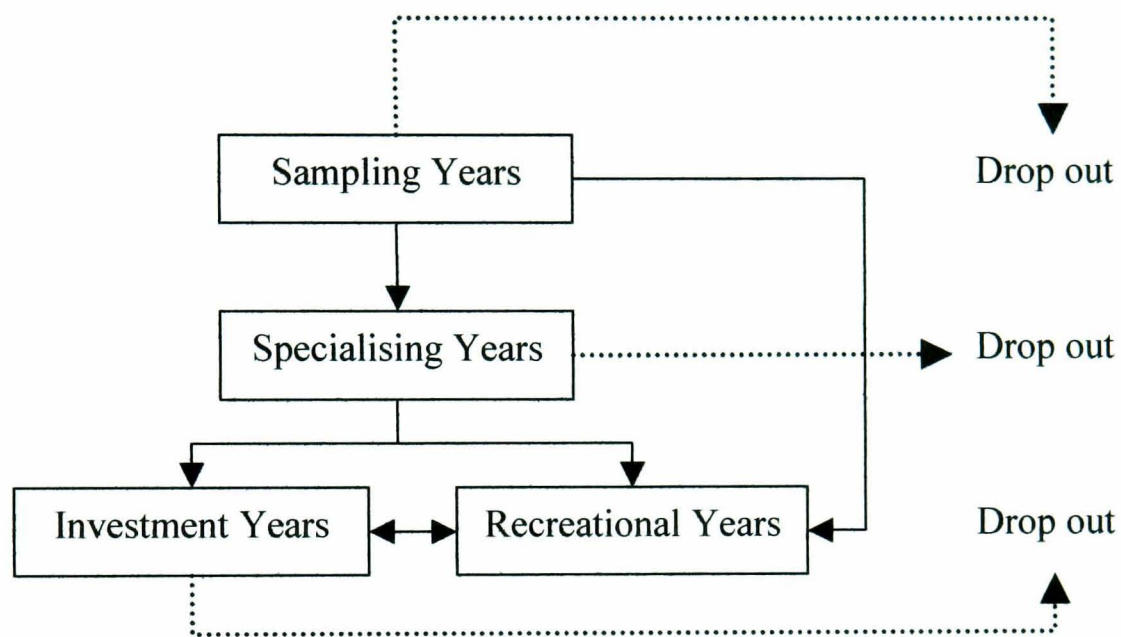


Figure 3. Côté and Hay's Stages of Sport Participation from Early Childhood to Late Adolescence (2002).

Intrapersonal and Environmental Catalysts

Intrapersonal and environmental catalysts constantly affect the developmental process. As Gagné (2003) explained, these catalysts can be examined with regard to their direction (i.e. positive or negative influence) and strength of casual impact.

Intrapersonal Catalysts

Gagné (2003) subdivided intrapersonal catalysts into physical and psychological factors, all under the partial influence of genetics. The relevance of both physical and psychological intrapersonal catalysts are akin to Ericsson et al.'s (1993) theory that motivational and effort constraints must be overcome to achieve expertise (see p. 37).

The physical factors relate to characteristics, handicaps and health. Indeed, Gagné (2003) noted that dance schools and sports with defined physical templates often base selection on

physical parameters. Certainly physical parameters formed a crucial first part of the AIS' (2001) Talent Search Programme.

The psychological factors of motivation, volition, self-management and personality interrelate considerably, particularly where the first three factors are concerned. The broader use of the term motivation would probably encompass the first three factors, but Gagné drew on the work of Kuhl & Beckmann (1985) to form a distinction between motivation and volition to show how motivation relates to interests, needs, and intrinsic and extrinsic motives while volition relates to effort and persistence. It could be argued that motivation and volition serve to activate, direct and maintain behaviour. Abbott and Collins (2004) also noted that motivation is a (if not the) crucial determining factor in developing and maintaining talent. Furthermore, self management and psychological characteristics such as goal setting, realistic performance evaluation, imagery and commitment have been found to differentiate between medal and non-medal winners (Orlick et al., 1979; Gould et al., 1992; Gagné, Neveu, Simard & St.Péré, 1996; Gagné, 1999).

Although the notion of personality as a predictor of talent was a popular topic for research between the 1950s and 1970s (Auweele, Nys, Rzewnicki & Van Mele, 2001), this body of research was inconclusive (Abbott & Collins, 2004). However, the casual and contributive impact on personality can still be argued, even if it has not proven to be a determining factor. Gagné (1993) also recognised this point; he maintained personality within the intrapersonal catalysts (Gagné, 2000; 2003) as a factor that may still affect the developmental process, either positively or negatively however subtly. Bearing in mind that intrapersonal catalysts can also interact directly with the environment (Gagné, 2003), the possibility exists that the personalities of the coach and gifted individual might be significant, as eluded to by Lyle (2002).

Environmental Catalysts

Given the contributions of Csikszentmihalyi et al. (1993) it should be recognised that the developmental process does not take place within a vacuum. This is why the DMGT has been favoured for use as a framework over Abbott and Collins' (2004) excellent model because Gagné showed the influence of environmental catalysts. Within the environmental catalysts, Gagné (1993) noted that milieu, persons, provisions and events can act upon the developmental process. Milieu refers to the macroscopic factors of geography and sociology

and microscopic factors of family size and socioeconomic status. This overlaps to some extent with provisions, which relate to the various programmes or services that might be available to develop talent in various fields. Certainly these factors would influence what talent fields were available for gifted individuals to pursue.

Arguably, in this case, one of the most crucial environmental catalysts is the role played by the teacher or coach (Bloom, 1985; Walters & Gardner, 1986; Csikszentmihalyi et al., 1993). In Bloom's (1985) phases of learning, the role of the teacher was shown to change through the phases. Initially, teachers were very motivating, almost inspirational (Csikszentmihalyi et al., 1993), but throughout the phases of learning, they became more business like, working only with outstanding individuals and demanding great perfection (Bloom, 1985). Bloom went on to suggest that it would be very rare for the same teacher to progress an individual through all three phases because of the different requirements at each stage of talent development.

In addition to the influence of teachers and coaches during the developmental process, Côté (1999) noted that a greater influence during childhood came from the family. Although Bloom (1985) provided a parental perspective in his study of talent development, more recent work (e.g. Côté, 1999) has looked at the influence of the family as a whole, including siblings.

Furthermore, a number of important intrapersonal catalysts (Gagné, 2000) that affect the developmental process are cultivated within the family environment. For example, parents of committed individuals across a range of domains have been found to promote values related to the importance of achievement, hard work, success, persistence and being active (Csikszentmihalyi et al., 1993; Monsaas, 1985; Sloboda & Howe, 1991; Sloan, 1985; Sosniak, 1985). Côté (1999) also found that older siblings could have an important part to play in the development of the work ethic through their own behaviour as role models.

The appropriate level of parental involvement in sport was theorised by Hellstedt (1987) as a continuum from under involvement to over involvement. However, Côté (1999) gave a more dynamic view of parental involvement by describing the shifting roles through the sampling, specialising and investment years of talent development.

In the sampling years, parents were primarily responsible for getting their children involved in sports. Bloom (1985) suggested that any initial rapid progress would be due to the teacher's and parental approach. However, Côté (1999) found that a number of the parents noticed a specialness or gift about their child. Whether the children in Côté's (1999) study were indeed gifted or not, their parents' belief in such a gift related to Howe et al.'s (1998)

notion of a talent account. Such a belief could serve to motivate and influence the behaviour of the parents towards the development of their child's gift.

In the specialising years, the child's interest in the sport grew and the parents' involvement increased. However, the parents followed and facilitated their children's involvement in sport, rather than leading or directing (Côté, 1999). Parents also made sacrifices to ensure sufficient financial resources were available to enable their child to focus on achieving both at school and in their sport (Côté, 1999). As part-time work by the child was seen as an added pressure that would interfere with both educational and sporting achievement, parents continued to be a complete source of finance for their children during the specialising years. Côté and Hay (2002) also pointed out that socioeconomic status does not seem to be a determining factor in parental support as interested parents will find the resources somehow to continue supporting their child. A further feature of this period, noted by Bloom (1985) was that children became less dependent on encouragement and support from the family, as they looked more towards evidence of their progress from results and teacher approval.

In the investment years, the role of the parents did not change as markedly as between the sampling and specialising years. Parents continued to facilitate their children's involvement in sport and to meet the considerable time and financial demands, despite repercussions on family life (Côté, 1999). However, parents at this stage were now required to provide more emotional support in times of stress and anxiety (Côté, 1999) and to mediate the hardships that could be associated with long periods of deliberate practice (Ericsson et al., 1993).

Although parents had less technical input into the sport during the later stages of talent development, they were still responsible for mediating the affect on the individual's life in general. Csikszentmihalyi et al. (1993) noted that talented individuals in sport have a much bleaker future than their more academic peers due to their limited sporting career and job opportunities thereafter. This was why parents served an important role in providing advice to their children regarding their future in sport (Côté, 1999).

The final environmental catalyst and perhaps the one most influenced by chance was called 'events'. By this Gagné (1993), refers to winning competitions, suffering bereavements, illness or accidents, getting married or any event that might facilitate, hinder or even permanently derail the pursuit of talent. Although significant events have been examined

within the discovery of giftedness (Walters & Gardner, 1986), their significance upon the development of talent is perhaps more a matter of common sense than empirical research.

Chance

As the environmental catalysts are akin to the notion of opportunity, the various factors can be viewed with a sense of luck. Indeed, although Gagné (1985) had originally placed chance within the environmental catalysts he later showed it as a separate entity and emphasised it as the most prominent component of the DMGT because of its influence throughout the components of the model. From the endowment of aptitudes to the development of expertise, the influence of chance is ever present. In the first instance, Atkinson (1978) claimed that all human accomplishment can be ascribed to two crucial rolls of the dice which determine an individual's circumstances of birth and background. Not only does chance determine genetic endowment and therefore influences aptitudes and intrapersonal catalysts, it is also evident within the environmental catalysts of milieu, persons, provisions and events.

Although chance has been examined by a few theorists (Tannenbaum, 1983; Gagné 2000), it is often overlooked when conducting research into giftedness and talent. For researchers who strive to predict talent from giftedness, the notion of chance in talent development might seem an unpalatable consideration. The acceptance that all components of talent development are subject to chance logically suggests the need for more flexible approaches to the developmental process which encompasses its multidimensional nature.

Advancing Knowledge and Understanding; A Research Agenda

From carefully reviewing and distilling the literature, it would suggest that coaches, parents and the individuals themselves are all agents in the discovery of gifts and the development of talents. In particular, the valuable contributions of Bloom (1985), Csikszentmihalyi et al. (1993) and Côté (1999) highlight the part that each of these agents play when considered against Gagné's DMGT. Each has a perspective on how gifts are discovered and why talents develop with a potential for exploration.

Exploring Coach Perspectives

Several authors (Kozel, 1996; Bartmus et al., 1987, *inter-alia*) have reported that the assessments of expert coaches remain more reliable than any talent detection system devised from sports sciences. Clearly, a worthy addition to the literature would be an exploration of what pertinent information these coaches utilise as indicators of giftedness (Régnier et al., 1993; William & Reilly, 2000). In addition, this would address the research question of how gifts are discovered (see p. 5). However, as has been argued, the lack of conceptual clarity, coupled with terminological laxity has negated recent attempts to understand the process of how gifted people are discovered. Until consensus on these issues can be reached, it will remain unclear as to whether coaches were talking about gifts or talents, or using one to describe or even assess the other. That said this line of enquiry intuitively seems to address the core of the problem facing talent detection in sport (see p. 4).

Clearly a step in the right direction to explore this topic would be to consider the coaches' mechanisms for talent detection, and relate their views as practitioners to some of the theoretical work that currently exists on talent. To that end, Gagné's (2000) DMGT remains, arguably, the most comprehensive model of talent because of its conceptual clarity, in particular with regard to its distinction between giftedness and talents. While Gagné's model can already usefully be seen as a means to reduce terminological confusion, its application to the sporting domain could also provide a means of explanation the field appears to crave.

Exploring the Perspectives of Gifted and Talented Individuals

How individuals come to discover their gifts and develop talent is equally as subjective as the judgement of coaches. Csikszentmihalyi et al. (1993) suggested that flow experience could explain why individuals commit to fields of expertise because of the autotelic nature of such experiences. However, flow, as a factor leading to commitment, currently lacks empirical support. Consequently, the connection between talent and flow, and flow and commitment to talent fields, requires further exploration, particularly in light of renewed interest in 'scientific' methods of talent detection in sport (i.e. AIS' Talent Search). If flow contributes to commitment to talent development, then coaches need to learn and understand more about this phenomenon in order to facilitate effective connection between individuals and a given talent field.

Similarly, Walter and Gardner (1986), from biographies and autobiographies of exceptionally talented individuals, proposed crystallising experiences. These, it is suggested had a profound affect on the individuals concerned, highlighting their gifts, connecting them to the talent field and driving them towards talent development. Crystallising experiences marked the personal discovery or realisation of a gift, or perhaps just a level of aptitude. The study of crystallising experiences and the subsequent commitment towards talent development would have particular relevance to any talent field because of the life altering impact of such events. To date, crystallising experiences have not been explored within sports related contexts and would address the research questions of how gifts are discovered and why talents develop (see p. 27).

The nature of crystallising experiences means that any study must be conducted retrospectively so that the life changing effects of the event can be assessed. This would require methods that looked at biographical or autobiographical accounts, or by interviewing individuals who are within the investment years (Côté, 1999). These individuals would already have become committed to the development of talent and might be able to identify any events that had contributed towards their commitment to a field.

Exploring the Perspectives of Families

Previous work by Bloom (1985) and Côté (1999) has emphasised how important parents can be in the discovery of gifts and development of talent. As Hellstedt (1987) noted, parents have varying levels of involvement in what their children do. However, few other sources could offer the same rich information as a parent who has observed the evolution of their child from babyhood to the present day.

As noted earlier, parents often noticed a specialness or gift in their child and involved them in sport (Côté, 1999). To understand further how gifts are discovered, there would be value in taking a closer look at how parents came to involve their child in sport and how parental observations compared to initial coach observations.

A New Approach

Coaches, performers and their families have a perspective worthy of exploration in the understanding of how gifts are discovered and why talent develop. In order to do this, an

approach is required that can grasp subjectivity and facilitate understanding of how giftedness and talent is perceived. A great deal of research into giftedness and talent in sport appears confused and sporadic. This is mainly due to undifferentiated terminology (i.e. concepts of gifted and talented), as well as limitations and inconsistencies with research designs. For these reasons, future research in this area must negotiate the emerging foundation that exists upon which to develop further knowledge and understanding. Clear concise definitions such as those offered by Gagné, and carefully considered research designs are required to bring continuity and progression to the field of study. Indeed, in the early years the field may have been held back because previous research too often studied actuality in an effort to understand potentiality (Heilbrun, 1966). In other words, research was directed at studying giftedness whilst trying to predict talent.

Arguably, the most valuable contributions (Bloom, 1985; Csikszentmihalyi et al., 1993; and Côté, 1999) seemed to take particular care in creating appropriate research design. In particular, Bloom (1985) studied talent retrospectively by interviewing individuals who had already developed talent. While, Csikszentmihalyi et al. (1993) studied the experiences of gifted teenagers developing talent by selecting participants who had been identified as gifted by their teachers.

There can be no denying that giftedness and talent are subjective and complicated and as such it is important to appreciate how that subjectivity is viewed. This is illustrated well when considering the nature/nurture debate, with the mixed responses reflecting how values and beliefs created different perspectives (Howe et al., 1998). Indeed, beliefs concerning the origins of giftedness could angle the perspectives of coaches, performers and their families. Although it could be argued that the debate is moot (Tranckle & Cushion, 2004), a coach who believes in environmental determinism may see giftedness very differently from a coach who believes in genetic determinism. For example, a coach who believes in environmental determinism may hold more optimism for the talent development of a less apt performer. This is important because it has been suggested that coaches may recruit performers who share similar values, resulting in congruence between the value framework of coach and performer (Lyle, 2002). Therefore, it is crucial that further research also explores the values that construct a participant's subjective view.

Certainly the exploration of values and perspectives falls outside of the focus of, and is arguably incongruous with a nomothetic approach. The powerful knowledge and perspectives of coaches, performers and their families are both personal and individualistic which mitigates

against any form of generalised positivistic inquiry (Jones, Armour, & Pontrac, 2003). Therefore, there is a need for a more interpretive approach that can embrace and capture the subjectivity of participants. Phenomenology is such an approach that can explore the essence of human experience by preserving the perspectives of the participants. It was almost thirty years ago when a case was first made to use phenomenology for sport-related inquiry (Whitson, 1976), which is still called for today (Kerry & Armour, 2000). Indeed, Bain (1995) indicated a need to strive for a greater balance between scientific and subjective knowledge in sport related inquiry.

In order to facilitate the reconstruction of subjective views, phenomenological interviews would seem to be an appropriate method to explore this area, as they attempt to preserve the essence of the participants' perspectives. Using a phenomenological exploration of the perspectives of coaches, gifted individuals and their parents may offer new insight into how gifts are discovered and why talents develop in sport. Indeed, although a number of qualitative strategies could be employed, phenomenological interviews have already proven to be revealing in this area (Bloom, 1985; Côté, 1999).

Conclusion

This review has presented a picture of the current state of knowledge regarding the discovery of gifts and the development of talent in sport. As well as presenting research from both the sporting and educational fields, Gagné's DMGT (2000), definitions from Williams and Reilly (2000) have been applied to clarify terminology. In particular, it has been demonstrated that the DMGT can facilitate a more structured view of current knowledge in sport, facilitating more continuity and a more solid foundation upon which to advance knowledge (see p. 60).

By using the DMGT to organise research from sport, it can be seen that promising contributions have been made in the areas of intrapersonal (Durand-Bush & Salmela, 1993) and environmental catalysts (Côté, 1999), the developmental process (Ericsson et al., 1993; and Côté, 1999) and systematically developed skills (Brown, 2002). This demonstrates somewhat of an imbalance in the sports talent literature, with the area of talent development receiving considerably more research attention, whilst the area of discovering gifts has been largely neglected. However, the education field has recognised the importance of this area and has already made some valuable contributions (Bloom, 1985; Walters & Gardner, 1986;

Csikszentmihalyi et al., 1993) that may usefully be considered and developed with sport in mind.

In order to advance knowledge, it has been proposed that a greater understanding of how individuals discover their gifts and why they develop their talents may be uncovered by exploring the perspectives of coaches, gifted individuals and their families (Tranckle & Cushion, 2004). Gaps in the literature need to be addressed concerning significant events (Walters & Gardner, 1986), values (Lyle, 2002), beliefs and meanings associated with the discovery of gifts (Csikszentmihalyi et al., 1993; Walters & Gardner, 1986). Whether giftedness and talent are a reality or myth (Howe et al., 1998) they are perceived and the influence of that perception remains real and powerful. Research in the field of giftedness and talent in sport will not be easy because of its complex and subjective nature (Kozel, 1996). However, a greater understanding will have value not only for sport, but for societies concerned about their own survival (Gardner, 1993, cited in Csikszentmihalyi et al., 1993) and individuals who find themselves surrounded or consumed by a belief in giftedness.

RESEARCH PHILOSOPHY

My Research Experience

My sport science education was primarily grounded in the natural sciences. Philosophies and research paradigms were rarely alluded to, but the rigors of natural science were valued and followed with strict conformity. The need to hypothesise, gather results quantitatively, statistically analyse and generalise findings were the norm.

The traditions of natural science were largely appropriate for the research methods available to me during my degree. Even when I came to research motor skills for my Masters degree, the assumptions and methods of natural science seemed not only appropriate, but also comfortingly familiar. The assumptions and methods of natural science that I was used to were not dissimilar to those used for experimental research into giftedness and talent (see p. 11). In fact, most of the early studies (see p. 12) were experimental, embracing the assumptions that underlie such an approach to research.

These underlying assumptions of experimental research (Lincoln & Guba, 1985), within the context of giftedness and talent, presume that; giftedness exists and is a prerequisite for talent; giftedness and talent can be studied and identified objectively; and that forming talent detection and identification systems will allow the objective selection of gifted individuals who will develop talent. Key questions from the literature review called these assumptions into question (see p. 70).

Evolution

The literature review has highlighted that the underlying assumptions of experimental research have had limited success within the study of giftedness and talent in sport (p. 14). Perhaps most notably, the assumption that giftedness exists has been a source of heavy contention (e.g., Howe et al., 1998). Therefore, both in theory and in practice, whether someone is gifted or not comes down to subjective judgment (e.g., Kozel, 1996) and even then can still be open to debate. Furthermore, the assumption that giftedness can be used to predict future talent has also been contested (i.e., Régnier et al., 1993).

Due to the philosophical nature of these assumptions they can not be disproved (Maykut & Morehouse, 1994), however, the limited success when conducting research under them has

prompted theorists to call for a more subjective approach (e.g., Mocker; and Ulmer; cited in Bartmus et al., 1987), thus questioning the epistemology of the subject. Due to the contextual nature of giftedness and talent (e.g. Csikszentmihalyi et al., 1993) and my own experience in coaching (see p. 82), the argument for subjectivity could not be ignored. However, my underlying assumptions about giftedness and talent and personal experiences create an interdependent web. Therefore, in order to explore a more subjective approach I had to re-evaluate my position regarding all of the philosophical assumptions regarding giftedness and talent.

It soon became apparent that my education in the research traditions of natural science was of limited use in the exploration of the social world. Although, the methods I was used to were obviously not sophisticated enough for exploration, I also found myself questioning the philosophies and rationales behind such approaches. Not only did I need to address philosophies of research, but also I needed to develop new skills and experience. My own research philosophy was undergoing a process of evolution or possibly even revolution.

Philosophical Repositioning

To prepare myself for exploring giftedness and talent, it became necessary to consider my position with regard to ontology, epistemology and consequently a paradigm through which to approach research. My study of these philosophies led me to establish my ontological and epistemological positions first, as these are closely related issues (Sparkes, 1992), and thus form the core of the research paradigm to which other assumptions are linked. Broadly defined as the branch of philosophy that deals with the nature of being and first principles (Chambers, 1993), ontology raises basic questions about the nature of reality (Lincoln & Guba, 2000). To put ontology into context within this research, the reality under study is giftedness and talent. Within this context, appropriate questions to consider might be how giftedness exists, if at all. Is giftedness imposed upon the consciousness of individuals or created by the cognitions of individuals? Put more simply, is giftedness fact or opinion? This illustrates the difference between an external realist and internal idealist ontology. An external realist view would assume that the nature of giftedness is objective, while an internal idealist assumes that it is the product of one's mind.

As they are so closely related, the ontological assumption needed to be considered in concert with the epistemology. An appropriate question to illustrate this philosophical position

might be whether giftedness and talent can be known objectively or subjectively. External realist ontology would seem complementary with objectivity because if giftedness and talent exist outside of an individual's consciousness, then it would follow that the knower (e.g. coaches and researchers) and the known (i.e. giftedness and talent) are not interdependent. Likewise, internal idealist ontology would seem complementary with subjectivity because if giftedness and talent is the product of individual cognition, then it would follow that the knower and the known are interdependent. Therefore, coming to bear on the epistemological positions of objectivists and subjectivists is how much a researcher's values mediate what is understood.

After carefully considering the philosophies in light of the literature review and my own beliefs in subjectivity, I positioned myself as an internal idealist believing in multiple realities which are socio-psychologically constructed by individuals. Consistent with this ontological position is my belief that such realities can only be known subjectively. Therefore, people can only view the world through their own eyes which is filtered by the values they develop from their experiences. Whose eyes and values see and shape the one true reality? Although there may be consensus on topics and commonalities in views and behaviour, there are subtle differences that continue to reinforce the uniqueness of the individual and human experience (Maykut & Morehouse; 1994). The conclusion that I have drawn and developed into an assumption is that individuals construct their own realities. Therefore, any concept of giftedness and talent is value laden. My ontological and epistemological position is based on a number of factors, which are relevant to the study of giftedness and talent, but my philosophical position is all-inclusive and not just limited to this context.

My position is linked to the more recent concept of giftedness as being complex, dynamic and interdependent (Abbott & Collins, 2004; Kozel, 1996). This interdependence relates to how giftedness interacts with people and the environment (Gagné, 2003). More so, a number of theorists (i.e. Kozel, 1996; Mocker and Ulmer; cited in Bartmus et al., 1987) have suggested that coaches are the most qualified to recognise giftedness in sport. With the indication that giftedness is in the eye of the beholder, it became clear to me that I should adopt an internal idealist ontology and subjectivity. Furthermore, my own experience of how giftedness can be seen by one experienced coach and missed by another added weight to my philosophical position. Therefore, from this position, the search for more precise methods of talent detection, which were frequent in the past (see p. 13) and still evident today (e.g. Abbott & Collins, 2004) became less attractive than the prospect of greater flexibility with detection

systems. Also from this position, the need to explore coaches' experiences of discovering giftedness came into focus. If giftedness can only be known subjectively, then it is logical to explore the experiences of the coaches who know it (Tranckle & Cushion, 2004).

In addition to considering ontology and epistemology, it is also relevant to consider how assumptions regarding human nature relate to the study of giftedness and talent. Human nature (Burrell & Morgan, 1979) concerns the relationship between people and the environment which is very similar to the issues surrounding the nature/nurture debate. As stated already (see p. 70) the debate can influence how coaches and researchers approach giftedness and talent in sport.

The question regarding human nature is whether human beings are the products of their environment or actively in control of it. To assume that people are conditioned by their external circumstances can be referred to as a deterministic view of human nature (Sparkes, 1992). However, subscribing to the notion of people being more in control of their own lives and actively involved in the creation of their environment can be called a voluntaristic view of human nature (Sparkes, 1992). To some extent, the assumptions of human nature have some echoes of the nature/nurture debate. Whereas the assumptions relating to human nature look to the locus of control in individuals, the nature/nurture debate argued the determining factors of individual attributes against environmental influences.

A researcher's position on human nature can sometimes be recognised by the avenues explored and the conclusions drawn, as assumptions are often implicit, rather than explicit. For example, a researcher at the far end of the voluntaristic side of the continuum would quickly suggest that a phenomenon was caused by environmental factors. In practice, it seems that most researchers take a stance where they assume that people's actions and thoughts are influenced by both situational (deterministic) and voluntary (voluntaristic) factors (Sparkes, 1992).

My position on human nature and more specifically the nature/nurture debate is very similar to Gagné's (1985), which was made explicit through his DMGT (see p. 21). I believe that there are always elements of both voluntaristic and deterministic factors. However, linked to my internal idealist philosophy, I believe the ratio of influence between voluntaristic and deterministic factors varies from case to case, as realities are individually constructed. This notion was inspired by the way Gagné (1985) portrayed the dual influence of both intrapersonal and environmental catalysts upon the developmental process. From the DMGT it

could be suggested that no two talents would have developed in exactly the same way from exactly the same basis (see p. 21).

Paradigm

Having established my underlying assumptions, it remained to use these philosophical positions to align myself within a paradigm that can be used to explore giftedness and talent in sport. Within the exploration of the social world, the major scientific paradigms are positivism, post positivism, interpretivism and critical theory (Lincoln & Guba, 2000). Each paradigm varies to different degrees based upon the aims, approaches and assumptions (i.e. ontological and epistemological) that form the framework for that particular research tradition. Having already established ontological and epistemological positions, the remaining consideration lay in whether interpretivism or critical theory would be the more suitable paradigm for my research.

Although interpretivism and critical theory are similar with regard to their basic beliefs regarding epistemology as well as their inclusion of values, they vary upon a number of issues (Lincoln & Guba, 2000). Most notably, these issues include inquiry aim, quality criteria and knowledge accumulation. After carefully considering the issues that distinguish interpretivism from critical theory, I positioned myself more within interpretivism. However, I acknowledge that my position with regard to inquiry aim, quality criteria and knowledge accumulation sat very much within the grey area, where interpretive and critical paradigms meet.

Inquiry Aim

A version of critical theory typically takes a transformative posture to inquiry, seeking to critique and create empowerment towards emancipation, whereas interpretivism simply aims to understand (Sparkes, 1992). Simply put by Bain (1989), the purpose of critical research is not to explain the world, but to change it. Although the terminology of giftedness and talent may require critique and transformation, the discovery of gifts and the commitment to talent development requires understanding, rather than change. Although my aim was primarily to understand giftedness and talent, I also acknowledge that increased understanding may in itself create empowerment and bring about change. However, the intended impact of studying

giftedness and talent was to facilitate practical and theoretical understanding of such a complex phenomenon and share good practice.

Quality Criteria

Rather than judging the validity of research against the more conventional benchmarks of reliability and objectivity, as in positivism and natural science, interpretivism requires distinctly different criteria. Due to the value laden and subjective nature of knowledge, objectivity has been described by Lincoln & Guba (2000) as "...a mythological creature that never existed, save in the imaginations of those who believe that knowing can be separated from the knower" (p. 181). In addition, Seale (1999) emphasised how the contextual and temporal elements of qualitative work make the quest for replication inappropriate:

"We have seen that external reliability, involving the replication of entire studies, has been difficult to achieve in practice, due to the particular difficulties of qualitative work, which often involves the study of unique settings that change over time, making revisits problematic if done in the hope that nothing has changed or that the exact viewpoint of the original researcher can be adopted (p. 157)."

However, this is not to suggest that validity is unimportant, as a rigorous approach to research is still intended. Instead, the term trustworthy, better describes the way in which a quality criteria is achieved (Denzin & Lincoln, 2000). With the value laden, contextual and temporal nature of knowledge, an honest and open approach to research is crucial for establishing trustworthiness. The best that an interpretive researcher can do is to present an explicit account of how their values and behaviour contributed towards the shared reconstruction of knowledge (see Summary of case studies, appendix 1).

Knowledge Accumulation

This is another issue where I positioned myself very closely to the borders of critical theory. Whereas interpretivists can take a very strict relative view to knowledge, critical theory suggests that knowledge can be related to similar settings (Lincoln & Guba, 2000). While respecting the assumption that knowledge is value laden and specific to times and places, I also believe that with care the knowledge can be related to similar times and places. Although I still held my ontological belief in individually constructed realities, I came to

believe that these realities tended to hold more similarities than differences, particularly as I observe that individuals can co-exist, communicate and share ideals. Therefore, it seemed unreasonable to take an extreme relative position and ignore the potential for relating knowledge from one context to another similar context.

Managing Values and Presuppositions

Having already acknowledged that all knowledge is value laden, it remained to explore how such values could be managed in qualitative research. This was addressed by first looking at how values influence research, then by exploring whether values can be controlled. These two philosophical issues set the scene for the introduction of phenomenology, mentioned previously as an approach that could facilitate the reconstruction of subjective views while preserving the essence of individual perspectives (see p. 71).

Influence of Values

Like all individuals, I have a lifetime of human experience which has angled my perspective and developed values that mediate and shape my concept of reality. These values have undoubtedly had some influence on my choice of research area, research paradigm, and decisions in the construction of the method and how I viewed the results, discussed them and formed conclusions. Often such values are implicit and not acknowledged explicitly. A multitude of experiences, from birth to the present have evolved into a current set of values that are influential in all decisions and judgements. Values are central to identity and existence as a human being as they are the mediator in our construction of reality. Following the ontological position of an internal idealist, the idea of separating values from an individual seemed naïve and inconsistent with the ontology.

Controlling Values

Perhaps one of the largest questions I had to wrestle with was whether it is possible to understand another person's perspective. If all reality constructions are value laden, how can a researcher understand another person's perspective if their own values are contaminating that view? In light of my acceptance of subjectivity in the construction of knowledge, I concluded

that it is not realistic to try and completely know another person's perspective. To completely know another person's perspective it would be necessary to become that person, not only suspending personal values, but deleting them in favour of theirs. However, I came to believe that it is possible to form an understanding of another person's perspective, accepting that it is unrealistic to know completely, but that the quest for greater empathy is worthwhile. I also came to believe that values can be guarded to facilitate a better understanding of another person's perspective; however, they are ever present and cannot be deleted. The need to manage values led me to take a closer look at Phenomenology as a method of exploring the perspectives of other people.

Phenomenology

Phenomenology is an approach that has given rise to methods of qualitative inquiry that have tackled ideas of how values can be managed in an attempt to preserve the essence of how individuals construct their realities. The phenomenological approach has been adopted by some qualitative researchers (e.g. Dale, 2000; and Seidman, 1998) to explore the meaning of human experiences. The history of phenomenology has resulted in two dominant traditions separating the philosophy, known as the Husserlian and Heideggerian traditions. Phenomenology became a distinctive philosophical approach from the German philosopher Edmund Husserl in the 19th Century (Kerry & Armour, 2000). One of the major features of Husserl's approach was the idea of phenomenological reduction, also known as 'bracketing'. Schutz (1972) described this first stage in Husserl's approach as the elimination of all preconceived notions. Husserl argued that it was possible to achieve an unbiased view of one's own subjectivity to the extent that one was no longer a part of it (Kerry & Armour, 2000).

However, Heidegger, a former student of Husserl, refuted Husserl's central concept of phenomenological reduction (Kerry & Armour, 2000). Heidegger argued that a researcher's background and pre-understanding cannot be suspended. It can also be suggested that Husserl's notion of being able to achieve an unbiased view is an objectivist view that is incompatible with an internal idealist position. Despite the damaging arguments of Heidegger and the formation of the Heideggerian tradition from the Husserlian tradition, the Husserlian approach is still the most prominent approach used in recently published work (e.g. Wessinger, 1994; and Dale, 2000).

The question of whether it is possible to appreciate another person's perspective is linked to the debate regarding how to manage the values of the researcher. If the intention is to appreciate another perspective, to what extent can and should a researcher attempt to control their own values and biases? As noted by Merleau-Ponty (1962), it is impossible to achieve complete reduction or bracketing of presuppositions. However, Merleau-Ponty (1962) went on to stress the importance of bracketing or suspending presupposition to the best of the researcher's ability. In a study on decathletes, Dale (2000) clearly outlined his procedure for bracketing researcher presuppositions. This conscientious procedure emphasised controlling presuppositions, making them explicit in an attempt to bracket them, rather than daring to presume that they could be eliminated from the process.

However, the argument of Heidegger has continued to haunt research that attempts to bracket researcher presuppositions. Can bracketing be consistent with internal idealist ontology and an interpretive paradigm? In my view, it can but it must be approached with care. In recent research (Dale, 2000), the process of bracketing has been used to highlight and attempt to control the researcher's biases as much as possible. The total suspension or complete elimination of researcher values would be inconsistent with an interpretive paradigm (Sparkes, 1992), but the controlled presence of values should be consistent. With the assumption that all researchers have biases, highlighting of such biases enhances the quality and the trustworthiness of the research (Janesick, 2000).

The end product of research utilising bracketing should be a good representation of another person's perspective with the identified influence of the researcher in the process. Therefore, it is seen as impossible to present a pure view of another person's perspective. However, it is possible through a conscientious procedure to present a good representation, acknowledging the researcher's influence in the process. As stated earlier, bracketing was used in the past to suspend or eliminate values, more recently (i.e. Dale, 2000), it has been used more realistically to make researcher biases explicit to facilitate a closer view of other realities. To try and summarise the modern use of bracketing with my own analogy, presuppositions are like children. Rather than leaving them behind, you take them with you, but you watch them and monitor their behaviour closely.

Exploring Presuppositions

Consistent with the phenomenological process of exploring presuppositions, it is prudent to highlight my relevant experiences of giftedness and talent in sport. By bringing these experiences and potential biases to the surface, I became aware of them and was more able to see their influence. However, I did not presume to be able to suspend my presuppositions or even to fully account for them. What I did was to explore presuppositions to the best of my ability and consider how they affected my interpretations throughout the process of research.

In order to explore my presuppositions, I paid particular attention to my own sporting experience as well as my developing awareness of giftedness and talent, gleaned from personal experiences as a participant and as a coach. I tried to explore how these experiences shaped my understanding of the world. As Dale (2000) suggested, by doing this, I was able to mediate my presuppositions as a researcher by creating more awareness of my preconceived notions regarding the topic.

Experience in Sport

My interest in sport began, perhaps quite late, at the age of 9. The sports that I engaged in were individual in nature. These were archery, eventually to a very competitive level, but also on a more recreational level, gymnastics and trampolining. Through these sports I had positive experiences of participation, competition and being coached. These positive experiences encouraged me to help others, which began my interest in coaching. At the age of 12, I had already taken it upon myself to teach the rest of my family how to shoot a bow and arrow. Six years later I took my first coaching grade in archery, which meant that I could officially teach people outside of my immediate family.

My appreciation for individual sports and deep involvement in archery prompted me to choose sports sciences and teaching as subjects to study at degree level, although I had no interest and little ability in team sports. The study of sport sciences served to deepen my interest in coaching, instilling the desire to give the next generation of competitors every possible opportunity, by bringing sport sciences into archery coaching.

However, coaching was more than just a mission to bring archery into the twenty first century; it was something that I knew was good at. I considered one of my better qualities as a coach was the degree of success with which I was able to empathise with performers. From

facial expressions, body language, questioning and their feedback I was often able to get a perspective on what it was like to shoot the way they were shooting. This empathy was also embedded in my own experiences as an archer, gained over the years of participation.

On reflection, my value for attempting to empathise with performers was inspired by an early experience of being coached on a trampoline by a very experienced coach. The coach, who I had never met before, was able to address all of my fears, concerns and misconceptions before I had felt the need to voice them. As a young participant, it had felt as if she could look inside me and see through my eyes, using her experience and skilful communication to prepare me for my first somersault. This quality of empathy is what I have always aspired to achieve in coaching.

Although my attempts at empathy are embedded in my own experiences, my coaching in archery and gymnastics eventually progressed beyond my own level of participation, yet my use of empathy remained a powerful coaching tool. I have come to believe that the grounding of my experience as a participant, the information I glean from performers and our discussions about their experiences are sufficient to facilitate a degree of understanding from their perspective.

Involvement with Talent

The decision to focus on talent, particularly the realisation of talent, was influenced by a number of experiences throughout my time as a participant, performer and then as a coach. These experiences captured my imagination due to the power of their influence over the individuals involved.

As a gymnast, I was identified as having a number of desirable qualities for the sport; however, there was no development pathway at the time so the opportunity was lost. On reflection I regret not being able to develop my abilities when I was younger. Although my life would have turned out very differently if I had become a competitive gymnast, I cannot help but wonder what it would have been like to have developed such impressive skills. Consequently, I make attempts to maintain the skills that I learnt because I valued them so much when I was taught them. As an archer I received good coaching throughout my participation. I was often told that I was doing well, but I never really believed it. It was not until I won the County Indoor Championships at the age of 15 that I realised how much I had underestimated my potential. This experience opened my eyes to the wide range of

possibilities that might have been if I had realised them sooner. Regrettably, I had left myself with precious little time to achieve my potential as a junior.

Within gymnastics, my aptitude was not developed because there were no opportunities. However, within archery, I had opportunities, but I did not see them as viable options because I did not believe I was gifted. I handle this regret by trying to ensure that the children I coach in archery and gymnastics become aware of their aptitudes and options at the appropriate time.

My sport science expertise was recognised at National level and I was identified as having talent for archery coaching. This resulted in me being fast tracked through the coaching grades, to become the youngest archery coach at National level, and onto a National squad. In some ways, this is like a third chance at talent development for me. The first time in gymnastics I realised I had aptitude, but there were no options. The second time in archery, my coaches realised it, but I did not, so opportunities were missed again. Now in coaching, the national coaches realise it, I realise it, and I am taking the opportunities offered. Perhaps it is a case of third time lucky. However, I cannot help but wonder what could have been if things had gone differently. I know what it took to make me realise my talents and how that opened my eyes to possibilities. How far would I have gone if I had been given an opportunity in gymnastics, or if I had realised my gifts when I was young enough in archery?

Due to these experiences, I have remained vigilant in coaching for individuals who do not realise the gifts that they possess. Sometimes it has been evident, but a lot of the time it is hidden, showing itself as a flair of talent that I feel I have to be alert enough to detect. I believe in the power of decisive moments in people's lives, perhaps even crystallizing experiences (Walters & Gardner, 1986). The experiences that people can have when they realise that they are capable of more than they thought possible. These are the moments that open their eyes to more possibilities and have the power to change their lives dramatically.

In addition to my background, contact with gifted individuals has also shaped my view of giftedness and talent. To explore these experiences and presuppositions further, I have highlighted three cases that I considered to be contributive to my current view. These stories have been retold using pseudonyms for those involved.

Nicholas' story. Not long after I started gymnastics coaching, I was a part of one such moment during one of my mixed recreational classes. A five year old boy called Nicholas had been enrolled on the course, with his friend.

Although Nicholas was not a shy boy, he was rarely heard to speak. However, Nicholas and his friend would often get distracted from gymnastics with playful shoving and other harmless sources of amusement. Neither boy stood out from the rest of the recreational class. Initially, they did not demonstrate any great aptitude for gymnastics, nor did they show any significant difficulties

Three to four weeks into their first term, the children were in groups, working round three stations. I was supporting forward rolls, my assistant coach was working with a group on the beam and another group were working on their own, doing handstands up against a matted wall. Nicholas and his friend had been split up on this occasion to see if they concentrated any better apart. While supporting rolls down the springboard, I noticed that Nicholas was doing a headstand instead of a handstand. As a child finished her roll I called over to Nicholas “No, handstand!” and raised my arms straight either side of my head to show the difference between a headstand and a handstand. Perhaps I had sounded angry because Nicholas looked worried. Then, from his headstand position, Nicholas pressed his arms straight into a handstand. Without taking my eyes off him I raised a hand to stop the next child from rolling down the springboard. Likewise, my assistant coach had stopped the child on the beam and had a look of surprise on her face. With the halt in gymnastic activity all of the other children stopped and followed our gaze to see what we were looking at. Nicholas’ face had turned from worry into a cheeky grin, whilst still in a handstand. With the whole class staring at him in silence I said “do that again!” Nicholas lowered to headstand and pressed again to handstand. This relatively unnoticed gymnastics beginner had just stopped a class of 10 peers and two adult coaches who had watched and marvelled at his demonstration of strength. At the end of his session, his mother was invited into the gym to see Nicholas’ handstand press.

From that day on, Nicholas came to class with a different attitude. Instead of messing about, he would watch what was being taught and would strive to master new skills. Although Nicholas’ flexibility was initially unimpressive, he began to practice at home and achieved side splits in the months that followed.

I had underestimated Nicholas’ ability. From that moment on, I saw a lot more potential in the boy and tried to develop his abilities. More than that, I was part of a powerful experience for the child that seemed to have a profound impact on his self-esteem. If my assistant coach and I had not been present, it is unlikely that Nicholas would have realised the significance of the handstand press, and the feat would have gone unnoticed by him and his

parents. The realisation of the boy's talent required the presence of a valid audience. It was very rewarding to be part of that event, which had such a positive effect on the boy.

Heidi's story. I was present for another decisive moment in someone's life a few years later in the summer of 2000 during an archery coaching session. A 12 year old girl called Heidi, accompanied by her mother, had come along to watch her father and younger brother shoot.

On this particular evening, I was coaching the county's junior team. When I saw the girl quietly watching I decided to let her have a go with a simple beginner bow to try and shoot a few arrows. Although I had plenty to do that evening, my club always actively tried to recruit new members. With my attention somewhat divided between the junior team and the new girl, I quickly gave the safety speech and set her up with beginners' equipment. I gave her a simple fibreglass bow, put an arrow in the bow and mimed the shooting technique and said "like this". Not my finest introduction to archery. She put her fingers on the string as I had shown her, turned her head to the target and said "what...like this" and shot the arrow straight into the centre. The fact that her arrow had gone into the gold was impressive as I had not yet told her how to aim, but that was not what had shocked me. After one very quick mime of the technique, she had accurately replicated my own shooting technique. I felt it necessary to ask again if she had ever shot before, to which she assured me that she had not. I watched as she shot her second arrow right next to the first in the centre with the same precise form.

Although I made excited faces at her mother and gave a few thumbs ups to her, I was careful not to show Heidi how enthusiastic I was. Shortly afterwards, she joined the club. In the weeks that followed, Heidi was selected to be one of the four juniors to appear in a short promotional film for the 2000 Olympics, which was produced by and aired on the Disney channel. In 2001, she was selected to shoot for the County and by October of that year she had been selected for the National Junior Squad. By 2004, she had qualified and shot in the World Junior Championships.

Heidi had been identified as a gifted swimmer and could have been developed at a competitive level. However, she was not interested in taking swimming any further. The first arrow she shot in archery had a profound affect on her life; her face beamed as she shot the arrow, showing her enjoyment for the task as well as the product (i.e. hitting the target). If I had not offered her the chance to have a go, perhaps she would not have become an archer. If I had not given her a bow that she could manage, she may not have had such a successful and

powerful experience. She has been the driving force behind her development into an international level competitor and has had to be prevented from over training. To say a monster has been created may be an amusing statement, but it is the superficial dressing of real concern. The experience of her first arrow was so positive that it led to a whole chain of events that altered her life and those of her family. I was instrumental in the experience that led to the change in her life. Being part of such influences means that I have a measure of responsibility in ensuring that the change proves to be for the better. Hopefully she will not look back on her decisions with any regret.

The stories of Nicholas and Heidi are very positive, with experiences that meant something to them and to me as their coach. These experiences were not just positive at the time, but have changed their behaviour and approach, hopefully for the better. The stories of positive experiences are inspirational to me as a coach and reaffirm to me that my role as a coach is a valuable and worthwhile one. However, not all stories are as positive and inspirational. Some stories are about missed opportunities and abused giftedness that are saddening and frustrating to me as a coach.

Aaron's story. One such example involved the missed opportunities of the most gifted individual I have met thus far in sport. I first encountered Aaron as a nine year old in 1995, when I was a newly qualified archery coach. He had been booked onto a week long archery course that I was running at a sports centre. With little idea of talent spotting at the time, it was still evident to me that he clearly stood out from the rest of the group. He had picked up the technique quickly and had a natural instinct for aiming and adapting to the inadequacies of the simple equipment. After questioning the boy, it became apparent that he was heavily involved in gymnastics and would have little time for archery. However, he was very keen to show me his cartwheel, which I tried to talk him out of for safety reasons, as it was an archery class. What I remember of him at the time was that despite my inexperience, I knew there was something special about the boy. My memory of nine years ago now is a bit vague, but I retain the impression of him being independent, confident, a good pupil and popular. He listened, observed and quickly adopted an efficient technique and used instinct to hit the gold frequently.

Four years later, I noticed that he was now doing karate at the same sports centre on Saturday mornings. However, I gave this little thought at the time, only recollecting that I had seen him previously during an archery course.

When he was 15, a friend who worked at the sports centre recruited him to help with a children's play scheme in the holidays. In the six years since our previous meeting, he had become more introverted. Although he was still independent and popular among his peers, demonstrating self-efficacy in some contexts, he had become shy and nervous around adults, being indecisive and non-committal. However, he proved to be extremely useful, assisting with archery and other activities, demonstrating what could be described as a gift for communicating with and motivating children. Added to his abilities with the children were the novelties of the skills he used to entertain them. He used the audience of children as an opportunity to show off his juggling, football, basketball, hockey and archery skills. In addition, the children marvelled as he walked on his hands, somersaulted and tumbled. This openness was more like the boy I had met six years earlier, who was confident and proud of his talents. The staff were also impressed and somewhat shocked by his skills. Most knew him from school, yet they had no idea of the extent of the skills he possessed. In the years that followed he was given the opportunity to train and work as a gymnastics coach. During that time, I coached alongside him and had the opportunity to find out some of his sporting history.

He did not remember what it was that prompted his selection for the gym club's boys' squad, but he does remember being approached by the coaches while he was swinging on the parallel bars. At the age of 12 he was forced to give up gymnastics because the club lost interest in men's artistic gymnastics and discontinued the boys' programme.

Inspired by martial arts movies, he then took up karate. The instructor was impressed by his reaction time and aptitude for learning motor skills. In a short period of time, he had progressed to brown belt, which is just below black belt. The instructor and his parents then started to plan for his future, seeing him as a prime candidate for the National junior squad. However, he did not enjoy the travelling involved or investing the time required to meet the expectations that had been placed upon him. As a result, he quit karate, much to the disappointment of his parents and instructor. He then started roller hockey for fun and only participated occasionally.

Although he has memories of the good times in his sports, the experience of the events that led to his withdrawal have been damaging. He was particularly bitter about how his former gym club ended the boys' programme. However, it was probably the withdrawal from Karate that had the most negative effect. Since then, he actively sought to keep his parents out of any activities he undertook, yet, it was apparent that they cared enough to provide him with any equipment he needed, such as roller hockey kit.

When he coached, he demonstrated skills for the children and on occasions I found him trying out old forgotten skills before and after classes. Yet, he was adamant that he was not very good and was very critical of his own abilities. I began to form the opinion that he was afraid to show his talents to adults in fear that they might be exploited again.

A demonstration of the mismatch between his perceived and actual ability came in 2002. I was preparing for an upgrade coaching exam in gymnastics and had been set some very complicated and difficult skills to teach for my practical exam. Even though I had asked around all of the clubs in two counties, I could not find any gymnasts who could perform these skills. As a last resort I asked Aaron if he would be willing to help as one of the gymnasts. In his usual tentative manner, he agreed. One of the skills I had to teach was a complicated vault that usually takes months or even years for trained gymnasts to learn. Never having done the vault before, it took Aaron only 15 minutes to learn! This would have been impressive if he had been a practicing gymnast, but he had not trained as a gymnast in four years and had never previously attempted the skill.

Although Aaron could be a national level gymnast, he would not entertain the idea that he had gifts that could still be developed. I have since met five other members of his gymnastics squad who still compete at national level, and his skills are comparable to theirs, even though he does not train.

The relevance of this story is that it is missing the positive elements of the first two. What could have been if this extremely gifted boy had had more positive experiences? I believe that sport is an opportunity to give children positive experiences that will benefit them and develop them into confident, self-determining adults. It frustrates me tremendously that sport has had a negative affect on such a gifted individual. I would have hoped that he would be extremely proud of the skills that have evolved from his gifts and hold such experiences to fuel his self esteem and confidence, opening his eyes to a world of possibilities. Instead he feels he has to hide his gifts from the world, believing or preferring to believe, that he has little or no potential, entertaining limited possibilities for the future. When he was younger, he was filled with confidence and dreams of the future. It disturbs me profoundly that sport and coaching could have contributed to such a negative effect on such a promising future.

Reflecting on the stories. As the three stories illustrated, significant figures such as coaches and parents can have tremendous influence over the lives of young people with regard to their talent. The thought provoking element of this for me was whether coaches and parents

appreciate how their behaviour could affect the lives of children. Seemingly casual interactions for coaches with performers could be interpreted as something far more meaningful for the child and vice versa. Very few studies have given attention to this particular dimension to the discovery of giftedness and development of talent (with the notable exceptions of Walters and Gardner, 1986; and Csikszentmihalyi et al. 1993).

If coaches are aware of how their behaviour can inspire or deter, can they attempt to use this in their coaching and to what extent is that ethical? As noted in Heidi's story, a coach's influence changed the lives of a whole family. Is it selfish for a coach to inspire a gifted individual to pursue excellence in their sport, when they could have selected other avenues? How prepared are coaches for such an overwhelming responsibility? This may seem to be overly neurotic to worry about the interpretations and consequences of the briefest interactions and smallest displays of behaviour. However, my experience suggests to me that they could be significant and might facilitate a series of interactions that redirect someone's life, forever altering their reality.

My presuppositions. To return to the assumptions of interpretivism, it is not possible for interactions to occur without contaminating the realities of those involved. The social construction of realities involves the continuous assimilation of new ideas, mediated by the values that have developed within individual realities. Therefore, I must remind myself of another one of my analogies, which is to live in fear of affecting another person's reality construction would be to live in fear of life.

I believe coaches should not be afraid of the powerful influence they have. However, they must have respect for that power and exercise the highest ethical standards to ensure that they always do what they think is in the best interests of the performer. Occasionally coaches will misinterpret, and get things wrong. This is when coaches need to learn from their mistakes. It is my hope that my research will help coaches and parents to learn from case studies that look at gifted and talented individuals in sport.

After absorbing the relevant literature and reflecting upon my own experiences in sport and coaching, my philosophy concerning giftedness and talent has evolved. I believe that most people can develop a talent for something. Indeed, people will have different levels of aptitude or giftedness (Gagné, 2000), but to some extent, everyone has something valuable. I believe that some people are highly gifted in a specific domain or across multiple domains, having genetic and learnt attributes that are considered valuable. At the other end of the spectrum are

people who have limited aptitudes or gifts in a domain, but they exist nonetheless. I have grown fond of the term 'flair' when talking about people's giftedness because it facilitates an analogy that I firmly believe in. Giftedness can be thought of as flair, similar within this analogy to the flare from a flare gun. Some highly gifted individuals will produce flares of giftedness regularly that can be seen from afar, instantly noticeable that draw attention, whether you were looking for it or not. Then there are individuals who exhibit very few flares. Unless someone sees their flare when it goes off, no one will even notice that they were there. I feel that it is important to see these flares and acknowledge them, particularly from individuals who do not exhibit very many flairs of giftedness. From my own experience, I took great pride and drew a lot of confidence from the knowledge that I had aptitudes that were valued by significant others. I can not imagine that feeling ever being negative. Working from the assumption that realising your own aptitudes or giftedness is advantageous and worthwhile for people (Csikszentmihalyi et al. 1993), I strive to facilitate this when working with people in sport.

These are my presuppositions with regard to giftedness and talent, which are the product of my academic and practical experience. Having brought these presuppositions to the surface I must be mindful of them while I explore how other people perceive the discovery of giftedness and the development of talent. Furthermore, it is important to reflect upon how my interpretations relate to my presuppositions and experiences throughout the research process (see p. 82).

METHOD

Introduction

This study explored the experiences of coaches, gifted individuals and their families via phenomenological interviews to understand how they had discovered giftedness and developed talent. The sections that follow detail how this form of qualitative research was undertaken and are titled ‘participants’, ‘interviews’, ‘data analysis’ and ‘transferability and trustworthiness.’

The participants section outlines the approach taken when selecting participants, the criterion used for the selection of coaches, gifted individuals and family members, as well as a more detailed explanation of the design of the study. In addition, the participants are briefly introduced, with an explanation of how they were found and why they met the criteria for selection. This section is then complemented by the interview section, which outlines how the interviews were arranged and conducted.

The data analysis section details how the stories were told and how the data was subsequently managed and analysed. The transferability and trustworthiness section rationalises the process of data analysis, addressing issues of relating and extrapolating, as well as how the quality of the research was enhanced.

Participants

Approach to the Selection of Participants

This study’s approach to the selection of participants was similar to purposeful sampling (Hanson & Newburg; 1992; Jackson, 1992; Lincoln & Guba, 1985), as the participants were chosen because of their specific and distinctively different roles in the discovery of gifts and development of talents. The intention behind this approach was not to achieve statistical generalisations (Polkinghorne, 1989) but to obtain richly varied descriptions that would relate to others beyond these participants for extrapolation (Alasuutari, 1995).

The participants were coaches, gifted or talented individuals and their family members from the sports of archery, gymnastics and trampolining. Their experiences provided a rich

description of how their reality had been affected by the discovery of giftedness and the development of talent.

Criterion for Selecting Coaches

The coaches were chosen based on their experience of spotting giftedness in individuals. In order to be relevant to the study, coaches had to have a proven record with regard to their talent spotting abilities. Therefore, the criterion used was that the coaches must have had experience of recognising giftedness in at least one individual, who had later developed skills to become a national level performer.

This criterion was distinctly different from the basis upon which other studies have selected coaches (e.g. Brown, 2002; Côté, Salmela, & Russell, 1995). Instead of selection based on the number of years they had been coaching, or the number of international performers they had been associated with, the criterion was whether the coaches had previously spotted giftedness. Consequently, this study included low-level coaches who knew enough to recognise giftedness in a performer, but excluded some national level coaches with no experience of talent spotting. The assumption that all national level coaches can recognise giftedness is flawed, as some work only with elite performers and have had little involvement during the performer's early years (see p. 65).

Criteria for Selecting Gifted Individuals

Once identified, the coaches nominated one or more individuals they had spotted as being gifted to participate in the study. It is important to bear in mind that coaches are the most qualified to judge giftedness (Kozel, 1996) and the coaches used in this study had already been identified because of their proven record for doing just that. At this stage it should be pointed out that although all of the participants were national level performers, this was not a requirement for selection. Indeed, Gagné (1985) pointed out that being gifted does not guarantee that talent will develop (see p. 24). Therefore, to enhance understanding of giftedness, the coaches were given the opportunity to talk about, and identify people they perceived as gifted.

Like Csikszentmihalyi et al.'s (1993) participants, the performers were selected based upon their giftedness, rather than their developed talent as Bloom (1985) chose to do. The

major difference was that the participants were all sports performers, whereas Csikszentmihalyi et al.'s (1993) participants were drawn from a broader spectrum which included artists, musicians, mathematicians and scientists.

A further criterion for the selection of the gifted or talented individuals was that they had to be able to recall their early participation in sport. There was no need to set a specific number of years of experience in sport as a criterion, as the quality of memories varies considerably between individuals and between specific events (Bloom, 1985). However, all of the gifted individuals interviewed were under 30 years of age and could recall relevant memories of their early experiences.

Criteria for Selecting the Relevant Family Members

The talented individual's relationships at the time of their sporting experiences identified the family members who were included in the study. The number of family members varied, but all had had a distinct influence on the individual during the time of their experiences. Although the study had been prepared to include non-family members (e.g. friends, team mates) and siblings none had been as influential as the parents in the cases explored. The appreciation of the family's influence in the discovery of giftedness and development of talent is not a new concept and had been explored in previous research (e.g. Bloom, 1985; Côté, 1999).

How the Participants were Found

The selection of the coaches for this study was the most crucial aspect as in turn they identified the gifted individuals which led to the parents and family members. What follows is an introduction to the coaches, how they met the selection criteria and who they coached. Fifteen coaches were included because of their experiences of spotting and working with gifted individuals. Four of the coaches worked in trampolining, six in gymnastics and five in archery. When making reference to individuals or places, a pseudonym was assigned. It should also be noted that all pseudonyms were unique; therefore, the occurrence of the same name in different situations is a deliberate reference to the same individual and not a coincidence.

- Sandra was a 50 year old national trampoline coach from Eastlake trampoline club. A former County level diver and teacher by occupation, Sandra had coached over 40 trampolinists to international level. She worked with a number of gifted and talented individuals over the years, including: Noah, Kira, Colette, Perry, Baxter, Ryan and Martin.
- Trevor was a 53 year old national trampoline coach at Eastlake trampoline club. He had been a former athlete and swimming coach before moving into trampolining and had worked with a number of gifted and talented individuals over the years, including: Phil, Valerie, Elsie and Ryan.
- Nigel and Jacen were Sandra's two protégés, aged 25 and 31 respectively, both training to become national trampoline coaches.
- Carl was a 45 year old head teacher of a primary school. Previously, he had been the head coach of the boys' gymnastics squads at Pegasus gymnastics club. The gifted and talented individuals who Carl had worked with included: Corey, Noah, Aaron, Curtis and Daniel.
- Alison was the 51 year old national coach and head coach of Pegasus gymnastics club. Some of the gifted and talented individuals who have worked with Alison over the years included: Corey, Jack and Lori.
- Mary was a 41 year old gymnastics coach at Bloomfield gymnastics club. Some of the gifted and talented individuals who have worked with Mary over the years included: Corey and his niece Antonia.
- Ben was a 35 year old coach at Barnstead gymnastics club, responsible for the boys' squads and jointly responsible, with June the 31 year old head coach, for Barnstead's national team gym champions. Ben and June currently work with such gifted and talented individuals as Billy-Joe, Daniel and Curtis.
- Pat was a 44 year old national gymnastics coach. Some of the gifted and talented individuals who have worked with Pat over the years included: Della, Jo, Carman and Louisa. Pat also shared his observations of other talented individuals such as Corey, Susie and Cristy.
- Arthur was a 69 year old archery coach. Over the years, Arthur worked with such gifted and talented individuals as James, Robert, Ron and Stacy.

- Albert was a 69 year old archery coach. Some of the gifted and talented individuals who have worked with Albert over the years include: Daryl, Adam, Bart, Steven and Connor.
- Terry was a 56 year old coach and former international archer. Some of the gifted and talented individuals who have worked with Terry included: Angela, Sheila, Nancy and Joshua.
- Don was a 69 year old national archery coach. Some of the gifted and talented individuals who have worked with Don over the years included: Rayleigh, Lewis and Jade.
- Leia was a 39 year old international archer and coach from Russia. Now living in the west, she has responsibility for coaching the national junior squad. Following Gagné's (1985) belief that talent can only develop from giftedness, Leia also met the criteria for involvement as a gifted individual herself.

How the Study was Designed

It should be noted that not all interviews with coaches led to interviews with gifted individuals and not all interviews with gifted individuals led to interviews with their families. In some circumstances, the coaches had lost contact with the gifted individuals. Bearing in mind that the coaches were sometimes drawing on 30 to 40 years of coaching experiences, this eventuality was hardly surprising. Interviews were occasionally not possible with parents due to them living abroad, ill health or where the coach and talented individual both suggested that they had not played an influential role.

As noted by Janesick (2000), the designs of qualitative study begin with some fixed structure (see table 1) with the potential for improvisation as it becomes appropriate. Within this study, the typical structure was to conduct a coach interview, which led to an interview with a gifted individual and then with a member of their family. However, gifted individuals by their very nature are atypical, rather than typical (Tranckle & Cushion, 2004) and as such tend to lead atypical lives. Where necessary the typical design was improvised to gain rich descriptions of these atypical people. These improvisations included interviews with a number of coaches to gain a full picture of Corey's early involvement in gymnastics (table 6); not interviewing Noah or Daryl's parents as they were unavailable; and choosing not to interview Kira's team mates or sisters to avoid stirring jealousy. Details of who was involved

in the telling of these stories (tables 2-10) and all of the improvisations have been described (see appendix 1).

Table 1

Example of a stereotypical case study

Participants	Who they are
Coach	
Gifted Individual	
Family member	

Table 2

Participants in Noah's story

Participants	Who they are
Sandra	National Trampoline Coach
Noah	16 yr old International Level Trampolinist
Carl	Ex Gymnastics Club Coach (Head of Pegasus Boys' Squad)

Table 3

Participants in Kira's story

Participants	Who they are
Sandra	National Trampoline Coach & Kira's mother
Kira	22 yr old International Level Trampolinist
Mike	Kira's Father

Table 4

Participants in the talent identification meeting for trampolining

Participants	Who they are
Sandra	National Trampoline Coach
Nigel	Senior Trampoline Coach
Jacen	Senior Trampoline Coach

Table 5

Participants in Billy-Joe's story

Participants	Who they are
Ben	Senior Gymnastics Coach
June	Senior Gymnastics Coach
Billy-Joe	16 year old International Level Gymnast
Lucy	Billy-Joe's Mother

Table 6

Participants in Corey's story

Participants	Who they are
Carl	Ex Gymnastics Club Coach (Head of Pegasus Boys' Squad)
Alison	National Gymnastics Coach
Corey	15 yr old International Level Gymnast
Vanessa	Corey's Mother
Mary	Gymnastics Club Coach

Table 7

Participants in Della's story

Participants	Who they are
Pat	National Gymnastics Coach
Della	14 yr old International Level Gymnast
Donna	Della's Mother

Table 8

Participants in James' story

Participants	Who they are
Arthur	Archery Coach
James	26 yr old ex International Level Archer
Jim & Joy	James' Parents

Table 9

Participants in Daryl's story

Participants	Who they are
Albert	Archery Coach & National Team Manager
Daryl	27 yr old ex International Level Archer

Table 10

Other coaches who participated in the study

Participants	Who they are
Trevor	National Trampoline Coach
Don	National Archery Coach
Terry	Archery Coach & National Team Manager
Leia	International Level Archer & Head Coach of National Squad

How the Participants were Known

In most cases, the coaches were already known to me through my involvement in the three sports of archery, gymnastics and trampolining from which they were drawn. This helped me to gain their trust and maintain a rapport. However, I was not familiar enough with their work to inhibit their interpretation of people or events. I had had little contact with the gifted individuals, although my prior knowledge of them had been supplied by coaches and other competitors who knew them and me. How the participants were known to me is shown graphically (figures 4 & 5) as well being described in more detail elsewhere (see appendix 1).

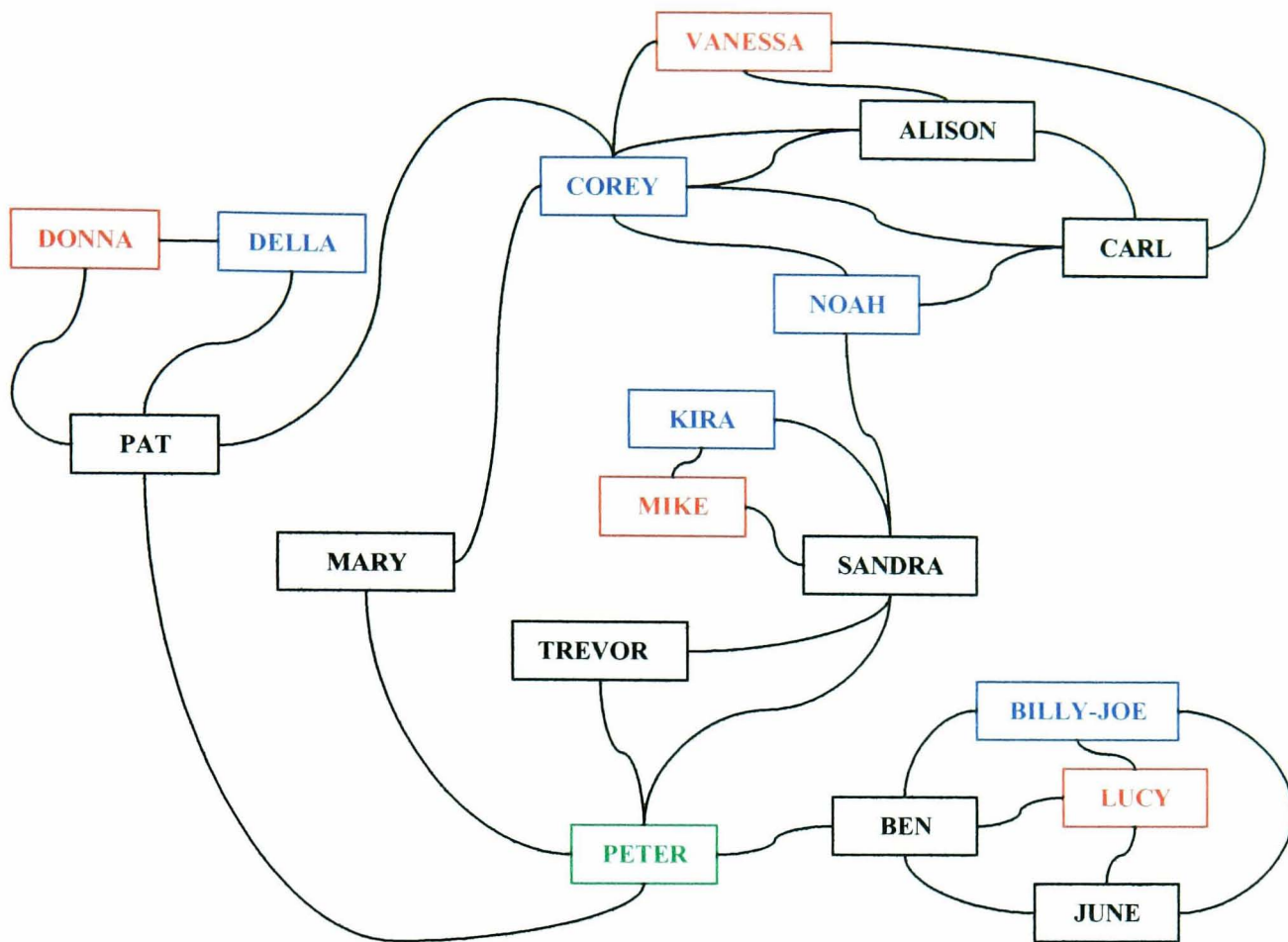


Figure 4. Relationships that Link the Participants from Gymnastics and Trampolining.
 Note: Interviewer in green; Coaches in black; Gifted individuals in blue; parents in red.

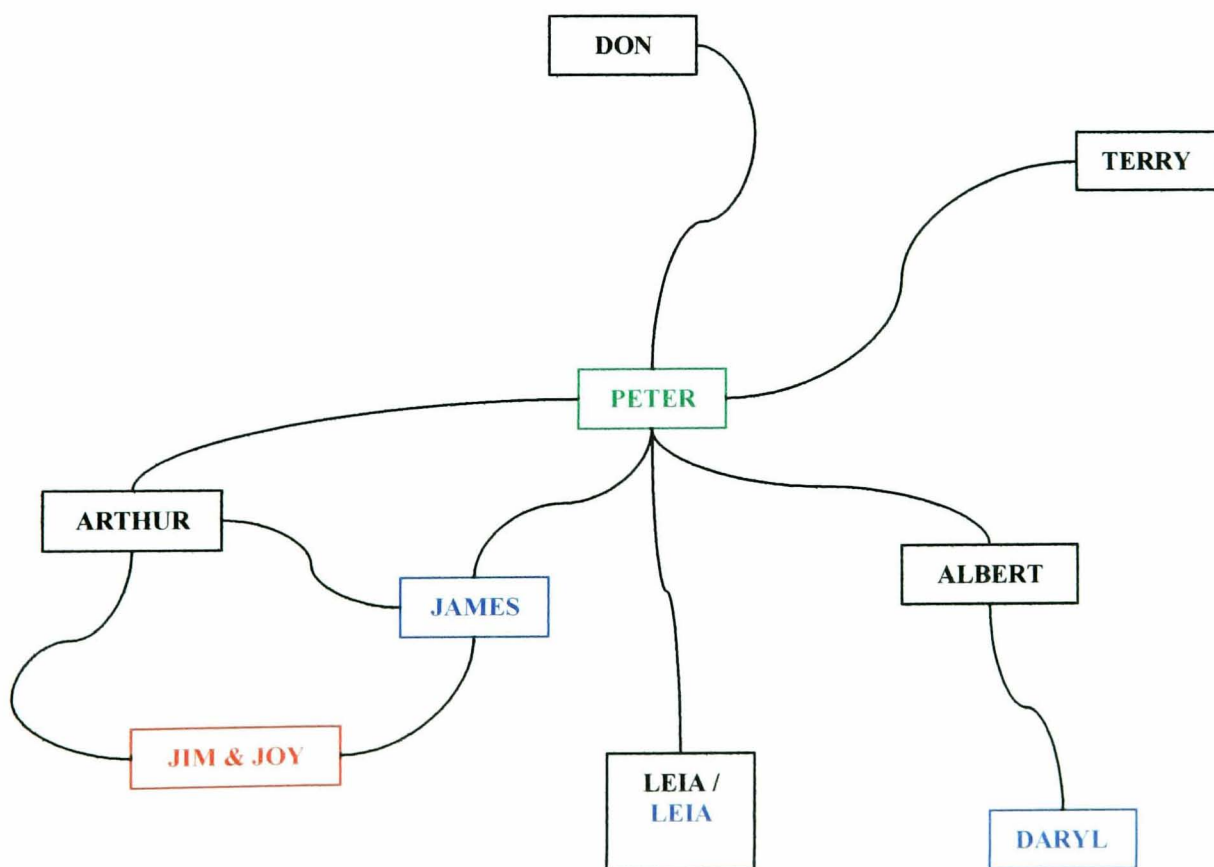


Figure 5. Relationships that Link the Participants from Archery.
 Note: Interviewer in green; Coaches in black; Gifted individuals in blue; parents in red.

Consistent with phenomenological methodology, any prior knowledge and presuppositions of the participants was acknowledged. An example of a case study has been shown below to illustrate how I had to monitor the impact of my presuppositions as the story was told.

Corey's Case Study

Corey is a 15 year old international level tumbler. There were a number of participants involved in revealing how his gifts were discovered and developed within the gymnastics disciplines of team gym, sports aerobics and tumbling. These included: Mary, who was his first coach at Bloomfield gymnastics club; Carl his coach at Pegasus gymnastics club; his current coach Alison; his mother Vanessa and Corey (see figure 4). The design of the case study was adapted to include three coaches because of the significant role they had each played and because they had all recognised his giftedness at an early stage. In addition, my prior knowledge of Corey had been informed by Aaron, who used to train with him at Pegasus and now coached with me.

Corey's case study was discovered by accident. Whilst interviewing Carl about Noah, his attention frequently turned to Corey, as the most gifted gymnast he had ever worked with. The case was not pursued at the time as Carl had lost contact with Pegasus and Corey. After a few weeks, Sandra asked how I was getting on with finding participants and suggested I approach Alison as the head coach of Pegasus. Alison had had a long and successful career coaching women's artistic gymnastics, but surprisingly when interviewed, the only gymnast she wanted to talk about was Corey. Alison introduced me to Corey and an interview was set up with him and then his mother. It was the interview with Corey that identified Mary as his first coach.

Aaron had told me about his years at Pegasus, his coach Carl and had sporadically pointed out some of the other boys he used to train with in gymnastics magazines and when we were at competitions. Among these boys were; Daniel, now part of the national championship team in team gym; Noah, who had become an international trampolinist; and Corey, who had gained national titles in three disciplines of gymnastics. In addition to these talented individuals, I personally considered Aaron to have extraordinary sensorimotor gifts and his story is told elsewhere (see p. 87). Given the collective giftedness and talent within the

old Pegasus boy's squad I could understand how Carl was not as impressed with Noah as Sandra had been. In addition to interviewing Carl for his perspective of Noah, I was also interested to see if he had recognised the gifts of the boys he used to coach. Carl's assessment of their aptitudes justified his inclusion in the study for spotting giftedness as his disassociation with the sport meant that he was unaware of how far they had progressed.

My prior knowledge of Alison was gained through Aaron as well as casual encounters with her in her capacity as head coach of the local gymnastics club. Therefore, I knew of Alison, but she did not really know me. As for Corey, even though Carl had told me a great deal about him, I had never met him until Alison introduced us. Likewise, I had never met Vanessa before the interview. However, the biggest surprise was when Corey identified Mary as his first coach as I had been working for Mary for the last three years as a coach at Bloomfield. Mary's inclusion in the study was justified because she had recognised Corey's giftedness, realised that she could not take him any further and had referred him to Pegasus. The irony of these encounters emphasised for me how rare and powerful contact with gifted individuals could be.

Interviews

How the Interviews were Arranged

Once a participant had been identified, they were contacted to ascertain their interest in participating in the study. Those who gave a verbal commitment to participate were sent information (see appendix 2) detailing what they would be asked to do, by whom and for what purpose (Seidman, 1998). It was stressed that every reasonable precaution would be taken to protect the participant's identity so that anything they divulged should not place them at risk or put them in a vulnerable position. To this end, anonymity has been facilitated through the use of pseudonyms and by removing as much reference as possible to geographical locations. In addition, participants reviewed the material and had the right to withdraw from the study at any time, although none chose to. Lastly, there was a consent form (see appendix 3) for signature to confirm that the participants understood and accepted all the considerations.

The location and venue for the interviews were discussed and mutually agreed with the participants. Where children were involved, the discussion also included their parents. To

protect the interests of the child and the researcher, parents were required to be present, but non-participatory, during the interviews.

Arranging the interviews was particularly challenging due to the nature of the participants' lives. As stated previously, gifted individuals are atypical by definition (Gagné, 1985) and live very atypical lives. The schedules of the coaches, gifted individuals and their families were in a constant process of improvisation to balance their work and their sport. Consequently, the research design respected this which resulted in a single interview with the participants rather than a series (as suggested by Seidman, 1998). Even with the commitment to a single interview, it was necessary to wait several months for an interview with Corey because of his schedule of intense training and international competitions.

How the Interviews were Conducted

Interviews were chosen as the most appropriate method of research because of the powerful way they gain insight into the experience of others (Seidman, 1998). In addition, interviews relied on the researcher's skill and discipline to help the participants reconstruct their experiences without undue bias (see p. 78). As interviews are interactive encounters that generate knowledge within a social dynamic, it must be noted that the participants were actively constructing knowledge around questions and responses (Holstein & Gubrium, 1995). The use of phenomenological interviews allowed participants to reconstruct their experiences (Seidman, 1998) and were sophisticated enough to actively peel away the layers of complexity to understand giftedness and talent.

Rowan (1981) suggested that no interviewer can enter a study with a clean slate. Therefore, a phenomenological approach to the interviews was used to acknowledge and address my influence in the reconstruction of the participants' experiences (see p. 89). This involved using the phenomenological strategy of exploring my presuppositions prior to interviewing participants (see p. 82). By raising awareness of presuppositions, I became better equipped to govern them. Although Merleau-Ponty (1962) noted that it is impossible to completely bracket out all presuppositions, the process did facilitate the monitoring and mediating of my values and beliefs during the interviews. Effectively, the bracketing process enabled personal views to be kept in check while allowing the participants to reconstruct experiences in their own way. For example, my interview with Arthur was managed carefully, because he had coached my niece, whom I felt was gifted. However, I had to be prepared for

him not to talk about Stacey as he had coached a number of gifted individuals who could have been more gifted than her. Therefore, I had to respect this and not guide the interview into this area just to defend my own view of Stacey's gifts. Instead, my role in the reconstruction of their experiences was to establish and maintain a rapport and guide them to focus on experiences relevant to the study.

The need to build a rapport with participants was an important first step in the phenomenological interviews (Seidman, 1998; Dale, 1996; Polkinghorne, 1989). It was considered particularly important to create an atmosphere where the participants felt at ease, especially when they described deeply personal crystallizing experiences (Walters and Gardner, 1986). Through making first contact, either by phone or in person, groundwork was laid for the mutual respect necessary for the interview process (Seidman, 1998). My knowledge of and involvement in the sports of the participants facilitated a level of familiarity and trust that, in all probability, would have been difficult for an outsider to achieve. It was important during each interview to demonstrate that what the participant had to say was interesting, both in their description and interpretation of events. Often when participants shared experiences they had never shared before, a degree of reciprocation was required to maintain rapport and give them the confidence to continue (e.g. Alasuutari, 1995). Sandra's interview contained one such example:

Sandra: I can cry watching Moskalenko doing a compulsory routine, because it's just so perfect, his technique is awesome, his timing on the bed, his line, his shapes. You know, I look at it and it will bring tears to my eyes just watching because that's what I've got in here (indicating her head). So when they hit it in training, I'm just so excited because that's what I'm working for and you so rarely get it, you know, you get it occasionally. Umm...Colette and Kira quite often hit it on their sets. That compulsories they did at the Russian match. They were...those routines would have picked up near perfect marks internationally on the circuit. They are usually within the top two or three in the World or Europeans on their compulsories. And when you watch them, they just...everything flows, all the lines... That matches what I've got up here (indicating her head). When the two merge, I'm just in heaven. When it doesn't merge I'm not in heaven. I don't know

(laugh). Do you get that in archery, when you get the perfect shot?

Peter: I had that with a girl once. I got her to...I was coaching the county squad and she had turned up to watch her brother. We just get people to have a go because it's the kind of sport that you never know...you never know.

Sandra: Yeah.

Peter: Your talents may never show in anything else.

Sandra: Yeah, it doesn't align to anything else does it really?

Peter: And she was identified as a talented swimmer, we later found out, but she wasn't interested. I got her up to the line and did possibly my worst ever demonstration of how to shoot. And so she got hold of the bow, she put her fingers on the string exactly as I had done and said 'what, like this.' Now it's hard to describe, because these are very different sports. She showed me my technique that I have developed over the last 18 years. And it gets to the stage that even on a video, a coach can't pick out the tiny differences that I can pick out. And she showed me something so close...

Sandra: Yeah, it's exactly what I feel.

Peter: It was like being hit in the face with something. All of the other kids were going 'can you come and tune my bow' and I'm saying 'not now!!' 'Do that again.' And 11 months later, she's on national squad.

Sandra: Yeah.

Peter: And another coach picked her out of a whole line of, you know 100 plus competitors. They said 'that little girl, black hair, pony tail, shooting with a tiny wooden bow.' 'Yeah.' 'I've seen her.' That was it.

Sandra: It is that je ne sais quoi isn't it? It's that...I would imagine for you, even though it was just a feeling about her.

Sandra - coach (p. 17, lines 5-41)

In this extract from the interview, Sandra had shared her very personal impression of talent and how it affects her. Her question was an invitation for reciprocation. With hindsight it seemed to be the right thing to do as it gave her the confidence to share other impressions and interpretations, knowing that I had an appreciation for what she was saying.

All of the interviews began with an open-ended question to give the participants the direction and opportunity to reconstruct their experiences. A generic opening question for all participants was not appropriate as their experiences and circumstances were all unique. For example, some of the younger participants (i.e. 14 to 16 years old) required more general small talk before the start of the interview to establish a rapport and put them at ease. From his short answers and nervous laugh Corey seemed quite nervous initially so we began by talking about how his training was going and the people that we both knew in gymnastics. Although the start of the interviews were individually tailored to the participants, I had listed areas to be explored to use as a memory aid which ensured the participants had the opportunity to talk about a range of aspects related to the discovery of their gifts and talents. These aspects had been identified from the literature review and included: how coaches recognised and valued giftedness and talent; how performers discovered their gifts and how they had committed to the talent field; and how parents had involved their children in the talent field.

After the initial question, the participants largely dictated the direction of the interviews. However, when participants indicated they did not understand or deflected the dialogue off topic, questions were rephrased to redirect the focus back to the experiences being explored. Follow up questions explored and clarified some aspects of the experiences more deeply, using the participant's vocabulary wherever possible (Dale 2000). Effort was made to avoid leading questions. As I had previously explored my presuppositions I was prepared for the participants to reconstruct their experiences in their own words and I was consciously able to keep my personal views in check (see p. 91).

As recommended by Seidman (1998), the interview duration was approximately 90 minutes. This time frame proved to be effective as it allowed sufficient time for the participants to reconstruct their experiences without the interview degenerating into idle rambling.

The number of case studies required depended on the richness of descriptive material obtained from the interviews. No further participants were sought when descriptions began to show similarities (Charmaz, 2000). The study comprised 13 coach interviews; 1 coaches'

meeting; seven interviews with gifted individuals and five interviews with parents across the domains of gymnastics, trampolining and archery. These interviews provided a prodigious amount of rich, descriptive material in themselves and in addition, there had been an opportunity in the course of the study to observe a talent spotting event and to record and transcribe the subsequent discussion of the coaches. This information became a valuable addition to the data obtained from the individual coach interviews.

Data Analysis

Organising the Descriptive and Interpretive Material

Each interview was audio taped and transcribed verbatim (e.g. Dale, 2000; 1996). In order to manage the vast amounts of interview data, the audiotapes were labelled and each page of transcript was coded to signify the case study, participant and interview number, as well as the page number (Seidman, 1998).

Every transcript was read and re-read at least three times, while the audiotapes played in order to get a sense of the participant's experiences (e.g. Dale, 2000; 1996). Any evident emotions or changes in tone of voice were added during this comparison of audio tapes with the transcript, if such information had been missed initially. An extract from Vanessa's interview shows how tone of voice was noted:

“So I can just be there and really enjoy it...enjoy watching him
(Corey)...(whispering) especially when people say how good he is (giggle).”

Vanessa – parent (p. 11, lines 27-28)

Analysing the Descriptive and Interpretive Material

In qualitative research, there is a need to reduce the amount of data in order to make it manageable (McCracken, 1988; Miles & Huberman, 1984; Wolcott, 1990). Portions of each transcript were analysed by taking relevant descriptions and interpretations pertaining to an experience and assigning a label that represented the potential meaning underlying that portion of text (e.g. table 11). This process adapted from Dale (2000) was effective in reducing the raw data transcribed. Once the data was reduced it became possible to compare and contrast the experiences of the participants.

Table 11

Example of how transcript text was reduced into meaning units

Coach	Transcript text	Meaning Unit
Albert	Adam...after he had lots of girlfriend trouble and things like that at that particular stage he...but he never gave up he had this sort of determination and he just kept going and going and going, even when it was difficult and he just got better and better and better	When things were socially difficult for Adam, he still continued to work hard and improve.

Consistent with phenomenological methods, the participant’s vocabulary was used whenever possible when forming meaning units from the text to preserve the essence of how meaning was communicated (Dale, 1996). These meaning units were gathered from the transcripts of all participants. Each meaning unit was coded to identify the participant from whom it came, along with the page and line numbers for the original portion of text (e.g. table 12).

Table 12

Example of how meaning units were coded

Transcript Code / Name	Meaning Unit	Reference (Pg & line)	Case Study Reference
Albert	When things were socially difficult for Adam, he still continued to work hard and improve.	6 (32-40)	Daryl’s story

The meaning units for all the coaches were sorted into clusters of similar meaning units (table 13) which became themes (e.g. Dale; 2000; 1996; Côté, et al., 1995). This process was repeated for the gifted individuals and the family members.

Table 13

Example of how themes evolved from clusters of similar meaning units

Transcript Code / Name	Meaning Unit	Reference (Pg & line)	Interview Reference	Themes
Albert	When things were socially difficult for Adam, he still continued to work hard and improve.	6 (32-40)	Arch2/coach1/int.1	
Terry	Talented individuals can be exceeded by those who just work hard unless they also learn to work hard.	2 (37-44)	Arch4/coach1/int.1	
Terry	How much work you put in is far more important than natural talent.	3 (1-20)	Arch4/coach1/int.1	
Sandra	Sandra noticed a work ethic in Martin, similar to Colette's, rather than a physical wow.	15 (33-35)	Tramp1/coach1/int.1	
Pat	Pat has hard working moderately talented gymnasts who've achieved through sheer graft.	2 (1-2)	Gym3/coach1/int.1	Work
Pat	Carman is a reasonably talented and tremendously hard working gymnast.	17 (17-22)	Gym3/coach1/int.1	Ethic
Don	Anyone can achieve if they work at it, but that doesn't make them talented, it makes them achievers – whole different concept.	2 (4-10; 12-18)	Arch3/coach1/int.1	
Don	Don thought Jade was a real hard worker but not talented.	4 (34-36)	Arch3/coach1/int.1	
Ben	The team has two very talented individuals and one other not far behind who got there more through hard work than natural ability.	8 (22-28)	Gym1/coach1/int.1	
Alison	Lori is exceptionally talented in hard work. She works and works and never stops.	3 (43-43)	Gym2/coach1/int.1	
Arthur	Caroline. An example of hard work rather than talent/potential.	1 (32-45)	Arch1/coach1/int.1	

Higher order themes were created by clustering related themes. (See figure 6).

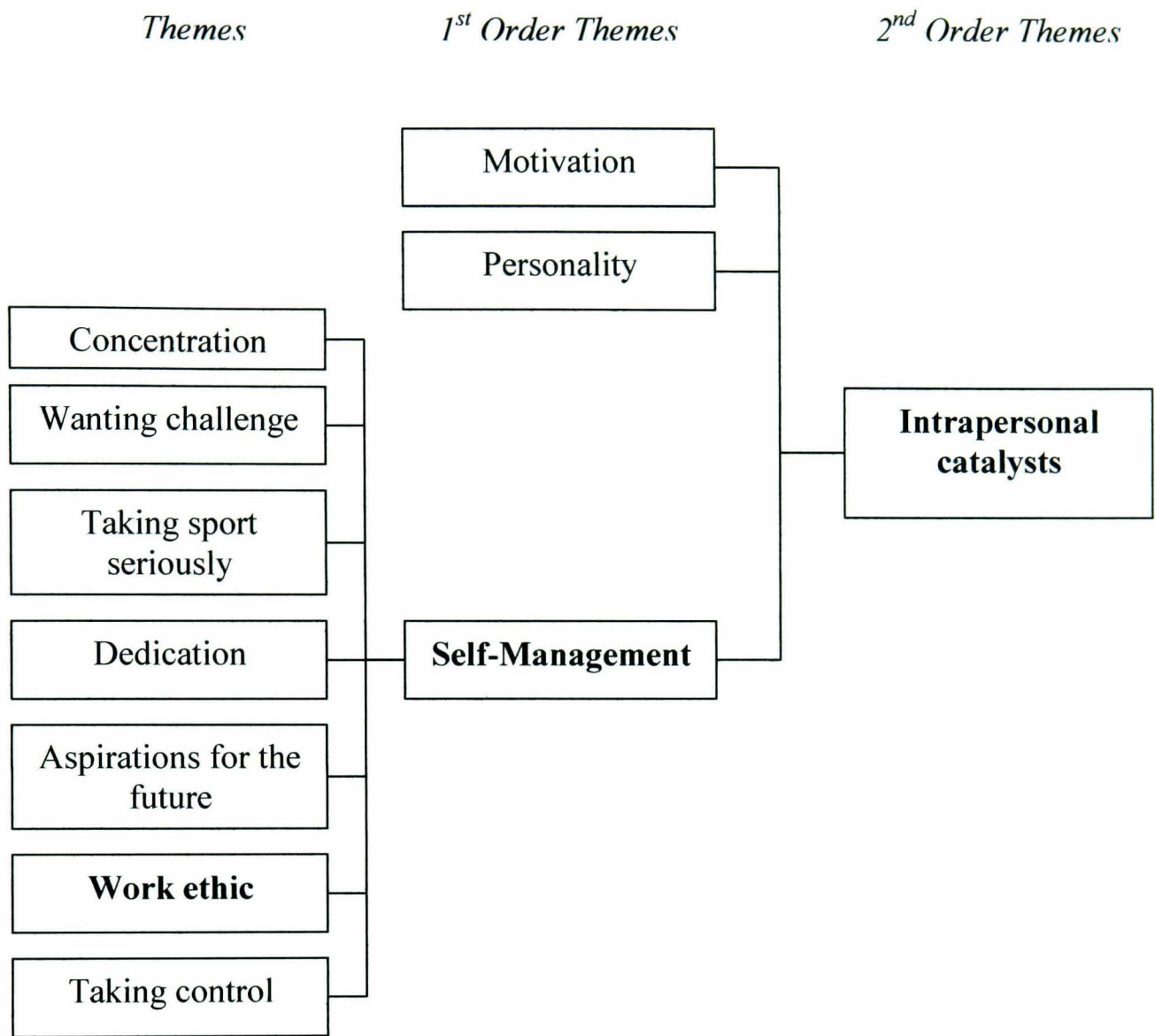


Figure 6. Example of how related themes were clustered together into higher order themes.

Transferability and Trustworthiness

Transferability

Transferability refers to the meticulous and careful way in which this study relates its findings to other contexts. Although this function of research is often referred to as generalisation, transferability is better suited to the way in which this was applied (see p. 78).

Within a positivistic paradigm, generalisations are based on the probability of findings relating to other contexts and presents them as representative of the wider population (Sparkes, 1992). However, within an interpretive paradigm, transferability does not make unwarranted assumptions about the characteristics of people and places beyond the participants within the study (Sparkes, 1992). Both positivistic and interpretive paradigms study the particular in an attempt to make their findings relevant to other contexts. However, the difference is that

interpretivism does not generalise to the wider population directly. Instead of generalising, in this standard view of the term (Alasuutari, 1995), transferability encourages readers to decide how much the findings relate to contexts they are familiar with and gives them the power to learn their own lessons from the cases. The role of the researcher in this process is to present the findings in such a way as to facilitate transferability.

Facilitating the transfer of the findings has been addressed in two ways. Firstly, qualitatively rich descriptions of each case have been provided so that the reader can vicariously relate to the situations and recognise the phenomenon being explored (Alasuutari, 1995). Secondly, the attention to individuality and varied descriptions of the same phenomenon facilitated the transfer of finds beyond the material at hand (Alasuutari, 1995; Stake, 2000). Therefore, from the description of different ways in which giftedness was recognised and developed, the likelihood of readers recognising the phenomenon from their own experiences and transferring what they learnt was increased.

The need to facilitate transferability was well made by Seale (1999): “Thick, detailed descriptions can give readers a vicarious experience of ‘being there’ with the researcher, so that they can use their human judgement to assess the likelihood of the same processes applying to other settings which they know” (p. 118). This is why readers are encouraged to transfer carefully, to consider where the findings came from and where they will be going. In this case generalisations without considering the relevance of context are discouraged.

Enhancing the Quality of the Research

A number of steps have been taken throughout this study to enhance the quality of the research. Research quality is judged against the criteria set by a given framework, paradigm or point of view (Sparkes, 1992). Therefore, all of these steps were undertaken in the interests of promoting trustworthy phenomenological inquiry.

As is customary with a phenomenological approach, before any research was carried out, my experiences and presuppositions regarding giftedness and talent were explored, (Dale, 1996; 2000). Indeed, becoming aware of my views, I became more prepared to allow the participants to tell their stories and present their views in their own words (see pp. 81-91). In addition, I had acknowledged prior knowledge and presuppositions of the participants (see appendix 1).

Furthermore, interviews were audio-taped and transcribed verbatim (see p. 107). Copies of the transcripts were sent to the participants to verify that they were an accurate representation of the interview. Minor amendments were made to the final transcript, normally relating to spelling and use of sport specific terminology. This check was vital for a trustworthy approach to the gathering of qualitative data (Lincoln & Guba, 1985; Stake, 1995; Siedman, 1998; Janesick, 2000).

Throughout the data analysis, the reduction process was revisited and cross checked throughout the process of doctoral supervision and by an uninvolved third party to ensure that the meaning units and themes maintained a fair representation of the coaches' views. This was achieved by comparison of each meaning unit to its theme and each portion of raw data from the transcripts with its meaning unit. The effectiveness of this process became evident when the raw data from the transcripts was used to illustrate themes within the results. The process enabled the retention of the participants' voices at the end of the data reduction process, which is the objective of a trustworthy phenomenological approach (Dale, 1996; 2000).

While discussing the results, some of my own relevant presuppositions and experiences were related to the findings to consider how they might affect my interpretations (see p. 91). Furthermore, by presenting the data in as raw and concrete a form as possible, readers are more equipped to judge the basis from which interpretation has been made (Alasuutari, 1995). Giorgi (1971) proposed that the key criterion of validity or goodness (Stean, 1998) in qualitative research is whether a reader, who adopts the same viewpoint as the researcher, can see what they saw, whether they agree with it or not.

ANALYSIS & DISCUSSION

This section presents an analysis and discussion of the findings against current research in an effort to understand how gifts are discovered and why talents develop. As is consistent with phenomenological inquiry, themes were allowed to evolve from the data.

Table 14

Higher order themes from the interview data

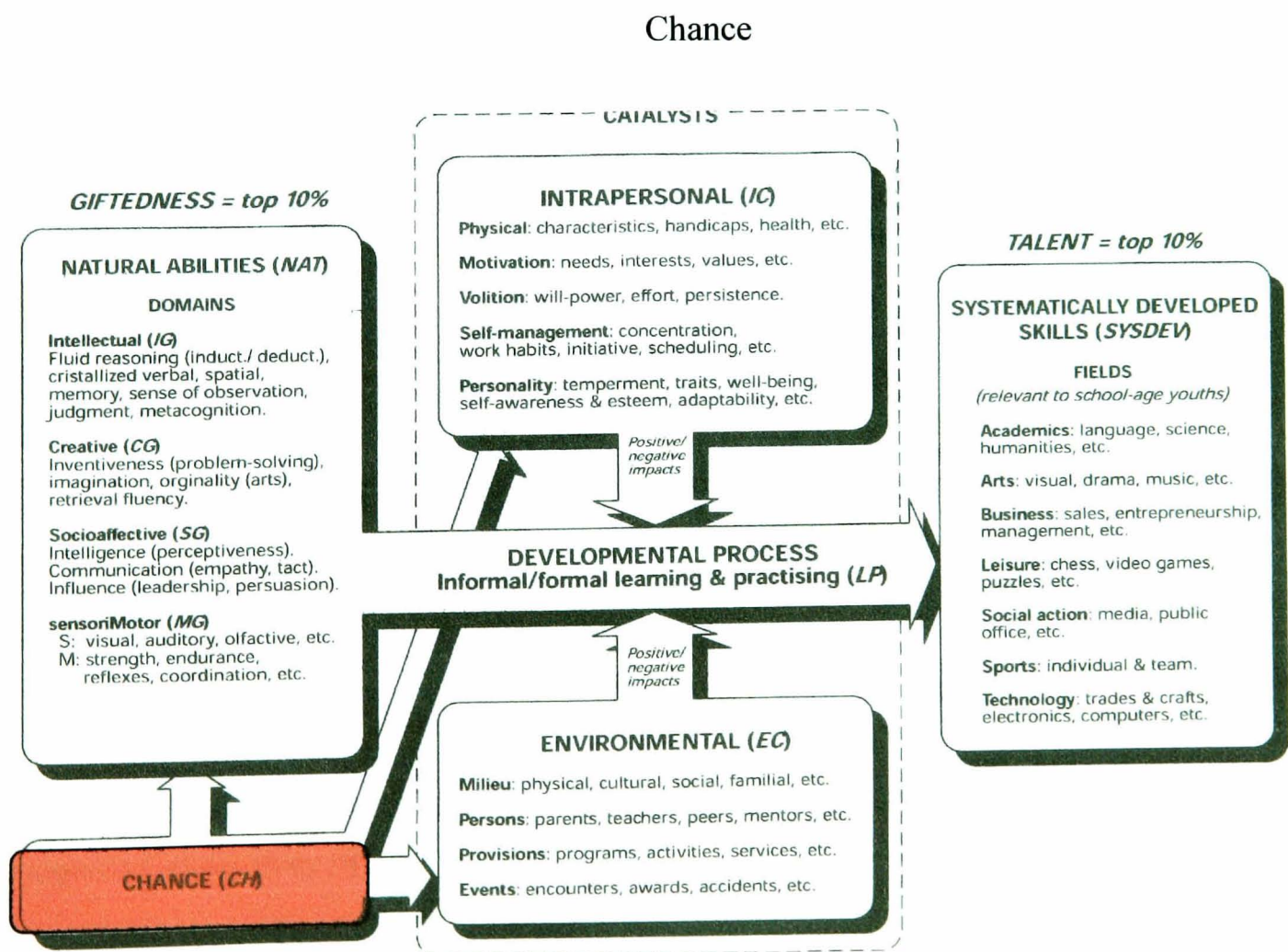
Higher order themes
Chance
Natural Abilities
How giftedness is perceived
Why coaches search for giftedness
How individuals can be affected by their own giftedness
The affect that giftedness can have on other people and the environment
Intrapersonal catalysts
Developmental process
How talent development has affected the gifted individuals
Environmental catalysts
How the environment affects intrapersonal catalysts
How talent affects gifted individuals

However, in order to compare the findings against current research the components of the DMGT were used as a basis for creating higher orders (see table 14) within which to cluster the themes that evolved from the data. To this end, the DMGT has been used primarily as a thinking tool to organise and reflect upon current research, including Gagné's (2000) model. Although there are numerous models of talent development that might have been used (e.g. Abbott & Collins 2004; Côté, 1999), Gagné's (2000) DMGT was felt to be the most appropriate in this instance (see p.113). Furthermore, Gagné's (2003) acronym of CGIPE (see p. 24) suggested a logical order for the discussion as it was purported by Gagné (2003) to show the order of casual impact upon the talent development process. Once again, the CGIPE acronym is not the focus for contention, simply a reasonable basis for giving an order to the discussion.

Using the DMGT and the CGIPE acronym as a structure, the results have been presented and discussed as part of a slowly evolving picture of how gifts are discovered and why talents develop. The results both challenged and expanded upon current views of talent in sport while addressing the research question. To aid the reader, the DMGT has been presented at the

beginning of each major sub section, highlighting the component or link being discussed. In addition, figures have been inserted to show the data themes. These figures have been colour coded to indicate the participants; black text refers to coaches, red to parents and blue to gifted individuals.

Early on in the analysis phase it became evident that the data generated more diverse themes and links than the DMGT was equipped to present i.e. bidirectional links between most of the components. Specifically, the DMGT seemed too generic to illustrate suitably how the process of discovering gifts and developing talent feeds back and affects the individuals and others involved in the process. Notwithstanding this, the DMGT was still felt to be the most appropriate means of structuring current research for comparison with the findings. Although Gagné (2003) acknowledged the existence of these bidirectional links, he did not show them within the DMGT and no empirical evidence has yet been gathered to support them. Therefore, after the discussion of each component, further themes have been presented that show bidirectional links between components. In following the CGIPE acronym, the order for discussing components is chance, giftedness, intrapersonal catalysts, the development process and finally, environmental catalysts.



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

Very few theorists have included chance in their models of talent development. As one of these few, Gagné (2000) used the DMGT to illustrate how chance impacts natural abilities, intrapersonal and environmental catalysts. Within the acronym of CGIPE, chance is the most critical component of talent development. The reason for this was argued to be the necessity of chance for the endowment of favourable genetics, which resulted in giftedness. Chance also exerts itself on intrapersonal catalysts in terms of health and handicaps. In an earlier version of the DMGT (Gagné, 1993), chance was displayed as an environmental catalyst. However, due to its affects upon all other environmental catalysts, such as milieu, persons and events, it was shown separately and more prominently within the later version (2000).

Gagné (2000) illustrated very well the impact of chance with the story of a blind Vietnamese boy called Dat, who eventually moved to the US to become a talented musician. The story clearly showed links between chance and the other components of natural abilities, intrapersonal and environmental catalysts during talent development. However, what was not highlighted in this illustration was how chance had primarily affected the discovery of giftedness, more so than the development.

The interviews with coaches revealed that chance also had a big impact on the discovery of giftedness, but through the environmental catalysts. They noted how chance can affect milieu, how it had introduced them as coaches to the talent field and how it created critical encounters between coaches and gifted individuals.

When considering milieu, the accessibility of the talent field would seem to be a prerequisite for talent development. This point was also made by Gagné (2003) and by the coaches:

...talent has to be given the opportunity to be able to, um, try out their talents. That's another thing, that you can't just be talented. If you lived in the middle of the desert in Saudi Arabia or something, you are not going to have the opportunity to be a top level gymnast.

Alison – coach (p. 10, lines 9-12)

Although this may well be true, the affects of chance cannot be underestimated. In Gagné's (2000) story of Dat, remarkable twists of fate occurred to present him with the opportunity to make contact with a talent field and develop.

How coaches came into the sport

Some of the more remarkable stories to come out of the interview involved the chance occurrences that brought the coaches into their sports (see figure 7). It was highlighted earlier (see p. 58) how crucial coaches are in the detection of giftedness and subsequent development of talent. However, it should not be assumed that all coaches can detect giftedness. Even individuals like Corey (see appendix 1), who's giftedness was obvious to at least six coaches, can still go unrecognised by seemingly experienced coaches (see p. 237). Therefore, it could be argued that there is certainly an element of chance in gifted individuals meeting the right person. It was interesting to discover the events which led these coaches to become involved in the talent field where they would later have critical encounters with gifted individuals.

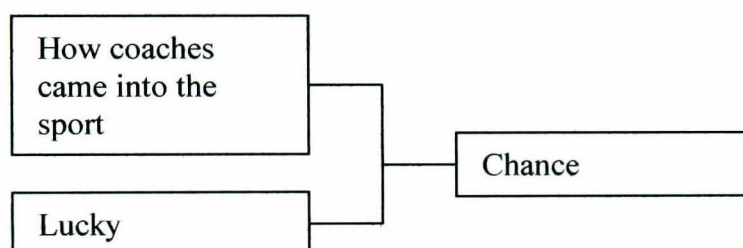


Figure 7. Data themes relating to chance.

Yeah I mean I came into coaching by sheer accident. Umm I was in the army, I was attached to a, a PT section for six months as a PTI. Umm I was rebuilding an old motorcycle and I'd reached a point where I was stuck with the electrics and I wanted to borrow a soldering iron. Umm the sergeant in charge of me had a soldering iron he was prepared to, to let me have if I covered his gymnastics class for one night because he couldn't get to it. I'd never coached gymnastics in my life, I'd never worked with kids in my life. I had no wish to. I stepped in there one night met...met kids for the first time if you like, umm saw gymnastics done for the first time...I, having hated it at school, umm and I was hooked. Out of nowhere and I've been coaching non-stop for twenty-five years ever since.

Pat - coach (p. 20, lines 6-15)

Although the coaches had not considered, until the interview, the role of chance or how their lives might otherwise have been, they had no regrets. These events served to put the

coaches, as the right people, in the right place which ultimately changed the lives of gifted individuals they later encountered.

Lucky (right place, right time)

Once again, the role of chance was particularly evident at the point of detecting giftedness (see figure 7). Given the rarity of giftedness (Tranckle & Cushion, 2004; Howe et al. 1998) and the absence of formal systems for detecting giftedness (Kozel, 1996), the discovery of such gifts really did have the feel of ‘right place, right time’ for these coaches.

Sometimes can be like this, of course, because this is just situation, you know...Right person...right time. You can work twenty-five years and you can have just one talent.

Leia – coach (p. 2, lines 6-8)

Absolute fluke. He was there in the hall doing a coaches course and she was on a, she was working with her coach on hand blocks next to him, on a different...wasn't even involved on his course and she was borrowed as a demonstrator. Sheer fluke...Right place, right time.

Pat – coach (p. 11, lines 11-14)

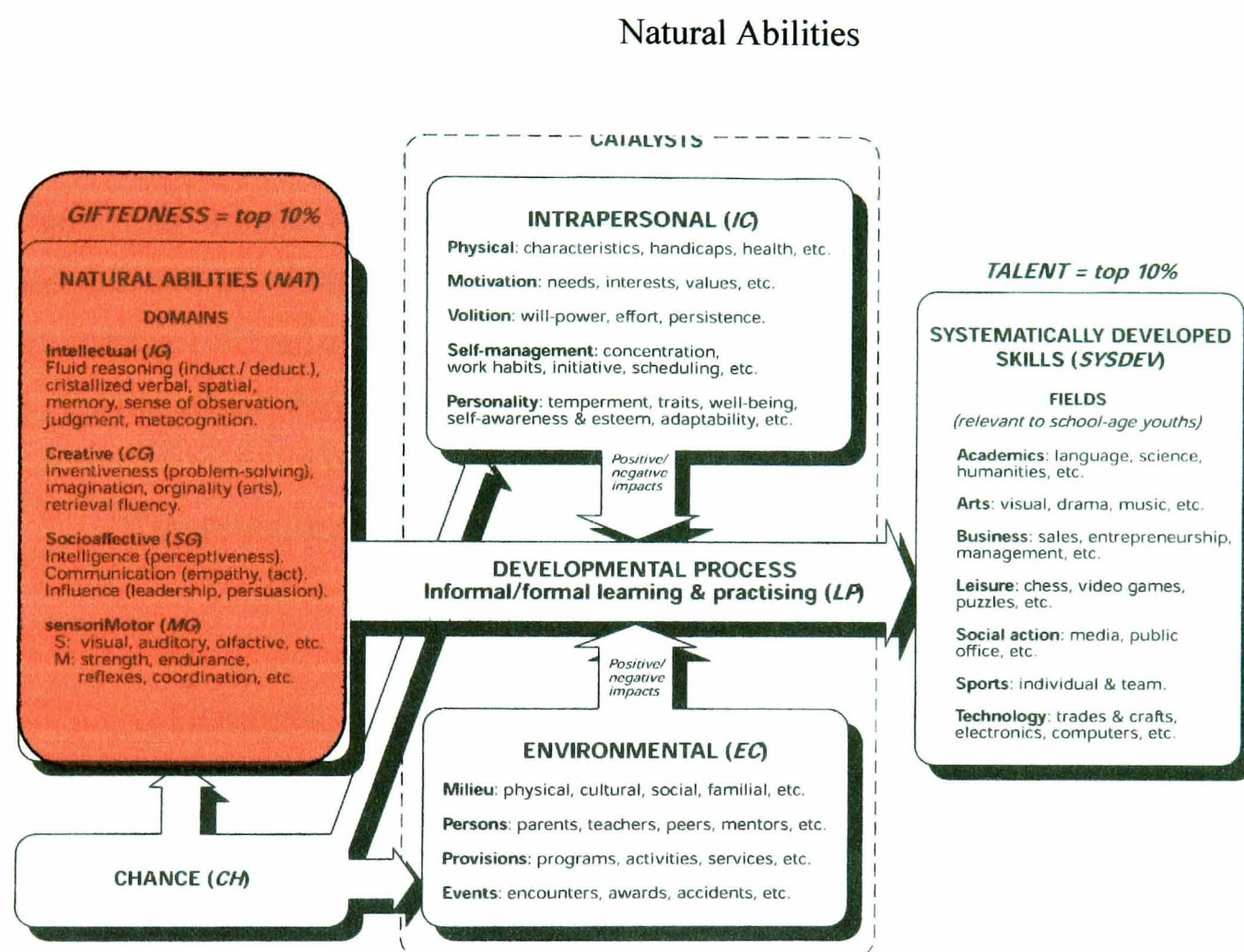
Now...In James's case, he was very lucky. He had the talent, I had the time because I had just retired and his Dad had the cash and inclination to pay for his equipment...

Arthur – coach (p. 2, lines 31-33)

In the absence of talent detection systems, without a chance encounter with a coach who can recognise it, giftedness can go unrealised or undeveloped. Certainly the gifted individuals who participated in this study were fortunate enough to have had such chance encounters with coaches who had recognised their giftedness. Not only does this suggest the strong influence of chance, but also the crucial role of the coach in the detection of giftedness.

Perhaps more detailed and systematic systems might reduce the influence of chance upon talent detection. However, the presence of chance within the DMGT serves as a reminder

that the evolution of giftedness to the development of talent is a dynamic process which is subject to change. Due to its influence upon natural abilities, intrapersonal and environmental catalysts, chance would seem to be the most vital component in the development of talent. Furthermore, as the discussion of other components reveals, chance does not merely influence certain components, but impacts upon every aspect of the discovery of giftedness and the development process whether it be for good or misfortune.



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

Whether a belief in genetic or environmental determination is subscribed to for the eventual development of talent, the contribution of chance towards natural abilities (as defined by Gagne, 2000), can not be ignored. Certainly, talent must develop from some notion of raw materials and Gagne describes this starting point as natural abilities, regardless of their magnitude.

Natural abilities were ranked as the next most critical aspect of talent development because of Gagné's (2003) firm belief that giftedness is a major differentiator between those who can attain excellence and those who cannot. Over the years, Gagné has refined the DMGT and eventually settled upon the term natural abilities, instead of aptitudes, to describe

the raw material that can be recognised as accelerated learning in various domains. This use of terminology and Gagné's belief that talent can only evolve from giftedness (Gagné, 1993; 2000) suggested an assumption that genetic determination plays an essential role in talent development. Gagné (1996) is so sure of his position within the nature versus nurture controversy, that he welcomes the debate.

Despite Régnier et al's (1993) warnings, Howe et al. (1998) became entangled in the nature versus nurture debate spurred on by their proposal of the 'talent account'. Howe et al. (1998) and Hyllegard et al. (2001) suggested that a perception of giftedness would impact upon the practices of teachers and coaches. Without wishing to stir a similar reaction to that received by Howe et al. (1998), it is important to highlight what the coaches believed with regard to the origins of talent. This would facilitate a better understanding of how such a perception might affect their view of how gifts are discovered and why talent develops. What the coaches believed ultimately impacted their coaching behaviour and the optimism they held for the individuals they chose to or chose not to coach.

'I think you are born with a talent. I think it's genetic.'

Alison – coach (p. 9, line 34)

'...I think you either have it or you don't. I suspect you're born with it, you can refine it as a coach but if it's not there you're refining thin air. You have to have it, that kind of force of character is born I think, not bred.'

Pat – coach (extracts from p. 4, lines 31-36)

The extent to which the coaches believed in genetics to achieve talent affected how much they valued giftedness. In contemplating the implications for such a belief it is worth revisiting the argument of Howe et al.'s (1998) 'talent account.' Those who believe giftedness is a prerequisite for talent will value giftedness more than coaches who simply see it as a means of achieving talent faster. In addition, the belief and value for giftedness will ultimately impact coach behaviour, affecting the opportunities extended to participants depending on their perceived level of aptitude.

Whether the coaches believe giftedness is genetically or environmentally determined, the aptitude and interests of the family can still be a valuable indicator. Certainly all of the

parents interviewed had developed expertise in sport or dance and considered sport to be a valuable experience.

‘My Dad was incredibly good at cricket...very good at cricket. We have a sporty family I suppose really (laugh). My Mum was very good at running, so yeah, sports quite important in our family. It’s encouraged.’

Lucy – parent (pp. 12-13, lines 49-1)

‘...if you look back on my side of the family, there’s a lot of very talented sports people. I mean, my father’s brother was a championship boxer, my cousin ran for Great Britain in athletics and you can...and my other uncle was a very good golfer and you go on like that. And then you go on Janice’s side and they’re very, very artistic and to be doing something artistic you got to be alone and have that creative thing on your own. So if you say OK you believe in genes and you put all those together, does that combination work? I don’t know, I honestly don’t know.’

Jim – parent (p. 11, lines 2-9)

Previous studies have also found that the parents of talented children had a proficient history in sport (Côté, 1999; Duncan, 1997). How the coaches valued giftedness and the family history of exceptional abilities supports Howe et al.’s (1998) assumption that talent “originates in genetically transmitted structures and hence is at least partly innate” (p. 35). As far as the nature/nurture debate is concerned, the coaches aligned themselves with the view that giftedness is important and that talent is partly genetically and partly environmentally determined. This view is similar to that of Gagné (1985) and Csikszentmihalyi et al. (1993). Therefore, the sporting experience of the families provided an indicator of favourable genetics and how the task of talent development might be received.

The nature/nurture debate seems to lie at the core of talent detection, identification and development. However, the relevance of the debate in practice would seem to be more to do with philosophy than fact. Where the coaches positioned themselves within the debate was reflected in how they used the word. The analysis of the data developed four themes that related to the coaches’ views concerning talent as a concept (see figure 8). These were

understanding talent, multi-dimensional nature of talent, prevalence of giftedness and recognising giftedness (Tranckle & Cushion, 2005).

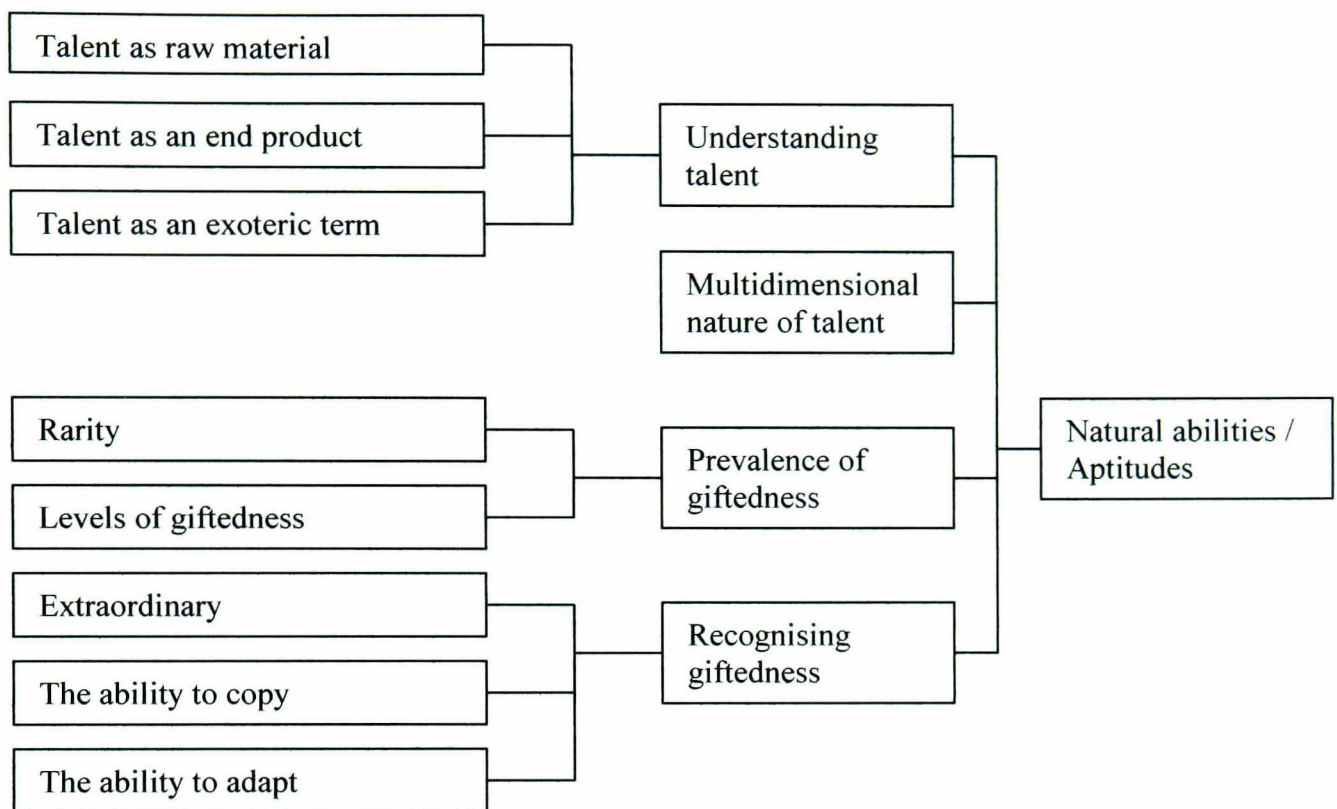


Figure 8. Data themes relating to natural abilities.

Understanding Talent

The use of a single term to describe both giftedness and talent must inevitably lead to confusion unless terminological clarity exists within sports concerning the language used (Gagné, 1996; Tranckle & Cushion, 2004). The coaches' understanding of the term talent was explored as that is the most recognised word out of talent, giftedness and aptitude within sport (Gagné, 2003). Analysis of the data showed that the coaches either associated talent with raw materials or the end product of a developmental process.

Talent as Raw Material

Equating talent with raw materials presupposes that components exist from which skill can be developed. This use of the word is consistent with Gagné's (2000) definition of giftedness, one of the few, if not the only, definition that makes the distinction between raw materials and the end product of a developmental process as the following data illustrates:

My definition of talent is the enhanced mental and physical coordination which enables an individual quickly to learn new procedures and with self discipline and the benefit of sound advice, progress more rapidly to high levels of performance.

Arthur – coach (p. 16, lines 4-7)

For me, talent is a combination of physical attributes, so that physiologically they are able to do what I am asking them to do, combined with the ability to make change...Because I have some very physically talented people that find it difficult to make change, so then they don't actually fulfil what we would see as their physical potential. It's the combination of that and the physical that creates talent.

Sandra – coach (p. 1, lines 4-9)

These coaches considered talent to be the raw materials that they deemed important for developing skill. Although there was no suggestion that these attributes were a prerequisite for the development of skill, they were thought to be desirable for quicker progress. The coaches' personal and varied definitions of talent appeared to equate more closely to Gagné's notion of raw materials before development, rather than to skill as an end product.

Talent as an End Product

Some of the coaches also equated the word talent with an end product, such as systematically developed skill. This was consistent with Gagné's (1985; 2000) and Bloom's (1985) definition of talent and Ericsson, et al.'s (1993) concept of expertise, as this data demonstrates:

Someone who is shooting well, with good technique and a good result at the end of it.

Terry – coach (p. 1, lines 3-4)

I understand talent to mean someone who can perform any skill or act better than the average person.

Don - coach (p. 1, lines 3-4)

These quotes suggest a distinctly different meaning behind this use of the word talent. Although some of the coaches viewed talent as raw materials; these coaches equated it with the demonstration of skill. Arguably, their definitions suggest that such skill would develop from a process involving formal instruction.

Talent as an Exoteric Term

When faced with defining talent, the majority of coaches either associated the word with the raw materials or an end product of a developmental process. However, some coaches preferred to treat the term as exoteric and describe its relative nature rather than provide a definition. Similar responses have been noted in the literature (Howe et al., 1998; Brown, 2002) where the nature of talent is described instead of defined. From the varied examples below, it would seem that none of the coaches were drawing upon any agreed terms or definitions and many of them struggled to augment a concept that they knew tacitly.

Somebody that shows the potential to do well in gymnastics. But that could mean a number of different things because there's so many disciplines within gymnastics that you could have the talent for, you might have for one particular discipline in gymnastics. So there's also several different levels within gymnastics. So you might say that kid's got talent and it might be talent that's focused towards achieving at...not highest levels, but a level much further down...yeah?

Ben – coach (p. 1, lines 4-10)

I think talent is relative to what it is you are trying to achieve. For example if I was to select a gymnast at the top level they would be different talent identification than if I was selecting a gymnast maybe for team gym. Because team gym would go to a European championship, and then that would be the pinnacle. A tumbler could get to world-class level and give the Russians a run for

their money and there's a possibility that they would win a gold, silver or bronze medal. So it's totally related to what it is I am trying to select for. Team gym, again I'd be looking for somebody who could work and connect with other people, to work in a team. That's not the same necessarily as somebody who is an individual performer, who would have maybe a different sight and a different attitude to their training.

Alison – coach (p. 1, lines 3-13)

The data demonstrates that collectively, the coaches had formed two distinctly different views of the word talent; either as raw material or expertise. This can usefully be seen as evidence of a lack of conceptual clarity within the field, i.e. they had no clear terminology to relate to, thus supporting the need to develop both clearer and stronger working definitions within sport, such as those proposed by Gagné (2000).

Multidimensional Nature of Talent

The multidimensional nature of talent (as defined by Gagné, 2000) has been well documented (Gagné, 1985, 1993, 2000, 2003; Brown, 2002; Abbott & Collins, 2004). Although Gagné purported that gifts should be recognised and valued for their own sake, the coaches recognised that they were ultimately faced with the prospect of developing talent. In other words, it was necessary also to consider how a gift could develop, rather than valuing the gift for its own sake. This view was evident in Côté, Salmela, Trudel, Baria, and Russell's (1995) study of the knowledge of expert gymnastics coaches. When considering the potential of gymnasts they would take into account personal characteristics (what they could and could not do), the gymnast's personal characteristics and level of development, and any contextual factors. Interestingly, the coaches, who talked about the multidimensional nature of talent, were also the ones who avoided a definition of the term as they were equating talent with potential for development, as these excerpts from the data illustrate:

Talent is a whole package of things.

Albert – coach (p. 16, lines 19-20)

There are so many things that contribute towards that talent aren't there. So, you might say how strong are they mentally? What physical abilities do they possess?

What body shape have they got? In trampolining there are so many things like body shape, ability to time rhythm on the bed...that sort of thing differs incredibly. Umm...there are some kids that we're coaching in the GB squad who have the most exquisite timing of their jumping, but there are other kids who are beating them who have awful timing, but they have other things that are in place that allow them to achieve a higher standard. So there are so many different things; parental backing; amount of homework; type of school they go to. So many things go to make up a talented situation. But maybe that's not completely to do with talent, but it seems to me that it all jumbles in together.

Trevor –coach (p. 11, lines 17-27)

The coaches recognised the multidimensional nature of talent development (Abbott & Collins, 2004), but due to its inherent complexity some were unwilling or even unable to define giftedness. It could be suggested that in defining giftedness the coaches felt that they were assuring that talent would evolve from the raw materials. Gagné (1993) also stated that giftedness will not necessarily develop into talent. Therefore, it could be contended that the coaches were looking beyond the gifts to the interrelated intrapersonal and environmental factors that would impact the developmental process (Gagné, 1985).

The coaches clearly valued giftedness that could be developed into talent. This outlook relates to Csikszentmihalyi et al.'s (1993) view that giftedness must be valuable to be regarded as such but diverges from Gagné's view that it should be valued for its own sake. Considering the coaches' responses and their interpretations of the talent field in light of Gagné's work (1985; 2000; 2003), it is reasonable to propose the existence of giftedness (without the intrapersonal and environmental factors that would facilitate talent development); giftedness that could develop (with favourable intrapersonal and environmental factors); and talent itself as an end product of development.

This raises the further need to distinguish between giftedness that is and is not likely to develop into talent. Although calling for a distinction between giftedness and talent would seem challenging enough for the field, from the data it could tentatively be suggested that there are in fact three distinct views of talent. Given the evidence from this research, perhaps it is appropriate to reconsider the use of the word potential. Within this context, potential would refer to the possibility of developing expertise or talent from giftedness. Therefore, specific gifts could be valued for their own sake enabling the development of talent, while adding

potential as a further dimension that considers the intrapersonal (Abbott & Collins, 2004; Gagné, 1985; 1993; 2000) and environmental factors (Côté, 1999; Csikszentmihalyi et al., 1993; Gagné, 1985; 1993; 2000; Bloom, 1985). This interdependent concept of potential is similar to that represented in the coaching model that resulted from Côté et al.'s (1995) study of expert gymnastics coaches' knowledge.

Prevalence of Giftedness

Csikszentmihalyi et al. (1993) suggested that raw materials or skill need only be valuable to society to be a talent. However, the coaches used labels of gifted or talent sparingly. The prevalence of giftedness in the data fell into two lower order themes and related to the perception of the rarity and levels of giftedness which existed among those who merited such distinction.

Rarity

Bloom (1985) felt that many more people in the world were gifted than were identified; whilst Howe et al. (1998) advocated that only a minority were gifted. Gagné (2000), one of the few theorists to assign a percentage to the prevalence of giftedness, suggested that natural abilities can only be judged as gifts if they were found within a benchmark of the top 10% of their peers. The coaches concurred with Gagné and Howe et al., holding the view that only a minority of people were gifted and that encountering these individuals was indeed a rarity. A view which adds weight to Gagné's suggestion of the possibility of establishing a benchmark of the top 10% and which supports Howe et al.'s theory that only a minority are gifted.

Real talent is very rare and you're lucky if a real talented person walks into your gym once every 10 years.... Corey is one of the most talented gymnasts I have ever come across. [In a 24 year coaching career]

Alison – coach (p. 1, lines 41-42)

Real, real talent I think you only see once or twice in a lifetime.

Don – coach (p. 3, line 29)

Not too many really talented. Talent is pretty thin on the ground. I always think that you equate talent with having really outstanding capabilities both mentally and physically. You can find the clever guys, you can find the tough guys, there aren't too many tough, clever guys.

Arthur – coach (p. 7, lines 39-42)

I suppose I've seen two in, in...15 years in this country that I would describe as having an outrageous talent...

Pat – coach (p. 1, lines 40-41)

Levels of Giftedness

Whilst taking a cautious view as to what can be regarded as gifted, the coaches also identified several levels among the gifted. These were similar to Gagné's levels that were labelled as moderately, highly, exceptionally and extremely gifted (Gagné, 1993). Whilst not necessarily having the vocabulary the coaches certainly grasped the concept, and developed their own terminology to describe the levels of giftedness they had perceived. Arguably a further emphasis of the need for terminological clarity and agreed definitions. However, the descriptive terms used by the coaches for the different levels of giftedness were unique to each coach and based on their experiences rather than any agreed terminology. Once again, due to their clarity and in the absence of other systems, it is possible to propose Gagné's (1993) levels of giftedness and talent as a sensible foundation for establishing agreed terminology.

Perry is super, super talented. Kira is super talented and Colette is highly talented.

Sandra – coach (p. 10, lines 45-46)

Rayleigh was super talented.

Don – coach (p. 11, line 28)

...here [Corey] was a mega talent.

Alison – coach (p. 15. line 3)

The coaches described extreme giftedness using more colourful vocabulary than Gagné's (1993) terminology; but richly reflected how they experienced such giftedness.

Perry could be world champion. Perry is awesome. Perry is the most talented...one of the most talented. Beautiful shapes, beautiful lines, phenomenally talented, his orientation is amazing. He's got everything.

Sandra – coach (p. 10, lines 6-9)

Recognising Giftedness

'Phenomenal', 'awesome', 'beautiful', 'amazing' are just a few of the evocative words used to describe exceptional giftedness by the coaches. However, such passionate descriptions were not restricted to the most exceptionally gifted individuals. Following a talent identification session at Pegasus Gym Club the coaches discussed the young hopefuls with similar language that reflected how powerfully they had perceived the students' abilities

Laura was nice to coach... Silvia was dynamite...Eleanor was incredible...

The second group of kids were really crap.

Nigel – coach (p. 2, lines 2-15; p. 4, line 7; p. 5, line 2)

Silvia was fantastic...Laura was quite interesting.

Jacen – coach (p. 2, line 14; p. 6, lines 46-47)

Silvia looked fantastic.

Sandra – coach (p. 2, line 31)

Extraordinary

The colourful and passionate vocabulary used by the coaches begs the question as to how they can come to view elements of a child as 'dynamite', 'incredible' or 'fantastic'. The impressions that the coaches get with gifted individuals can be understood better when considering how they differ from the norm. Bearing in mind the rarity of giftedness (Gagné,

2000; Howe et al., 1998), and how infrequently it is encountered in coaching, it is hardly surprising that coaches consider that gifted individuals ‘stand out.’

He [Rayleigh] was so different to anyone else I had seen before. That’s how I recognised he had talent.

Don – coach (p. 7, lines 48-49)

Just first impression was that he [Phil] was doing skills with quality that I wasn’t seeing from anybody else in that group. He had quality written all over him, and that was about body tension, height from the bed, ability to time the bed...um...spatial awareness and all that sort of thing.

Trevor – coach (p. 2, lines 38-41)

Each child when they stand in front of you, they’ve been selected here because they’ve shown some talent of some sort, and I say to them that they all have the right bodies and the right shapes and that they have been selected because they are much better than the other children.

Alison – coach (p. 4, lines 39-42)

The Ability to Copy

Although the specifics of how gifted individuals stand out differs with the context, Gagné (1993; 2000) noted that giftedness can be recognised by accelerated learning in a domain of aptitude. Kozel (1996) also suggested that accelerated learning as a sign of giftedness can be assessed by how quickly children learn without external input. In this study, learning without external input was observed by the coaches as an ability to copy:

He (Noah) watched Collette doing a one and three [one and three quarter somersault] and he taught himself a one and three. You know...kids don’t do that...they copy, but they don’t go off and teach themselves on the garden trampoline the way he did. He taught himself a full, he taught himself a Rudy, two twist, two different twisting ways. He had to sort that out! But, his capacity for copying, watching others...And when he was little we’d go to competitions

and we would have taught him one way of doing something, and then all of a sudden I'd see he had changed his arm position, "why have you changed your arm position?" "oh, so and so was doing it, I watched them at the competition and I liked the look of it". Because he watches. Ahm...he's self-taught an awful lot...for me, if I get a child that copies and is interested in others, I think wow, you've got it!

Sandra – coach (p. 7, lines 13-22; p. 12, lines 16-17)

The Ability to Adapt

In addition, Kozel (1996) highlighted that accelerated learning as a sign of giftedness could be assessed by how quickly children were able to learn skills with precise instructions. This ability to adapt was also noted by the coaches. Like the observed copying, it was also consistent with Gagné's (1993) claim that giftedness could be recognised as accelerated learning.

His (Perry's) capacity for change is phenomenal. Kira is very good at making change. Because Perry and Kira feel so much, there's so much kinaesthetic going on...

Sandra – coach (p. 11, lines 2-5)

Susie...um...her ability to assimilate information and reassemble it and use it and store it is phenomenal. I've never seen anything like it.

Pat – coach (p. 1, lines 42-43)

...everything I asked him (Daryl) to do he just did it, and now that doesn't normally happen. It's not that easy for them to just do what you are asking'.

Albert – coach (p. 1, lines 24-26)

...he (Billy-Joe) tends to pick things up quickly, I mean he learnt a Kazumatsu vault in a week, from prepping it on the floor to taking it to vault.

June – coach (p. 2, lines 37-39)

...just incredible ability to see what I was saying, picture it and do it...straight off...unbelievable.

Trevor – coach (p. 2. lines 8-10)

Bearing in mind the rarity of giftedness in individuals, it seems obvious on reflection that they may be recognisable by the way they stand out. Indeed, these individuals will be at least among the top 10% of their peers and will be atypical in many ways (Gagné, 1993; Csikszentmihalyi et al., 1993). In addition, the coaches highlighted that performers were particularly distinctive in terms of their ability to copy and adapt. This would seem to lend weight to the assertion that accelerated learning is a key indicator of giftedness (Gagné, 1985; Kozel, 1996).

The coaches revealed that the word talent is used with distinctly different meanings amongst practitioners, as is the case throughout the academic literature. In the interests of conceptual clarity and harmonious understanding between theory and practice, it would be advantageous to consider carefully the use and definition of terms. These terms being: 1. raw materials known as 'giftedness' (Gagné, 1985); 2. the possibility of such raw material being developed 'potential' (Tranckle & Cushion, 2004); 3. the end product of a developmental process 'talent' (Gagné, 1985). Within the talent field a common language is necessary for effective sharing of ideas and continuation of the evolution of knowledge and understanding for generations to come.

The main findings of this section relate to the coaches' concept of talent and how the nature/nurture debate affects that concept. Their view of what constitutes talent is primarily important as they are the ones charged with the discovery of giftedness and its subsequent development.

How Giftedness is Perceived

It has already been discussed how the recognition of giftedness is vital for the discovery and development of talent (see p. 115). For their role in the talent development process, it is clear that giftedness needs to be recognised by coaches and also parents. However, the link between natural abilities and those who recognise them is not clearly illustrated within the DMGT (Gagné, 2000). Therefore, how giftedness is perceived is discussed as an extension to the component of natural abilities; showing how natural abilities are perceived by coaches and

parents. From the interview data, it appeared that the coaches intuitively perceived giftedness, while the parents perceived more of a specialness about their child (see figure 9).

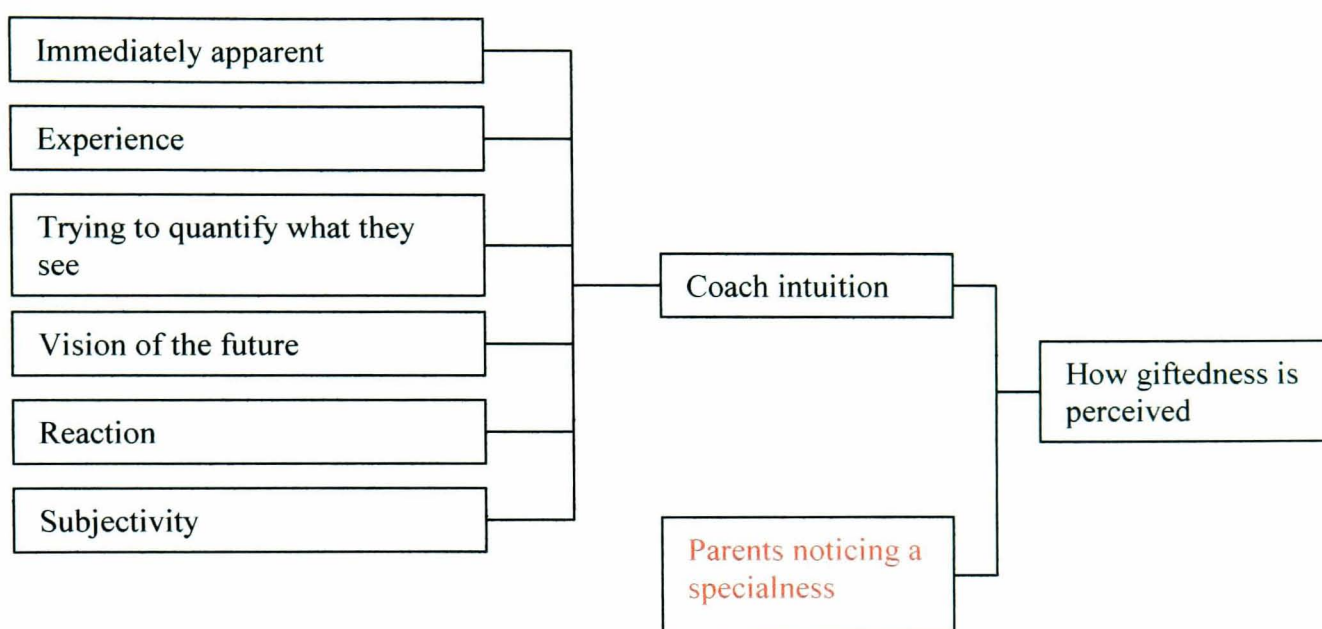


Figure 9. Data themes relating to how giftedness is perceived.

Coach Intuition

It has been suggested that the experience and intuition of coaches (Mocker, 1987; Ulmer, 1987; Kozel, 1996) is more reliable than systematic testing for detecting talent. Furthermore, researchers have been curious for some time as to how coaches spot giftedness (Bartmus et al., 1987; Williams & Reilly, 2000).

The expert coaches found it particularly difficult to put into words how they intuitively recognised giftedness. Being able to relate and show understanding of what the coaches were saying was crucial to be able to give them the confidence to continue. For many of them, it was the first time that they had been given the opportunity to discuss their very personal perceptions of giftedness. From the data it appeared that these coaches intuitively found giftedness to be immediately apparent, based on experience, difficult to quantify, but involving a clear vision of an individual's potential, and an acceptance of how subjective such intuition was. These data themes are now discussed in an attempt to unravel some of the mystery surrounding how these coaches intuitively recognised giftedness.

Immediately Apparent

Bearing in mind the rarity of giftedness (see p. 126) it might seem unusual that the coaches felt that giftedness was immediately apparent. As discussed earlier (see p. 128), it was not that they resembled previously perceived giftedness, but that they were somehow different from other individuals.

Always find it quite simple to pin point a child that's got some ability at gymnastics and has got the potential to achieve something, at whatever level that may be. And I don't find that...usually you do that fairly quickly when you've seen a child; their stance; their posture; their size...umm...and obviously their ability to do certain things within the gym. Err...kids that are very co-ordinated are quite easy to pick out...in a group of 20 kids...4 years old...5 year olds... It's very easy to pick out one or two that are that group that have those sorts of things...co-ordination...balance...posture... So I never find that terribly difficult...to pin point them before you've even asked them to do very much. I think you then have to go on and get them to do a series of tests but...looking at specific things that they can do to then sort of confirm the idea that you've got that someone's got talent.

Ben – coach (p. 1, lines 15-26)

Yea, she walked in the door the first night for rec and I said “This one's going for squad” she hadn't actually got undressed yet. (Laugh) She, I don't know how to describe it really they have the X factor. They walk in the door and you think “Yep” and then you let them get changed and start training. I've picked up 4 of my top kids, literally they walk in the door and they have about them an air the way they hold themselves, the way they walk the way they, it's just it's like a little halo around them when they walk in the door you can almost, you can literally see them glow in the dark um and as soon as they start to work, it's obvious, instantly that this kid needs more attention for all the right reasons, they have a natural fluid movement um you'll see it, they walk differently, they stand differently um it's almost, yea it's almost like they glow in the dark, it's weird.

Pat – coach (pp. 5/6, lines 45-5)

The first time I saw him (Noah), I didn't even sleep that night. I was so excited, by the fact that this kid had walked through the door and got on a trampoline, and I just knew he was going to be very, very special. And we just went wow! Now, I think...that people on the outside are starting to see now in Noah what we saw then, it's taken six years for the outside world to see what we saw and felt on that initial...

Sandra – coach (p. 5, lines 31-33; 35-41)

The notion of giftedness being immediately apparent seems to contradict Harre's (1982) theory that it could only be determined through training. However, as noted by one of the coaches, after the initial detection, they would then train them to confirm what they thought.

Experience

From the interviews, it seemed as if the immediate perception of giftedness was based upon the coaches' experience. The following quote illustrates how experience helped the coaches to separate extraordinary from the ordinary.

It's...having the ability to know what is a reasonable attempt by a kid with inexperience and what is exceptional. I don't think it's that easy unless you have years of experience of trying, but that's one of the joys of age (laugh).

Trevor – coach (p. 5, lines 16-18)

However, there is perhaps more to their ability than just experience. As some of the previous quotes indicated, the coaches were able to notice something in the children before they even had the chance to demonstrate a rate of learning.

Trying to Qualify What They See

The coaches gave the impression that there was more to their intuition than just experience. Through the interviews, they went on to try and augment their tacit perception of giftedness, which they found extremely difficult.

...the X factor kid has it all um and they have about them a certain aura. They have, they usually have um self confidence, not necessarily pushy in your face self confidence, but they are quietly self confident, they know who they are, they know where they're going in life and know how they're going to get there. They're not afraid of people, they'll talk to you up front won't go all shy and not talk to you. They're easy around other kids, they may not want to be the centre of the party, but they're not afraid to be either. Um and they're usually comfortable with their own bodies they're not shy, they're not sort, sort of "Don't look at me" Sort of "don't look at me, I've got to wear shorts, so don't look at me I'm too fat or too thin" They just get on with it, they accept themselves for what they are and they get on with it and it's very difficult to pin down but it's one of those, you know it when you see it or more importantly, you know it when you don't see it. You'll see them and you go this one hasn't, it's easier to define those who haven't got it than those who have it. Um but there is just something about, there's a spark about them they have they have almost like a presence. It's really hard to try and pin it down, but yea, almost like a natural charisma.

Pat – coach (p. 7, lines 15-30)

I think when he's (Lewis) shooting, its more intense. But when he wasn't shooting its still something...it's a special sparkle almost. Something that you see in the eyes, that is different to the average person. It makes you feel excited.

Don – coach (p. 3, lines 38-40)

It is that je ne sais quoi isn't it?

Sandra – coach (p. 17, line 40)

A range of different indicators were suggested by the coaches to qualify their initial impression of giftedness. These included a variety of intrapersonal qualities, something in the eyes and ideal physicality. However, none of these indicators alone defined giftedness for the coaches. Giftedness to them was something extra that was almost elusive to pinpoint, but clearly apparent when someone had it. This was described by one of the coaches as an "X"

factor and a “je ne sais quoi” by another. Whatever the substance of the X factor, when it was perceived it had a powerful affect on the coaches.

Vision of the Future

Although the coaches were not able to pinpoint the elusive X factor, they were able to take their analysis of how they perceived giftedness even further. The exploration moved from what the coaches thought the children had for all to see, to how they personally thought the children would develop from what they had perceived.

...take plant a tree. When you plant it, it's still very, very small. Nobody can see how beautiful it will be but you, during all this process. After one hundred years we, or fifty years, how we want, we can see nice tree. And I think working with children, this is the same.

Leia – coach (p. 2, lines 15-19)

I have a vision straight away. As soon as I see them on the trampoline. It's usually with everybody. I...I...I have a very....I can watch a little child on a trampoline and I can have a very powerful image of them doing a routine in 10 years time and what it's got in it. It's quite bizarre! Stronger with some. I mean...if I've got this WOW factor, it's...it's as clear as clear can be, and I can see exactly what they're going to look like, and I have that image there.

Sandra – coach (p. 9, lines 1; 3-5; 8-10)

10 years ago there was a gymnast called Hannah who was nothing special. She was in sports acro; she was an acrobat top at the time and umm Andre was running a coaches course, and she came as a demonstrator and he saw her working round the gym and said “I need this child in artistic.” “She has what I'm looking for” and she transferred across and I came here on a training weekend with my gymnasts and saw the National coach working with this kid who couldn't do a damn thing...Like he was teaching her to do round off flick and I'm thinking “why is the National coach ploughing his personal time and effort, What is it that he's seen that I haven't?” And eventually curiosity got the better

of me and I asked him. “So, why are you working with this kid, she can’t do anything? I’ve got like 15 kids, all of them can do more. “Well yes” he said “they can, but they won’t” I said “I don’t get it” He said “watch” I said “Like now?” He said “No, watch in ten years time” In ten years time, lo and behold, she was in the Olympics. Now, he had seen something of a child who could do nothing, he had seen the potential. She wasn’t even in artistic gymnastics for crying out loud, she was an acrobat top but he’d seen what he wanted to put on the floor in his team in ten years time.

Pat – coach (extracts from p. 10, lines 22-44)

The idea that the coaches had a clear vision of a gifted individual’s future is very revealing. Beyond the relatively simple but rare recognition of giftedness, the coaches had also perceived a clear way of turning that giftedness into talent that showed an affinity for Ericsson et al.’s (1993) 10 year rule (see p. 37). This inspired them to devote time, energy and belief towards the talent development of these children. Perhaps what the coaches detected was more than just giftedness, but a sense of potential. Based on their perception of the child’s giftedness and intrapersonal catalysts, together with their own experience as coaches, a clear path for talent development could have been perceived (Côté et al., 1995). In looking back to the refined definition of potential as the possibility of turning aptitudes into expertise (see p. 131), it could be suggested that the X factor is extraordinary potential through an ideal mixture of giftedness and intrapersonal catalysts.

Reaction

The perception of potential seemed to evoke powerful reactions from the coaches. These reactions included surprise, excitement and sometimes even fear, which are illustrated by the following quotes.

...the first thing that strikes you is that they’re able to take in information and reproduce it into something that is pretty much along the lines that you would love to have seen in your wildest dreams. And they have the ability to do that with very little practice opportunity. So in other words, more quality, better technique than you would have expected of someone with limited experience.

Trevor – coach (p. 1, lines 15-18; 22-23)

But with Kira, it really was her physiology, it was so exciting...this body tension she had.

Sandra – coach (p. 12, lines 38-39)

It frightens me. Umm...because I don't think I'm good enough for them, I don't think I have the skill to...To me it frightens me and I think it's a privilege to work with them. (laugh) It's only happened two or three times. I definitely am frightened of letting them down and not being good enough for them.

Don – coach (p. 3, lines 44-47)

Excitement and fear were quite understandable reactions to the realisation that an individual in their charge had the potential to become an elite practitioner in their chosen field. Where the child had all of the necessary material and qualities to become talented, all that remained was the coach's skill to guide them through the learning process. This was an immensely powerful position for the coaches, one that could easily be interpreted as challenging or even worthy of anxiety. Whether the coach decided to take on the responsibility themselves or refer to a more experienced coach arguably relates to the degree to which this reaction was interpreted with excitement or fear.

Subjectivity

Through the exploration of how they perceived giftedness, the coaches reflected upon their role and personal input into the detection and talent development processes. Given their own input as an integral element in their concepts of potential (see p. 124), the coaches came to consider the subjectivity of detecting giftedness and developing talent.

Talent can manifest itself in many different ways. I worked with a coach (Bert) for many years...We had a woman on the squad and I just overlooked her in a sense. Bert identified that she had talent, and he developed that talent. I know she made the national team. So you don't always see...My perception of talent is different to yours...mine is certainly different to Bert's. I would never have put her down as a talented archer, but Bert did. The first day he said "Have you

looked at her,” “Oh yeah.” “She’s really got something” and I didn’t see it. So it’s the...I think what I’m trying to say is that each coach may have a different perception of talent. What I see, may not be what you see, and what I find exciting in someone, may not be what you find exciting, you may find something totally different. So what I’m saying I think is that the identification of talent is hugely personal. It isn’t necessarily something you can say that if we all look for this we’ll identify talent.

Don – coach (extracts from p. 9, lines 35-51)

It’s just that it always seems to feel right with somebody with talent, You get a feel that this person’s got something and I actually believe...very strongly...I believe in self-fulfilling prophecies anyway...because I really believed in her (Colette), because other people said ‘why are you wasting your time?’ I was even more determined that... So...I know that your own expectations have a lot to the success of some people. And we see that all the time, you know...in clubs where, from the outside you see.... two or three very talented kids but only one making it, because that’s the one the coach really believes in. And the others may be equally as talented, but the coach for whatever reason, doesn’t have the same relationship or doesn’t believe in them in the same way.

Sandra – coach (extracts from p. 3, lines 3-18)

The idea that coaches can disagree on the future of gifted individuals and not see things the same way not only reaffirms the subjectivity of this topic, but also raises other possibilities. Perhaps it is the potential that coaches disagree upon more as it is a far more complex concept than giftedness alone. As Gagné (1993) noted, giftedness is largely displayed through accelerated learning. However, potential is a mixture of giftedness and catalysts, which includes the expertise of the coaches (Côté et al., 1995). Therefore, it is understandable that coaches might hold different views about the possibility of turning gifts into talent given the dynamic (Kozel, 1996) and multidimensional (Abbott & Collins, 2004) nature of talent development.

The concept of potential remains a very subjective matter as it includes the ability of the coach to develop talent. Therefore, different coaches will perceive potential very differently as they will necessarily be combining what they look for with what they can develop.

Parents Noticing a Specialness

Similarly to the coaches' perceptions of giftedness, Côté (1999) and Bloom (1985) noted that the parents of gifted individuals often noticed a specialness about their children. However, the coaches within this research pointed out that there is the possibility that all parents consider their children to be special and somehow exceptional (see p. 69). Unsurprisingly, the parents interviewed during the research also considered their children to be special. However, one of the mothers seemed particularly aware of how biased she might have sounded and took further steps to consolidate what she was saying.

...Things always happen to Corey. Like he'd always...he would be the one picked to go and do something special...do you know what I mean...he would be on the front of the school magazine...that sort of thing...do you know what I mean? Things seem to happen to him... You know both his grandparents...they'd say "You need never worry about Corey" He'll always be alright. You know...I'm sure probably grandparents always say that sort of thing, but you feel with him that he...he seems special...he seems special to other people, they go "Oh Corey" you know, it's sort of... As I said he makes them smile...he just...I don't know what it is he has...it's just something in him that things sort of happen and he does seem a little bit different to people.... Does that sound strange?

Vanessa – parent (extracts from p. 2, lines 8-15; 21-29)

Before being too quick to dismiss Vanessa's perceptions as simply parental pride, it should be noted that Corey's giftedness had been recognised by at least seven coaches, many of whom realised immediately. If there is such a thing as an X factor that represents an individual's extreme potential to turn gifts into talents then Corey surely had it in the eyes of these expert coaches. Vanessa's concept of her son's specialness was something which she tentatively revealed in an interview, rather than something she boldly advertised as a proud parent. Her perception of specialness was based on the impression that Corey had had on other people, influencing how they regard him and behaviour towards him. If this X factor is so apparent in Corey, it is quite possible that other parents, teachers and peers have been reacting to it since he was very young. Although most parents may think their child is special, the

parents of these gifted children did not feel the need to impress this upon others as their specialness seemed to be prominent for all to see.

The findings of this section illustrate how subjectively giftedness was perceived by the coaches and parents. A perception of giftedness seemed to be enough for them to form a belief in its existence. Therefore, it would seem that giftedness can be very much in the eyes of the beholders, affecting its discovery and the belief that it can be developed into talent.

Why Coaches Search for Giftedness

Thus far, the data has shown that for every individual who developed talent, there was someone who had the ability to see and believe in their giftedness. However, the coaches also suggested that not everyone has this ability (p. 133). Therefore, the role of the coach is perhaps as crucial as giftedness itself. Without the coach, giftedness could go unrecognised and undeveloped.

In keeping with the integral role of the coach in the discovery of giftedness, it was relevant to explore further this link between natural abilities and those who can detect them. Having already discussed how gifts are perceived, it was also revealing to explore why these coaches were searching for giftedness. From the interview data, the themes of: talent as something beautiful; past experiences of coaches; coach values and, the notion that giftedness is out there and must be found are discussed (see figure 10).

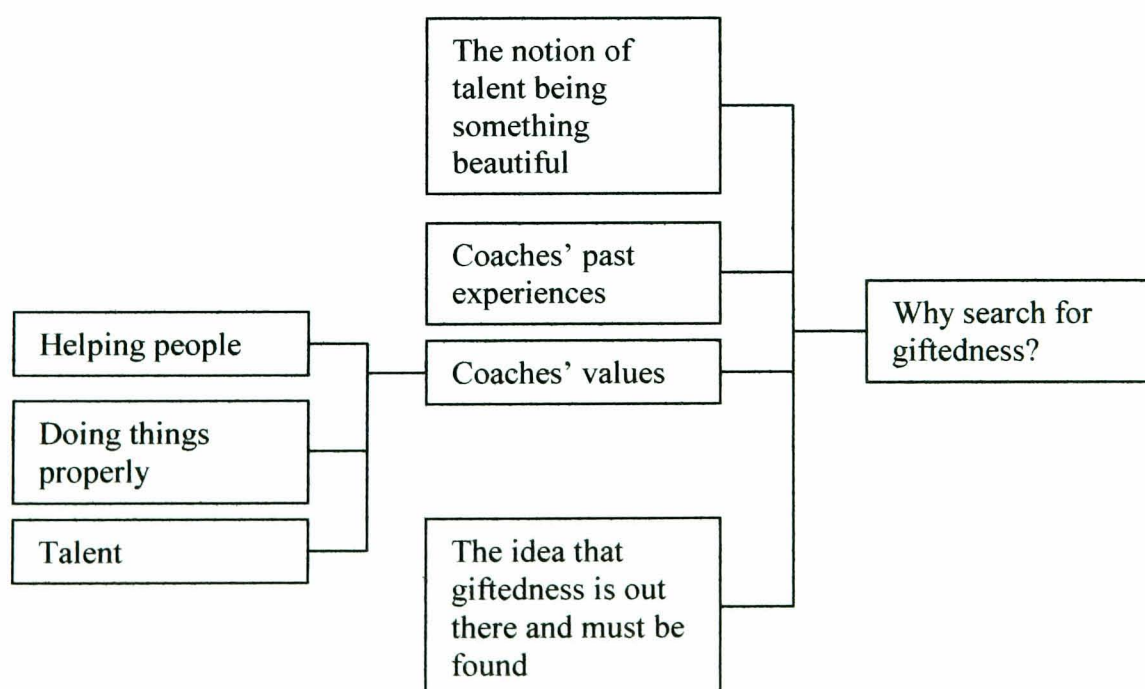


Figure 10. Data themes relating to why coaches search for giftedness.

The Notion of Talent Being Something Beautiful

It was apparent that the coaches had a passion for developing talent. During the interviews, they explained how they regarded the expression of talent as something beautiful or perfect.

I used to just like to watch Angela shoot , I just used to sit there and watch it's so beautiful, the action is so beautiful...It was absolutely amazing and people can do that in anything...I used to do fishing for a living and there was this fella I worked with and his casting...I mean he could put a fly under that tree right on the edge of where he thought the fish was and it didn't go like that slap when I did it just went like that, it was absolute perfection and the fish would come and take the bloody thing because they thought it was a real fly so....yeah it nice to see human beings do thing beautiful, I mean...Its just...its like another level of existence isn't it, its like...yeah it's like another level of existence I can't think of other words than that.

Albert – coach (extracts from p. 19, lines 3-15)

I have a vision of perfection in my head. All the time. So whenever I'm coaching, doesn't matter if I'm coaching little ones straddle jump or I'm coaching Colette her Triff, I have a picture of perfection here and I'm working towards that. So the point at which they hit that zero deduction, which is perfection, even if it's only once, in a training session and on a mat...my head explodes. It's just wow, that's it, that is my picture of perfection....That routine that won the World Cup. I had seen that routine in my head so many times. I knew that they (Kira & Collette) were capable of it, and they hadn't done it yet because the routine was new. And when they hit it I was just speechless. I was absolutely speechless. Because that was it, they had hit what I had seen in my head. And the judges thought so to. They got near perfect marks in everything and you never get perfect marks in trampolining and they got near perfect marks. And everybody in the hall erupted. It was in France and they have very good audiences. The whole crowd were stamping and cheering. The girls were waving to the crowd. Everybody from every nation came up afterwards and said that was an awesome routine...you know. I was proud that I coached them, but it wasn't the coaching bit that got me,

it was the fact that there is always the perfection up here and they got as damn near close as they're ever going to get. Umm...and it's when the two marry that I really, really feel...I really feel.

Sandra – coach (p. 16/17, lines 48-1; p. 19, lines 38-50)

Not only were the coaches enthralled by the beauty of human beings doing things perfectly, but it also gave them an ideal template in their minds. With a vision of perfection in their minds, they were better equipped to spot individuals with whom they could develop that vision.

Coaches Past Experiences

The past experiences of the coaches presented a window of opportunity to appreciate where their passion for talent had come from. Not surprisingly, their own past experiences were steeped with an involvement in talent development. However, this is not to suggest that all of the coaches were themselves elite performers, but they had all experienced talent development in one form or another.

When I was involved as a schoolboy with athletics and middle distance running, I had the opportunity to train because the club I was with had awesome talented individuals. And I had the ability to compete at a very average level locally, regionally, but I never had the talent to do very much, but I was surrounded by people that did have talent. A woman who was British record holder at one time for 1500 metres. A guy who got a medal for marathon in the Olympics. Umm...another two or three who were recognised as the top marathon runners in Britain in their day. A guy that went on to get World record at 5000 metres. Umm...I was on nodding terms with them and on occasion I was able to go out and run with people like that. And I so wanted to have the ability to compete at that sort of level but I never did.

Trevor – coach (p. 12, lines 37-47)

A bit of a sob story really. I know that I was a good diver and I didn't have the opportunities, partly because I didn't have any parental support. And in a 12 year

diving career, my parents never saw me dive once, they weren't interested...and I had to do it all myself and I was very, very driven because I didn't have the most easy of upbringings and this was my salvation. I was part of something...I was part of this club. A very intense need to be part of something and then because I was good at diving, that was how that developed... my love, my passion was diving...And the whole passion I think came about because it replaced something I didn't have in my own growing up and family. Umm...I don't think had I had a happy childhood and all the sort of support systems and love and care, that you hope a child has, I don't think I would be where I am now. So in a sense it did me a favour because it's given me the most massive passion that anybody could have really.

Sandra – coach (extracts from p. 18, 42-50; p. 19, lines 14-28)

Csikszentmihalyi et al. (1993) also stated that coaches need not be expert performers themselves, only that they should have a passion for the talent field, which these coaches seem to exhibit. It would appear that their own engagement with talent development had left unfinished business for them. Whether it was to help others gain as they had done or to help them achieve what they had not, their past experiences had impressed on them a high regard for the value of sport and talent development. Furthermore, in their capacity as coaches, they had been able to continue their involvement in talent development.

Coach Values

In an effort to understand better why these coaches search for giftedness and strive to develop talent, the interview data was examined to see how the values exhibited by the coaches might further explain their involvement. From the interview data, it appeared that the coaches held values related to helping people, doing things properly and about giftedness itself.

Helping People

The coaches revealed their values relating to sport and a person's overall development. This reflected their philosophy regarding talent development for the individual.

...what interests me is the people and I use the sport to help people develop in their life; and if they are adults improve their lives and their quality of life that's really what I do and that's what really in it for me. I like to see the development and the improvement in the people and that's why they are happier than they were before, you can actually do that with sport.

Albert – coach (pp. 3/4, lines 49-7)

My whole coaching philosophy was not valuing talent, but valuing people.

Carl – coach (p. 7, lines 6-7)

The values of the coaches indicate that they have a person orientated philosophy to their coaching. This suggests that they value what talent development can do for the individual as a central concern.

Doing Things Properly

The coaches stated that they valued doing things properly. This meaning that if they undertook a task, they would give it their all and strive to achieve rather than allow themselves a half hearted effort.

...if they have obviously got talent and obviously going somewhere I really encourage them. I don't discourage the others but I don't encourage them in the same way...are you with me...perhaps I should I don't know...but I'm always looking for excellence ...if I do something I want it to be done well.

Albert – coach (p. 11, lines 3-7)

Now that comes back to my ideas that if I'm going to do something, I want to do it properly. But this takes me back to when I was born in an age when that was the norm, self-respect, self-worth was valued because everybody lived in a fairly small community, you were known by everybody, you knew everybody so everyone knew the pecking order of worth within that society.

Arthur – coach (p. 14, lines 16-21)

Not only did the coaches' value doing things properly, but they also encouraged this value within the individuals they coached. In the pursuit of excellence in sport and the attainment of talent, doing things properly would seem to be a necessary attribute.

Talent

The coaches also revealed their value for talent. Their philosophies seemed very similar to Csikszentmihalyi et al.'s (1993) view that talent should develop for the good of society.

I must as a sports...as someone who loves sports, try and put that talent in the right area so that that talent can achieve.

Alison - coach (p. 7, lines 44-45)

Definitely, most definitely. Got to use your strengths or what's the point in having them. Make use of the talents that you've got, because their important to pass on.

Carl - coach (p. 10, lines 28-29; 32)

These views were representative of how all of the coaches in this study valued talent. The notion that talent has a wider relevance in society that just for the coach and performer seemed to help validate the coaches' search for giftedness.

The Idea That Giftedness is Out There and Must Be Found

The coaches believed that it is their responsibility to discover giftedness. As stated already (see p. 117), giftedness needs to be recognised, therefore, the coaches are needed to uncover such gifts.

Particularly with kids you have to point out to them that they really are quite good at this type of thing because they may not be aware of it.

Albert - coach (p. 16, lines 5-6)

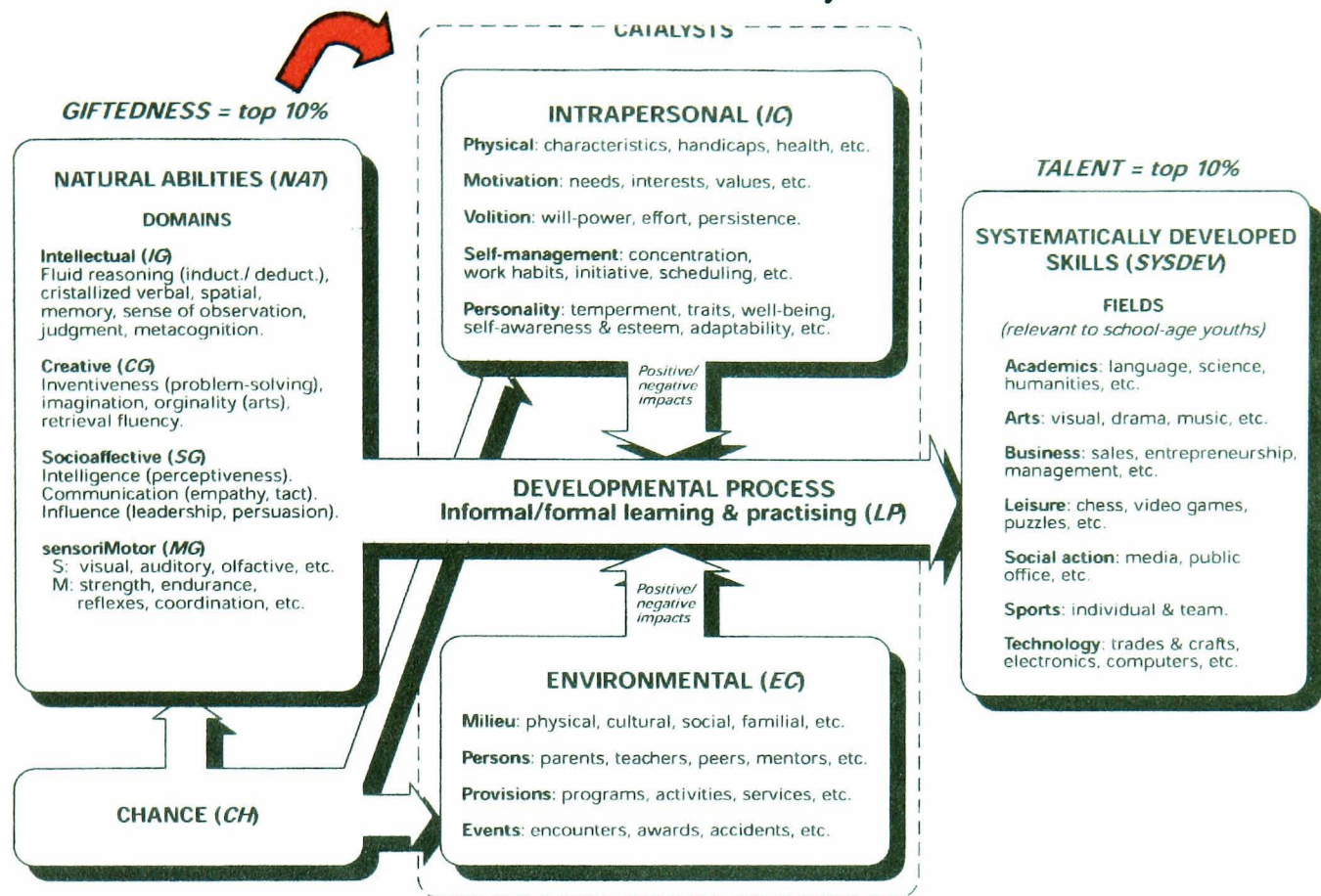
I still think that talent, is something which can be inside of us, but somebody needs to discover this. We can be talented, but if nobody near us can open this little door, we will not...are you talented or no.

Leia - coach (p. 10, lines 12-14)

The coaches were mindful that individuals could be unaware of their giftedness. More so, they felt it was their place to use their abilities to spot giftedness in these instances to help individuals see that they have more than they were giving themselves credit for. In many ways, this relates to the story of Aaron (see p. 87), who was very gifted in sensorimotor abilities, but chose to hide his gifts because of the unhappiness the exploitation of his abilities had caused earlier in childhood. In this case, Aaron had not been able to experience the positive side of talent development, which these coaches were so passionate to promote for such gifted individuals.

It appeared from the interviews that the coaches were searching for talent and interested in its development for two main reasons. First, talent and talent development had become a central focus in their lives. They learnt to value what talent development can do for an individual from their own experiences and felt a desire to help others in the same way. Second, they learnt to love the expression of talent, perhaps similar to how art lovers appreciate a piece of art. They saw it as something beautiful and perfect and carried a clear image of that in their minds. As coaches they had a strong desire to find the raw materials that would allow them to bring their images of perfection to life through the development of talent. It could tentatively be suggested that if there was a key component to the discovery and development of an individual's giftedness, it would be coaches who regarded giftedness in this way. Therefore coaches are an integral part of the talent detection and development processes. Without recognising their role, our appreciation of how gifts are discovered and why talents develop would be incomplete.

How Individuals Can Be Affected By Their Own Giftedness



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

Having already discussed natural abilities and how they are perceived by coaches and parents, it is logical to consider how they affect the individual themselves. Although the DMGT does not make a clear link which shows how giftedness can affect an individual, the interview data was rich with such observations.

The interviews with coaches and gifted individuals suggest that a direct link from natural abilities to the individual's intrapersonal factors was missing in a clear understanding of how gifts are discovered and why talent develops. This was particularly relevant for appreciating how giftedness could make people feel and behave (see figure 11). By appreciating the affects of natural abilities upon intrapersonal factors, the coaches were more able to recognise and cater for giftedness.

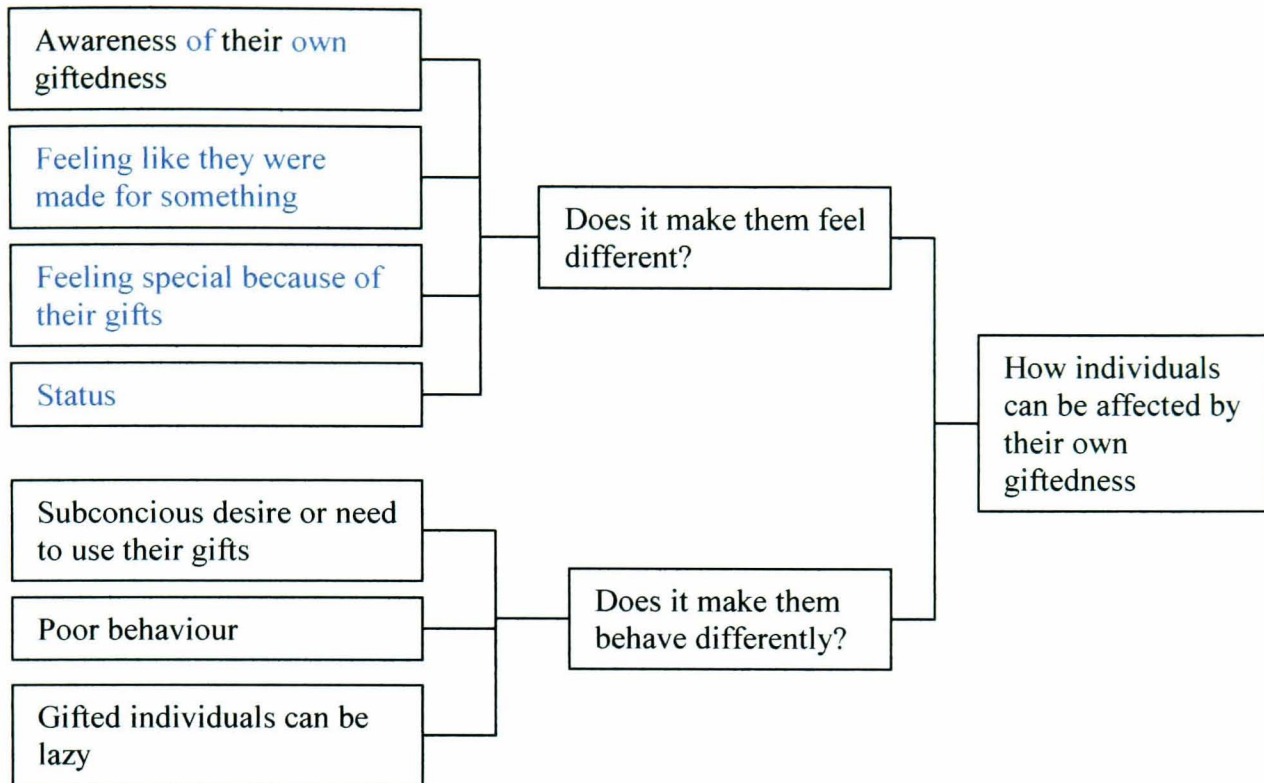


Figure 11. Data themes relating to how individuals can be affected by their own giftedness.

How does it feel to be Gifted?

Although coaches and parents noticed indicators of giftedness within the individuals, it has yet to be discussed if the individuals themselves were aware of their extraordinary abilities. In addition to the gifted individuals, the coaches also offered their perceptions of whether the gifted individuals seemed to be aware of their gifts.

Awareness of Giftedness

...the more you get to know about yourself...when you get to your 20's you actually know... you begin to understand yourself, you begin to understand why you are the way you are, why you behave in the way you do and of course when you are a teenager and younger you don't know that do you? You're not interested in that you...you can just either do things or you can't and that sort of thing.

Albert - coach (p. 11, lines 7-12)

I think he's always known. I think Corey's always known he's talented...they actually are working in, within a talented um squad, you know, there's a pecking order even up there.

Alison - coach (extracts from p. 17, lines 30-37)

Because, I would suspect at the time they didn't realise what they had, but they do now. They're older now.

Carl - coach (p. 8, lines 39-40)

The coaches' views were mixed about whether their gifted individuals were or were not aware of their gifts. To some extent, this possibly reflected the age of the individuals. As one of the coaches stated, they either could or they could not, they might not have reflected on why. However, if individuals trained within a competitive environment, such as squad training, their advanced learning became more readily apparent. What the coaches did hold similar views upon was that the individuals became more aware of their gifts with age.

I would say my first competition, when I realised that I was as good or better than the other boys. It was only recreational, like Thorn Vale Championships and things like that, and I started to enter into that and winning. So I thought, hang on a minute, I'm starting to get quite good.

Billy-Joe - gifted individual (p. 8, lines 23-26)

I was always stronger than other children of my age and faster than other children of my age so and could always throw further...

James - gifted individual (p. 8, lines 41-43)

...within the boys group and I thought I wasn't one of the best within the group, that I wasn't really an all rounder, that I was better on the floor and the trampoline and uh, the tumble track, as opposed to the other pieces.

Noah - gifted individual (p. 1, lines 33-35)

As suggested by the coaches, the gifted individuals knew that they had gifts that were accelerating their talent development. In most cases, the awareness of their giftedness came with direct comparison to others, usually through competition. However, as some of the accounts show, they did not fully appreciate why they were or were not good at things until later in life, around about their mid teens.

Feel Like They Were Made For Something

The gifted individuals in this study had all reached the age where they were old enough to appreciate what their gifts were and they reflected upon how suited these gifts were for their chosen sports. Their accounts describe how the expression of their gifts within these sports and activities felt natural and right.

I would roll around and never minded being up high, which is probably good for gymnastics. And I was constantly rolling around. It's like, I'm quite short anyway, and you need to be short for a gymnast. And I'm not fat and I'm not thin, I'm quite muscular so I thought, you're built for it basically. I was always rolling around as a little boy, falling over, getting up again.

Billy-Joe - gifted individual (p. 8, lines 31-36)

...naturally I had a good genetic make-up...er...the abilities that I had erm guess it was the kind of child I was. I was very into meticulous repetitive, kind of things from a very young age, which I didn't know about, that my mother told me about. Because of the way I used to play and used to play and I used to repeat things over and over and over again erm, just to perfect them but I used to erm completely and utterly consumed by this whereas other children would finish one thing once then go onto something else. I was very, very much meticulous and repetitive in everything I was doing...

James - gifted individual (p. 8, lines 43-50)

I believe that I was born to do it. Born to be involved in trampolining. And it more picked me than I picked it, if you know what I mean.

Noah - gifted individual (p. 10, lines 1-2)

The gifted individuals seemed to have always had a natural affinity for their chosen sport. Sometimes even before they had found their sport, similar tasks were found to be very enjoyable and consumed their attention. The idea that the individuals could become lost in these tasks suggests that they could have been experiencing flow at an early age. This links to Csikszentmihalyi et al.'s (1993) idea that flow experiences can lead to people committing to talent development (see p. 34).

Feeling Special Because of Their Gifts

From the interview data, it was possible for the gifted individuals to show how they felt about being gifted. However, rather than explaining how they felt now about being gifted, they were able to describe retrospectively how they remembered feeling about being gifted in the early days of their sport before the age of 8.

I think that when I actually kind of won that medal, it was like, like I said, it was almost like a relief "Oh my God, I've found a niche"

Daryl - gifted individual (p. 3, lines 40-43)

It kind of made me feel special because he thought that I was good enough to join a club. And he had only said that me and this other boy (Corey) were maybe good enough to join a club or recognise that I had a talent in it. And I felt quite proud that I had a talent in sport.

Noah - gifted individual (p. 3, lines 29-32)

From their gifts, they were able to determine that they were good at something, which in turn contributed towards their identity construction. It was arguably very important to them to have something which they felt they were good at. However, this may certainly be true of most children when developing their identity.

Status

As the individuals engaged their gifts they began to learn how they compared to others. With this came a status and an identity within their peer group for being good at something and worthy of respect.

It was just achievement, making a success of what you were doing, making a point to it. The reason why you did it was to see who was the best out of who you were playing against or with. So in order to be the best then I guess you felt a kind of er respect among your peers or you felt slightly elevated in a group because they would always look at you and say who's the fastest its so and so who's the strongest its so and so. There was a sense of getting recognition or a sense of I don't know if respect is the right word but a sense of who you are within a group to your friends and to yourself as well. Yeah, so you'd know what was what. Racing on the bikes as well and that was a circuit round the street and timing. Again, everything was done so, if you consider it was children, everything was done with timing or rules or officials so it was set. It wasn't just sort of see what happens and then we'll decide, it was definite.

James - gifted individual (pp. 1/2, lines 50-9)

Although the individuals were always aware of their gifts, they quickly became aware of what they were good at and what they enjoyed, which was usually the same thing. With the realisation that they were good at something came a feeling of status among their peers, which relates to Gagné's (2000) definition of giftedness being within the top 10% of a peer group (see p. 9). As they became older, they became more aware of exactly how they were different which helped them to capitalise on their strengths in the development of their talent.

Do Gifted Individuals Behave Differently?

Although these gifted individuals felt different because of their gifts, perhaps this would only have relevance if it also impacted their behaviour. The interviews suggested that giftedness did indeed manifest in the behaviours of these individuals which included, a subconscious desire to use their gifts, being lazy because of their gifts and poor behaviour.

Subconscious Desire or Need to Use Their Gifts

Interviews with the coaches revealed that they thought the individuals had a subconscious desire or need to use their gifts. Once the individuals had found an outlet for the expression of their giftedness, the coaches found it hard to stop them.

My tumblers, I have to stop coming in. They'd come in all day, every day, some of them, not all of them, but some of them would... They choose to be here and despite what the media have said about us over the past, they choose to be here. There's no mind... er games that we play with them to get them to come here. These kids mainly have a hell of a lot of energy and if they don't get rid of that energy in a positive way I'm a great believer in the fact that they will get rid of it in some negative way. So it keeps them off the streets definitely, and some of them I think like Shaun. I've got a little boy Shaun here who's in the national squad, phenomenal gymnast. God knows what if he'd drive his mum up the wall I should imagine. There's no way he's rude or insolent, nothing like that but just so much energy, you know, he's either hanging from the trees somewhere I expect or he's up to mischief but... I have respect for him for the fact that he gives up every day and he comes into a disciplined ... um... atmosphere and the same old thing every day, all day do this...

Alison - coach (p. 4, lines 31-33; p. 5, lines 22-33)

If a gymnast is going through a doubting time that they want to do the sport, I usually say to the parents "Right, take them away for a month." That will be the telltale time. They will either go off with their peers and they'll have a great time and they'll never want to come back, fine, or they'll come back and say "Well, they're so boring." And they come back. I think they find it boring...

Alison - coach (p. 18, lines 45-50)

Noah came into a session, the first time we met him Colette and Kira were training in that group, and he watched them, and they... actually Noah's memory of this was, he got on the trampoline and I told him to jump up and down and he did a somersault, and I told him off. He said 'the first time I met you, you told me

off', and I said 'why was that Noah?' 'cause you told me to jump up and down, and I did a somersault' and I said 'yeah' and I said... funny enough, we were talking about this the other day, and I said 'had you jumped up and down and done a somersault and landed on your head, who'd been in Court?' 'you.' 'Yeah absolutely. Luckily, I had witnesses that I had not asked you to do that.' So I said 'that's why I told you off'. He said 'yeah but everybody was doing them' (said with longing).

Sandra - coach (p. 7, lines 2-12)

The coaches gave the impression that these individuals were bubbling over with a need to exercise their gifts. When considering this innate need to use their gifts it is interesting to reflect on the fate of the Pegasus boys' gymnastics squad. When Carl left, they had to dissolve the squad, yet they all continued to engage their gifts. Corey joined another gym, only to return to Pegasus later in Aerobics, Tumbling and Team Gym. Noah went to Trampolining at Eastlake. Daniel went to Team Gym at Barnstead, to be joined by Curtis six years later. Aaron went to Karate, but later returned to gymnastics at Bloomfield as a coach. Although Aaron became a coach, he still exercised his gifts whenever the opportunity arose, whether it be after a gym class or in his back garden. Their innate desire to use what made them special continued to rise to the surface, even with Aaron who tried so hard to hide his gifts.

Poor Behaviour

However, this burning desire to use gifts did not always manifest itself positively, as some individuals felt frustrated when the expression of their abilities was being controlled. Both the coaches and the gifted individuals reported some over zealous behaviour upon their initial participation.

...he was disrupting the group. I mean, I won't tolerate anybody being ridiculed when they're on the line doing their best by somebody else who's not shooting. That's about the only rule we have. We don't ever upset anybody else who's trying to shoot. And James, would be laughing, making cracks in general, being a nuisance...

Arthur - coach (p. 3, lines 36-40)

(Laugh)...I would never in a million years think he would grow into the boy he is today. Umm I think firstly behaviour, he was a nightmare, when he was younger, I seem to remember him running around and being like a lunatic, doing things which he shouldn't be doing, umm and his coach at the time getting so stressed he actually walked out the building because he couldn't cope with him...umm.

June (p. 1, lines 26-30)

Er, I was also on probation as well in the archery because I was quite...er...talkative I would say pupil or whatever. So I used to banter with all the kids-just trying to work out where I was...

James - gifted individual (pp. 5/6, lines 51-1)

I think I was a bit of a pain. I wanted to get on with things and not wait in line for my next turn. I would want to go again, so I cut lines and wouldn't wait and things like running all over the place. So I would do something once, then would immediately go over to trampette and go on that. But I learnt to wait and wait for my turn.

Billy-Joe - gifted individual (p. 6, lines 6-10)

Not all of the gifted individuals exhibited poor behaviour upon their initial participation. However, it would seem that the need to exercise gifts can result in frustration and possibly poor behaviour if means are not provided to satisfy that need.

Gifted Individuals can be Lazy

With the exception of the gifted individuals in this study, the coaches also reported that giftedness could make some individuals lazy. The interviews with the coaches revealed that if people always learnt things quickly and easily, then they rarely had the opportunity to learn how to work at something.

I've seen that in a lot of people...errr. There's a big problem with that, they are very good very quick, and they've only been shooting 4 or 5 weeks and they are shooting good scores, they are good archers, they are natural, and then after 3

months, they're not improving much and they get a bit stale...it's too easy, it's just too easy for them, they expect to hit the middle every time... They come in, they are natural, they're scoring good scores straight away and they are the ones who seem to fall by the way side, whereas somebody who has come into it and had to work at their technique...and they steadily improve all the time until they're ready for better equipment and then go forward even further. Somebody with natural ability, they're not going to improve much. They're at their top all the time, then suddenly they see the ones who are having to work at it, following them on, getting better and better...They're not improving...its very strange.

Terry - coach (extracts from p. 2, lines 29-40)

And the...some of the difference for these people is that they're very highly talented ones...when things start going wrong...because things are so easy for them, they don't always have the mental capacity to work through it.... The less talented ones, which would be Colette category, although highly talented still, but less talented, they've worked through all the problems because they've had to work hard to get there in the first place. Now Ryan was in the super category. He was a highly indulged child at home...highly indulged...but he never took responsibility for anything...so when he started to have problems in trampolining, which they all do at some point. You know, you work your way through it, OK they fall back or they can't take off for their half out or whatever. He...there was no responsibility on his behalf, for working through this. Basically it was the coaches... 'oh I want another coach.' I think he went through every coach in the club at the time. I would never do that now.

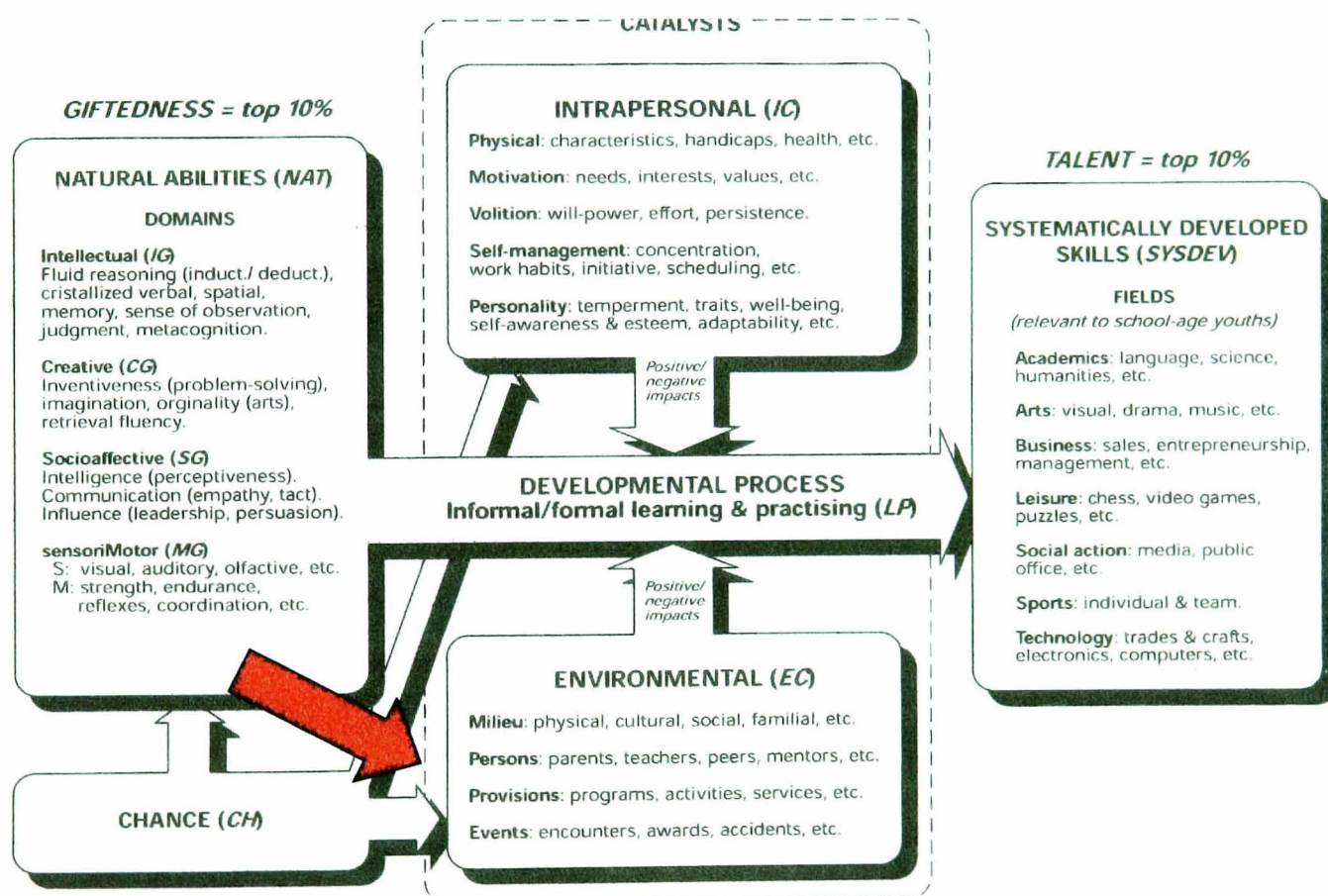
Sandra - coach (p. 13, lines 17-30)

As these particular gifted individuals not challenged early enough, they had become unaccustomed to having to work through problems. For these people, their giftedness was a novelty that enabled them to pick up skills quickly, but perhaps also a curse if they tried to develop them towards talent. The gifted individuals within this study were fundamentally different from these lazy individuals because they also had a work ethic that seemed to counter any tendency for laziness. Arguably, this work ethic gave them the potential to turn their gifts into talents. However, the idea of gifted individuals being lazy is reasonable. If someone has

always learnt things quickly and easily then they have no experience of having to work through problems or tackling a more challenging goal. Inevitably, they will progress to a point where their gifts are actually being challenged. If this occurs too late, they would have become lazy and feel particularly frustrated when their progress begins to slow down.

It would seem that giftedness has a strong influence upon how individuals feel and behave. These influences may lead to individuals realising their gifts or displaying signs of giftedness through their behaviour. This highlights the need for a link between natural abilities and intrapersonal catalysts to show how the individuals discover their gifts and why they feel driven to develop them.

The Affect That Giftedness Can Have On Other People and the Environment



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

In addition to a link between natural abilities and intrapersonal catalysts, the data also suggested a link between natural abilities and environmental catalysts. This links an individual's giftedness with other people involved in the talent detection and development processes. Specifically, this concerned how those people were affected by their own perception of an individual's giftedness.

In the interviews, numerous examples were found where the natural abilities of individuals had affected other people and their environment (see figure 12). In the direct sense, this related to coaches and parents reacting to the giftedness of an individual. Indirectly, it related to how the coaches had worked to change the environment of gifted individuals to facilitate their talent development.

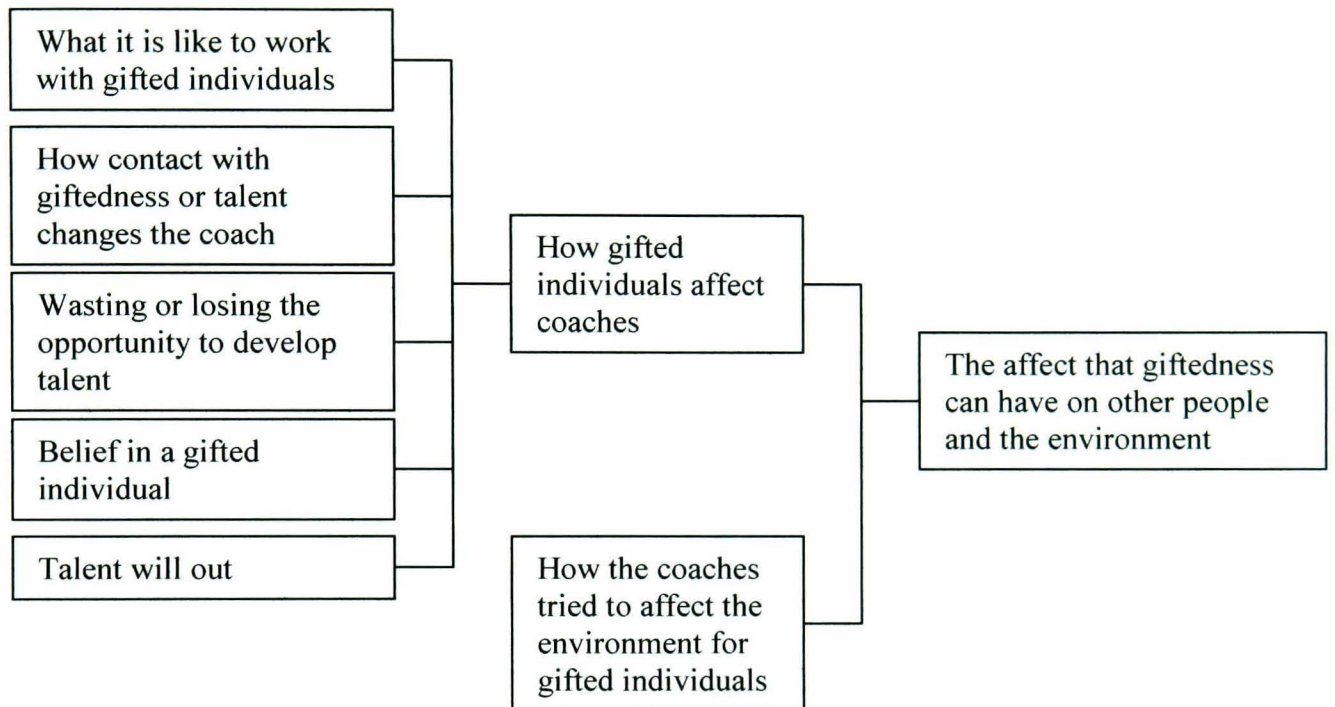


Figure 12. Data themes relating to the affect that giftedness can have on other people and the environment.

How Gifted Individuals Affect Coaches

The interview data suggested that the coaches were affected in a number of ways by the giftedness of individuals. These themes showed what it was like for them to work with gifted individuals; how contact with giftedness or talent had changed them; how they felt about losing giftedness; their belief in giftedness; and their view about the assumption ‘talent will out’.

What it is like to Work with Gifted Individuals

Due to the rarity of giftedness (see p. 126) (Gagne, 2000; Tranckle & Cushion, 2005), it could be argued that the majority of coaches will never have the opportunity to work with gifted individuals. However, the coaches selected for this study were fortunate enough to work

with gifted individuals and they shared their experiences of what it was like. Even though the coaches were very engaged in their interviews, they became particularly animated when they moved onto this subject.

It's quite frightening because you've always got to be one step ahead all the time and the kids were learning things quicker than you could teach them. You didn't have to teach them, I had to showed them once or twice and they would do it. Um...and they would be wanting to look to the next stage of development and the next stage of development so it's quite difficult keeping up with that, but what I used to do was...used to refine the skills because they needed polishing, they needed to be perfect. And I found with these kids that if you told them what you wanted once or twice it would be there. They seemed to intuitively know where their legs should be, or where their arms should be, or where their head should be or which way they were moving or whatever. Whereas other kids found that completely difficult.

Carl - coach (p. 6, lines 30-40)

It frightens me. Umm...because I don't think I'm good enough for them, I don't think I have the skill to... To me it frightens me and I think it's a privilege to work with them. (laugh) It's only happened two or three times. I definitely am frightened of letting them down and not being good enough for them.

Don - coach (p. 3, lines 40-47)

It's a huge responsibility. Coaching is...I wish people would understand, it's a huge responsibility. As I said, it's not just teaching the skill, it's their life that you're holding in your hands.

Don - coach (p. 11, lines 32-34)

Back then in those days it was the cream of the cream. It really was because they're a joy to teach. Talented children are like magnets, they draw you in sort of. And then because of their willingness to work, you then want to expand their knowledge.

Mary - coach (p. 2, lines 10-13)

Huge pleasure and it justifies all the crap I put up with working 70, 80 hours a week cleaning the toilets. It's why I exist basically. If I didn't do that I'd find another sport to coach at that level, umm it's, it's what I live for. It's why I put up with being unemployed and why I put up with being, doing all the crap jobs I've done over the years. It's why I put up with all the nonsense I put up with now. It's why I coach recreational, I coach 15 hours of recreational so I can coach 15 hours of squad with those talented kids. It's why I only work with 6 children.

Pat - coach (p. 9, lines 15-21)

Because I am so committed and I'm so passionate about it, that's how I feel about them. Every time they make a change I'm excited, every time they...it is something new, I'm excited. As I say, quite often I won't sleep if they've done something good. I'll see it...I'll picture it and go through it and it's just...that's after 20 – 25 years of professional coaching. The passion hasn't waned at all.

Sandra - coach (Extracts from p. 16, lines 38-46)

The coaches felt a mixture of joy and fear at the privilege of being able to work with gifted individuals. They considered it to be a privilege because they appreciated how rare giftedness was and how fortunate they were that they had been given the opportunity to help it develop. The joy and exhilaration they felt for working with these individuals reaffirms a notion of interdependence in coaching. Within this notion, individuals who want to learn need coaches and coaches need individuals who want to learn. However, in this case, the best learners are gifted, thus presenting the coach with the challenge of seeing just how capable they are as a coach. The fear that some of these coaches felt, related to the responsibility they felt when charged with developing talent. With giftedness as a rare commodity, they felt that they must not waste it by failing in their responsibility to either develop talent or in referring it to someone who could.

Interestingly, what the coaches described is similar to how some people might describe challenge. The excitement, fear, joy and privilege could all be responses to a challenging opportunity for the coaches; an opportunity to see how good they really are by developing talent with an individual who has all the raw materials to achieve it.

How Contact with Giftedness or Talent Changes the Coach

As with any good challenge, working with the gifted individuals moved the coaches out of their usual comfort zones and caused them to change. Through the interviews, the coaches explained how they responded to the demands of gifts that they felt needed to be developed.

I don't think the other coach would have been able to give what Phil needed, so...but I was I was prepared to change in whatever way I could to help him further. So it meant developing links with other coaches and I was phoning up people in other parts of the country to get information and taking Phil to wherever I could to further his level of ability...level of achievement in the sport.

Trevor - coach (p. 3, lines 33-38)

I can't go back and work with rubbish now. Initially I would coach anybody. And I used to get the same buzz...If a kid's potential was a swivel hips and they achieved that then I was happy, and I've gone beyond that now. I really do not want to work with untalented people. Isn't that selfish? I really don't want to work with untalented people. If I had kids that come in and I've had to coach them. I'll do the business and be awfully jolly and I'll work with them, but I don't get the same buzz.

Sandra - coach (p. 17, lines 45-51)

...somebody had to take on this young lad who wanted to desperately do some tumbling, um... so I sort of agreed to do it and I've got a squad together because of it.

Alison - coach (p. 15, lines 24-26)

In many cases, contact with a gifted individual spurred the coaches to either become coaches or make dramatic changes within their own coaching to accommodate an individual's talent development. In particular, Alison turned her back on a 25 year coaching career in women's artistic gymnastics to become a tumbling coach for Corey. It would seem as if these gifted individuals left a wake of change behind them, as people were figuratively pulled into their talent development pathway. However, once these coaches had encountered gifted individuals they became hooked on working with them.

Wasting or Losing the Opportunity to Develop a Talent.

The coaches had a great deal of their own happiness and satisfaction wrapped up in their work with gifted individuals. It might not have begun in that way, but after working with giftedness it soon became very important to them. From the interview data, it became apparent that the coaches felt frustration and pain when they lost opportunities for developing giftedness. Although the pain might be the indulgence of selfish feelings, the frustration they felt was for the gifted individual's loss.

...if you've got someone who you know in your heart has got the ability to really achieve something. It does hurt you when they walk away. So you will want to try and stop them walking away. You're a fool if you think you can hold on to talent forever, because you can't. You're just a link in the chain. You're a very lucky person if you take a talent right from the beginning and take it right through to the end.

Don - coach (p. 6, lines 36-41)

Martin stuck with it through thick and thin. And he's gone where he thinks it will work for him. He left me a year ago. Umm...caused me a lot of pain actually. But in a sense it's part and parcel of his mentality. He thought he was going to get more elsewhere. And if he thinks that he's going to push for everything he wants. The loyalty factor didn't come into it. He wasn't going to stay with me if he thought he was going to get better elsewhere, because he so wants it. I mean as it happens, I think he probably would have done better if he had stayed with us, but that was his choice. And in a sense I do respect the fact that he wanted it so much that he did what he did. You know, after 17 years, he upped and left.

Sandra - coach (p. 15, lines 35-44)

It's so frustrating you've hit me on the, on the, on the raw bit really. I get very frustrated about that; opportunities that children did not have. Alright they might decide not to go down that road but at least they had the opportunity to go down that road if they want to.

Alison - coach (p. 21, lines 6-9)

It's important from the point of view that, if there is talent out there, it needs to be channelled, because it's a waste. And that's one of the things that always bugs most coaches and I'm no exception; to waste talent is awful. So it's paramount that the talented individuals that are out there are identified and get given opportunity...so for me wasting talent is about people who have an ability and who get an opportunity through the club situation that we're in and the level of coaching that we offer and don't do anything with it. That is such a waste. What worries me is that I think people who do that, for various reasons, will also do it later in life. And it makes them losers to me. And I think in their eyes they will look back at that situation and think, "if only I'd done this." So I just hate people to just have that hanging over them.

Trevor - coach (pp. 12/13, lines 26-30; 50-4)

Frustration felt by the coaches for the gifted individual's loss also reflected their awareness for what talent development can do for an individual. They clearly did not want the individuals to look back on their lost opportunities with regret, which was something about which Csikszentmihalyi et al. (1993) had warned (see p. 1). Although not all of the individuals recognised their own giftedness and perhaps would not harbour any regrets later, the coaches probably would. Being blessed or cursed with the vision of what individuals could do with their gifts meant that these coaches felt the frustration and pain for the children who passed up opportunities to develop talent.

From the discussion thus far, a critical reader might challenge whether the coaches really were frustrated for the individual's loss or whether they were actually more frustrated for their own. However, the interview data has also reaped examples of how the coaches have accepted when individuals need to move on and leave them. On a number of occasions, the coaches were the ones who either advised the individuals to find a more experienced coach or leave the sport for their own good.

Daryl has had to stop because I actually said to him look you are going to have to stop this archery thing you are going to have to decide how to earn a living, you can't earn your living this way your going to have to decide how to do it, and he said he wanted to do art. You can imagine how well that went down at

home...and he took A level art in a year and did very well and...I took him down to St Martins with his work...down there...and he got accepted by them and he got a grant and things like that...but he still has got his archery equipment and he still wants to shoot they all do, they all of them still want to shoot and I think that when they get to middle age they will come back I think they will actually come back to archery.

Albert - coach (p. 10, lines 35-44)

It's like having a piece of gold isn't it, you don't want to let it slip through your fingers, but sometimes you know that you have to let it go.

Don - coach (p. 7, lines 24-26)

These coaches believed in what talent development could do for individuals and that giftedness should be developed. Although the prospect of guiding that development themselves was appealing, they were ultimately more interested in the individual and their potential talent rather than what developing it could do for coaching career.

Belief in a Gifted Individual

The pain and frustration, even the willingness to give up a gifted individual to facilitate their development was rooted in the coaches' beliefs in giftedness. They believed so completely in the giftedness they saw in these individuals that they would do almost anything to facilitate its development.

Rayleigh could have been good at anything. He could do anything he wanted. I'm convinced if he wanted to be Pope he could have been Pope, he could do anything. I've never met anyone else like him. I've met a few talented people...If you're talking...its difficult to compare isn't. I should think 99% of them are average. Real, real talent I think you only see once or twice in a lifetime.

Don - coach (p. 3, 25-29)

...he (Phil) always came up trumps. He was a great competitor and if he ever had a dodgy competition the next would be better and umm...so no and when

learning skills, we'd have our problems with what he was attempting to do but he would always win through in the end. Even though I was inexperienced and learning with him, we'd just battle on until we got there.

Trevor - coach (p. 4, lines 10-14)

The coaches clearly believed in the gifted individuals and it would also seem that their faith in them was justified. However, the question remains; was it right that the coaches believed in the individuals or was the coaches' belief right for the individuals? Recognising how much emphasis they were placing on their belief in the gifted individuals, the coaches tried to explain the relevance of these beliefs.

...if you have a coach who is one hundred percent behind you and is moving heaven and earth to make it possible for you to succeed because they believe in you um that has to boost your self belief, I can't believe it doesn't um and you will progress and you will...Let's face it they're kids at the end of the day. They have a desire to please, whether it's their mum, their dad or their coach, they have an instinctive need to please, most kids have that. If they, if they believe that you believe in them and you're on their side and you're moving heaven and earth for them they will turn head over heels to please you. Conversely if you have a very talented, very able child whose coach obviously doesn't believe in them, um they will often fail, fail to arrive at all.

Pat - coach (p. 15, lines 38-47)

I know that your own expectations have a lot to do with the success of some people. And we see that all the time, you know...in clubs where, from the outside you see.... two or three very talented kids but only one making it, because that's the one the coach really believes in. And the others may be equally as talented, but the coach for whatever reason, doesn't have the same relationship or doesn't believe in them in the same way.

Sandra - coach (p. 3, lines 13-18)

Not only was the coaches' belief critical for the detection of gifts, but their continued belief was also important for its subsequent development. Sandra in particular emphasised

how the belief of the coach is crucial for talent development. It cannot be denied that the gifted individuals within this study who had developed talent had the complete faith of their coaches.

Talent Will Out

The belief that the coaches showed in the gifted individuals was also very resilient. Once they had formed a belief, they believed and nothing would sway their faith in the giftedness they saw.

The knowledge that they could do it, that they could have it, will always be there with me. I've never, I don't think I've ever watched somebody and thought 'had that wow thing' and been disappointed in the sense that I got that wrong. What will happen, what's happened lots of times is that I've had that wow and they haven't actually wanted it. So they haven't actually fulfilled they're own potential, but it's definitely been there.

Sandra - coach (pp. 9/10, lines 46-1)

Furthermore, the coaches also believed that to a certain extent, the giftedness of the individual could compensate for missing components in the talent development process. Bartmus et al. (1987) had also suggested a compensation phenomenon, which had continued to cause problems with systematic talent detection models.

There was a guy called Phil who I coached at the end of the 70s, early 80s. And that young man, despite the bits of the jigsaw that weren't in place, i.e. an experienced coach – me! Umm...access to top level coaching, to good facilities, good equipment sort of thing...without all that in place, he still achieved international level and was a member of national squad in the early 80s. And that was again, just an unbelievable ability to reproduce something that he had never seen before, but if you put it into words he could picture it and do it.

Trevor - coach (p. 2, lines 13-18)

This example illustrates how the giftedness of an individual managed to compensate for and even change the environmental factors that were affecting his talent development. Although Phil could not magically create top class equipment from his own giftedness, it had

caused his coach to believe in his potential. Through Trevor's belief in Phil, he developed his own skills as a coach and made arrangements to give him access to better facilities and equipment.

How the Coaches tried to affect the Environment for Gifted Individuals

As discussed, these coaches appeared to believe in an individual's giftedness and were prepared to do what ever they could to facilitate their development. In many circumstances, this also meant that the coaches had to find ways of compensating for missing environmental factors.

Carman got here and within three months her mother left the country to go to live in Australia. And we ended up, Dana and I, stand in parents with our house available for her to come back to. Now as it happens she went to stay with her grandfather, but the offer was there from our side that "your mum's gone and left you high dry at sixteen years old, we will we will be your stand in family." To be fair we'd been her stand in family for years anyway, it made not a lot of difference. Then her mum didn't like and they all came back and you're suddenly supposed to be reinserted into her life like it never happened.

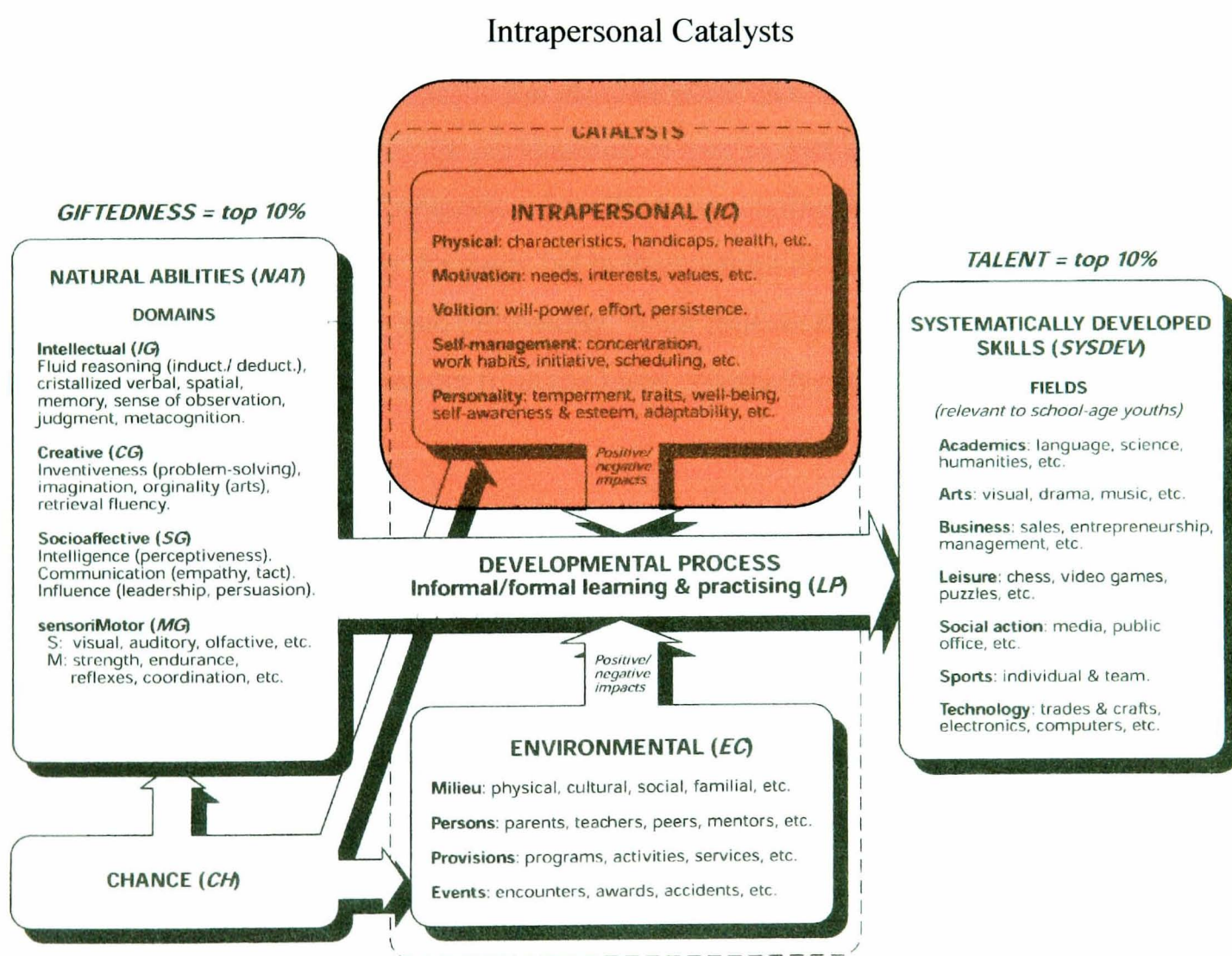
Pat - coach (p. 18, lines 43-50)

I think because of my commitment, which has been total. I pride myself...I mean, I've been a squad coach for 12 years and never missed a squad. I pride myself that if any one of mine want to go in and train, I'm there for them. I have never once said no to them, I am there every day of the week for them. And if they have problems and say would I come in on a Sunday, which is the only day I don't work, unless competitions and squads. I get about a dozen Sundays a year where I'm not working. And if they want to go in, I will be in there with them.

Sandra - coach (p. 16, lines 31-38)

Where environmental factors were concerned, the coaches were the key element in the compensation of missing factors such as other persons or provisions. Certainly this section (see pp. 158-168) and previous sections (see pp. 131-146) illustrate the need for a direct link

between natural abilities and other people to more fully appreciate how gifts are discovered and why talents develop. As stated earlier (see p. 166), even if the coaches themselves lacked the necessary expertise to develop the talent, their belief was sufficient either to gain the necessary expertise or to refer the individual to a more experienced coach. Arguably the most necessary component to compensate for environmental catalysts is a coach who believes in a gifted individual. This helps to explain how and why talents develop, even outside of an ideal environment. However, this is rather different to Bartmus et al.'s (1987) notion of a compensation phenomenon which was arguably referring to qualities such as Gagne's (1985) intrapersonal catalysts. Such intrapersonal catalysts were raised by the participants and are discussed next.



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

The influential power of natural abilities has been demonstrated by the links between this component, intrapersonal and environmental catalysts. According to Gagné (2003), the next most influential component in the DMGT is intrapersonal catalysts. Gagné (1985) described intrapersonal catalysts as psychological and physical factors that can affect the development,

either positively or negatively. He also noted that intrapersonal catalysts can be the result of both genetic and environmental factors.

It could be argued that these intrapersonal catalysts are the finer qualities which define a person, such as their motivation, personality and self management. Whether these qualities are developed through sport or simply come to light through sport is certainly open to debate. If they are developed through sport, then it is within intrapersonal catalysts that the impact of sport on a person can be assessed.

Coaches, parents and gifted individuals generated a great deal of interview data concerning intrapersonal catalysts. This gave deeper insight into how giftedness was discovered by overlaying natural abilities with valued intrapersonal catalysts to show concepts of potential (Tranckle & Cushion, 2005). The themes that evolved were remarkably compatible with the DMGT.

Gagné's (2000) subdivisions in the psychological factors proved, with only minor amendments, to be suitable for the presentation of a great deal of the data (see figure 13). Whereas Gagné subdivided intrapersonal catalysts into motivation, volition, self-management and personality, the data from the study led to the creation of the similar subsections titled motivation, self-management and personality. What follows is a discussion of each of the psychological intrapersonal factors from the three perspectives of the coaches, parents and gifted individuals.

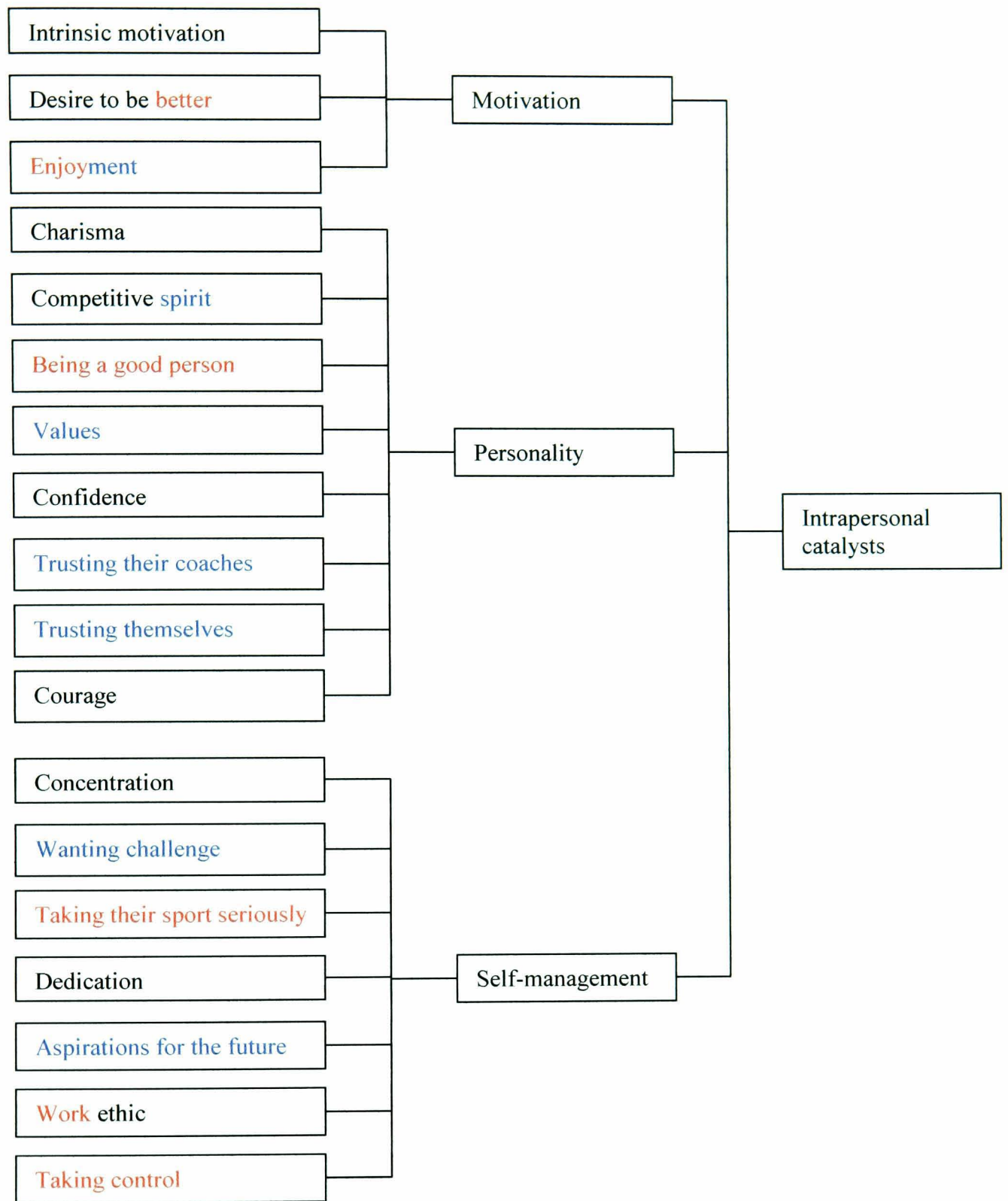


Figure 13. Data themes relating to intrapersonal catalysts.

Motivation

Motivation is arguably the intrapersonal catalyst that fuels talent development, giving a direction for evolving gifts (Abbott & Collins, 2004; Ericsson et al., 1993; Gagné, 1993). A number of themes evolved from the data that were later grouped under the higher order theme

of motivation. These themes were intrinsic motivation, a desire to be better and enjoyment (see figure 13).

Abbott and Collins (2004), Ericsson et al. (1993) and Gagné (1993) all identified motivation as a crucial intrapersonal factor in talent development. Certainly Ericsson et al. (1993) felt that motivational and effort constraints would have to be overcome to develop expertise.

Among the coaches, the importance of motivation was a given. However, they were more concerned with intrinsic motivation, which they felt they had little control over, but were very keen to discover in gifted individuals. Certainly they valued intrinsic motivation as a factor that tended to differentiate between those that would or would not develop talent from giftedness.

I want to know that they're doing it for themselves, they're not doing it for me. And I think little children love their coaches. Sometimes the edges get blurred; they're not quite sure why they're doing it. 'Mummy and daddy love me, they want me to do trampolining, the coach loves me and they want me to do trampolining and they all get on jolly well,' until the child has to make the decision to do it for themselves. I would rather get to that point much earlier.

Sandra - coach (p. 3, lines 26-31)

Although the coaches recognised motivation as separate from giftedness, it is apparent from the data that they regarded it as a prerequisite for talent development. This supports Abbott and Collins' (2004) view that motivation is a (if not the) crucial determining factor in developing and maintaining talent. In addition, this also lends weight to Côté et al.'s (1995) and Tranckle & Cushion's (2005) concept of potential.

Desire to be Better

Gagné (1993; 2000; 2003) further subdivided motivation, noting 'need' as an intrapersonal catalyst. The coaches and parents also talked about a need that was evident in the gifted individuals, which manifested itself as a desire to be better and to progress. However, the coaches especially, suggested that this was due more to environmental influences than

genetics. Therefore, the desire to be better could relate to effective goal setting, which was evident within Abbott and Collin's (2004) model as a vital element in talent development.

Because you've got competitions to work for and like you know what you wanna do. But they always know what they wanna do next Europeans...full twisting Tsuks, double straights and things like that. I say they because they are a team, but Billy-Joe was always focused on what was next, he won't let it go, he'll keep going and won't give up

June (p. 4, lines 14-18)

They always try to improve. Is personal for me, ah, I think that when person can say "oh, I'm great, I did everything how I want in my life, and this is enough" they can say that this person can't develop, as a person because he or she doesn't want to improve. And I think that people always need to improve. They never can say "oh this is enough, and I can stop because I am great" and in sport this is very important. So I think the period when you doing the sport, you need work very hard.

Leia - coach (p. 1, lines 25-31)

Then after he'd finished it he would ask you to look and then he would ask you how to do the next thing. He wouldn't sort of be satisfied with saying that's good enough he would always want to take it to the next step or what could he put in to it to make it go to the next step. You know, what err, you he always strives for something else, doesn't he?...You know I mean he'll go into the detail of something and he'll get so far and you say ok that's what they think and that's how they think you could do it, but what do you need to do to take it to the next step? And he would think about what could he do with either his physical makeup, with his stature, with the equipment whatever to move it to the next level.

Jim (p. 3, lines 6-11; 13-17)

Goal setting and a desire to improve feature prominently in talent development models (e.g. Abbott & Collins, 2004; and Gagné, 2000). The observation that this is a vital element in

talent development is valuable in its own right, but the origin also has relevance for talent detection. Can people develop a need to be better? If not talent detection systems would need to identify those with such a desire. It could be argued from the views of the coaches that discontent with the status quo and desire to improve can develop during talent development. Developing a desire to be better through formal training could be the element that counters the earlier point about some gifted individuals being lazy (see p. 156). This would strengthen the need to detect giftedness early on and challenge such individuals sufficiently so that they want to better themselves rather than being lazy.

Enjoyment

Csikszentmihalyi et al. (1993) suggested that gifted individuals become committed to a talent field because of the enjoyment they reap from the process of talent development. This suggestion is in some ways contrary to Ericsson et al. (1993) who purported that deliberate practice is arduous and not enjoyable. However, Durand-Bush and Salmela (2001) challenged this assumption, contesting that deliberate practice could be enjoyable.

The interview data from parents and gifted individuals strongly suggests that sport, talent development and therefore deliberate practice was enjoyable in these cases. To further augment the understanding of what motivates gifted individuals, interview data has been presented that begins to uncover why they found it so enjoyable.

But it did become a way of life early on. But its fun, he (Billy-Joe) loved it, it wasn't a chore...it was never a chore. Doing exercises and things it was never a chore he loved it.

Lucy - parent (p. 11, lines 14-16)

...he (Corey) just enjoys...I think he enjoys the camaraderie of the tumbling team. He enjoys the fact that he works very hard...he enjoys that. He likes the coaches that he has...He enjoys working with them. He just enjoys this whole thing at the moment and he really feels as though he's got more and more to work for too.

Vanessa - parent (extracts from p. 6, lines 15-21)

...I actually enjoyed doing it as well I find it a very pleasurable thing, visualising these things you know erm especially when I visualise it all and it was good and then when I actually put it into practice it was good, I mean that was an amazing feeling it's another thing of like I say it's the convincing thing it's like the daffodil head again (see p. 204) 'I can do it and I will' and then you do and you know it's kind of it's almost a perfect, the perfect scenario...

Daryl - gifted individual (p. 17, lines 12-17)

Well I'm actually experiencing what my body is physically capable of producing and performing, and to do that is a fantastic feeling; to actually take your body to its complete potential and develop it beyond. Umm...it's fantastic it really is; it's an interesting and lovely experience to have... you know and you need to have it as well. To be able to run down a track in ten point something is a very, very interesting feeling. It's...it's extreme power and speed, but at the same time it's so relaxed and controlled. Umm...it's a very interesting contrast to have...very interesting.

James - gifted individual (p. 11, lines 29-34)

The parents and gifted individuals uncovered a number of reasons behind why they found talent development so enjoyable. Among these were autotelic experience associated with both competition and training, learning new skills, challenge and social reasons. Although motives for participation have been well researched in the past (Gould & Petlichkoff, 1988), the motives of gifted individuals committing to a talent field has not been well understood (Csikszentmihalyi et al., 1993). From this study, autotelic experience was particularly evident from the interview data, which supports Csikszentmihalyi et al.'s (1993) ideas that gifted individuals must find the activity enjoyable to develop talent. The arduous nature of deliberate practice is not in dispute (see p. 37) but perhaps it is not so apparently rewarding. What can be argued with conviction is that these gifted individuals would surely not have engaged in any activity that they were not getting something from. It would seem that autotelic experience is a reward that is accessible and motivating for gifted individuals, possibly facilitated by their extraordinary aptitudes (see p. 34). Certainly this sheds further light on why these gifted individuals came to commit to talent development.

Personality

The relevance of personality as a determinant of optimal performance has been the target of considerable scepticism and has not been well supported empirically (Auweele et al., 2001). Gagné contested the relevance of personality within the DMGT (2000) by noting it as a contributive element, without implying that it could be regarded as a determinant of performance. This approach to the role of personality in talent detection and development seems far less controversial.

The participants all had experiences to share that could augment understanding of how personality impacts the talent detection and development processes. Coaches noted charisma and a competitive spirit in particular as well as confidence and courage; parents noted morality and being a good person; while gifted individuals demonstrated a strong personality with transparent underlying values, as well as trust in themselves and other people. The relevance of these and the justification for them being grouped together is now discussed.

It is understandable that specific personality characteristics have not been identified as significant within experimental research as they are unique. Certainly Gagné (1993) noted that no two gifted individuals would necessarily be gifted in exactly the same way. More so, giftedness is unique by its very definition (Tranckle & Cushion, 2004), and has a multidimensional nature (Abbott & Collins; 2004). Therefore, giftedness comprises many contributive factors which may or may not be apparently relevant when viewed individually. Perhaps personality cannot be used on its own as a basis for talent detection or even development, but part of the unique make up of a gifted individual is their personality and how it affects the other intrapersonal catalysts.

Charisma

When talking about gifted individuals, the coaches would frequently remark on their personalities. Some of these observations related to a form of charisma which they felt were suited to a given sport, or just a trait that made them interesting to work with.

...he (Billy-Joe) enjoys performing, when he's out there in a crowd whether they are competing or not, he wants the crowd behind him. He winds the crowd up, they respond and it works.

June (p. 3, lines 41-43)

He said “This kid has charisma this kid will sell a routine to the judges...” Now, he had seen something of a child who could do nothing, he had seen the potential. He’d seen the spark and she had the presence and the charisma and the whatever it was he was looking for.

Pat - coach (p. 10, lines 37-42)

What is particularly open to debate is whether personality impacts more during talent detection or talent development. Although the coaches noted a charisma that would facilitate performance, how relevant was that charisma initially in capturing the coach’s attention and prompting a closer look? It is worth reiterating that giftedness is extraordinary by definition. If an individual’s personality ‘stands out’ then perhaps other attributes will also prove to be as extraordinary.

Competitive Spirit

Far more obvious than charisma was the value which the coaches placed on a competitive spirit. More so, the need for a competitive spirit in competitive contexts like sport seems obvious. However, not everyone who participates in a sport responds well in competitive situations. Gifted individuals and the coaches commented on competitiveness during the interviews. The coaches found this intrapersonal catalyst to be noteworthy because it seemed to separate some gifted individuals from those who were less likely to develop talent.

Susie is like a...she’s ferocious. She will just take one look at them and laugh her socks off and then go and trample them into the earth. There’s nothing to touch her, mentally, or physically, or gymnastically, there’s nothing to touch her. So her arrival on the seniors will be um interesting. I can see several seniors being very disheartened.

Pat - coach (p. 17, lines 7-12)

I wanted to be the best, simple as that...I remember specifically at my first school, there were two of us who were the fastest two at the school and we used

like, the races were very structured for er, sort of five year olds I'd there was, there was a starter for on your marks get set go and a finishing line for depicting who had won. And generally we'd cross the line together. Erm, so yeah it was quite structured. So there was a big element of competition and officials and rules and stuff like that. And that was at the age of five. And it was very important to win.

James - gifted individual (p. 1, lines 12; 16-22)

Although the coaches encouraged a competitive spirit, their language suggests that it was an aspect that they discovered in the gifted individuals rather than one that they had created. Whereas charisma can be initially evident, a competitive spirit would probably require a competitive environment to assess. If this attribute is desirable for selection, then perhaps talent detection systems require a competitive element.

Being a Good Person

Whereas the coaches described the charisma and competitive spirit of the children, the parents described a softer side that portrayed something of the person beneath the competitor. What came through from the interview data was a sense that these children had developed into very good people. Indeed, the term 'good person' arose again and again throughout the interviews with coaches and parents. Although this may not seem relevant for talent detection or development it is an intrapersonal catalyst nonetheless. As is consistent with phenomenological inquiry, the data must be allowed to speak for itself and the prevalence of these observations made it difficult to dismiss. Although these accounts are full of parental pride, even a sceptic would have to acknowledge that they at least show that these gifted individuals are held in high regard by their parents.

I think he's lovely (laugh) obviously. He's very, very caring. He's very good with smaller children... He's great fun...he got a nice sense of humour. He's very enjoyable to be with...oh he would just always make you smile... People...people like him (whispering)...they get on with him...he manages to bring the best out of people. He always does and he's always done it.

Vanessa (p. 1, lines 7; 14-15; 34; p. 2, lines 20-21)

... she's not spoilt the way she behaves or the way she is to other people. Um. For example I came in the gym one night and I... she's got loads of leotards, always has loads of leotards... I noticed someone wearing a leotard that I thought was like hers and I said "Oh so and so's got a leotard like you". "Oh, it is mine, I gave it to them." "What did you do that for?" "Oh, cos the parents can't afford it, they're on benefits"...(At a competition)...the girl that she was with... um, hadn't won a medal, so she come straight out, took her medal off and put it in her bag, because it wouldn't be fair on Lisa because she hadn't won anything. She is quite conscious of other people's feelings.

Donna (p. 6, lines 37-44; p. 9, lines 39-43)

...that's quite nice to think that someone like that can come from a very small short sighted little boy to you know being recognised, he does have his protectors as well I have to say, you know people who rip peoples legs off if they hurt him because he's such a nice guy, he's never had to have them thank god, but yeah he doesn't fit into any particular group do you know what I mean by that, he doesn't follow, umm crews I think they're called now, he doesn't smoke, 90% of them do and that would set him apart from other people, but they know why, they know not to tease him, because hey Billy-Joe's a gymnast he doesn't smoke, he doesn't not speak to people because they go on skateboards, he doesn't not speak to people because they don't go on skateboards. This happens a lot at school especially at that age, where you're a townie, or you are, I don't know what they call them but they have groups of people and they don't speak to people out of that group, but everyone one of those groups speak to Billy-Joe because he is not in one particular group he stands out, and he's friend with everybody. He's their student council. But he's not afraid to say what he thinks, that's I mean, its not quite the same. Actually no I don't agree with what your doing but its your choice, I know you want to go out and get stoned it's up to you, but hey it's nothing to do with me but I don't wanna know, you may feel that it was the right idea to kick that chap, but I don't wanna know, he's never agreed with people just to be their friend...he's not like that. But they respect him for it I suppose. I don't know if respect is the right word, but seems to me, that's the way it is. But he's

very popular, with all different walks of teenagers...that's the way he is... Very unique. And I'm not the only person who feels like that. Umm...especially the coaches at the gym think that Billy-Joe is a very special sort of person. But people like Billy-Joe don't come along very often. Because he's not an in your face kind of guy. He can be friendly with 2 year olds...and 60 year olds, it doesn't matter. He...he can make people smile and feel at ease, it doesn't make any difference what age they are or what ability they are. He is very special...I've not had any problems with Billy-Joe.

Lucy (p. 6, lines 1-22; 27-33)

These accounts of gifted individuals revealed that they were popular, sensitive to other people's feelings with a strong sense of morality. These qualities would seem to be consistent with the ethos of sportsmanship. Arguably, these would be the kind of values that parents and society would want sport to impart to children. Is this good parenting or are these individuals particularly susceptible to the lessons that others have to teach them? Interestingly, Bloom (1985) also noted that the gifted individuals in their study were quite susceptible to suggestion. Perhaps the relevance of these qualities is that they reflect how well an individual listens and absorbs the lessons and values that society and their parents have to teach them. Therefore, being a good person could arguably be an indication that the individual is co-operative and amenable, which would surely aid the talent development process and would serve as a strong intrapersonal catalyst.

Values

Following on from the perception of these gifted individuals as good people was the exploration of their values. Lyle (2002) suggested that coaches might try to recruit individuals with similar values to themselves so that they can relate to them easier, thus facilitating the talent development process. Although the interview data is steeped in the values of the gifted individuals, there seemed to be little similarity between them. The realisation of this was a reminder to let the data speak for itself.

It's hard to say without sounding big headed sort of thing. You know you've got a talent and you know other people know it, but it just...but, I would say not

many have as much talent as I've got, and I wouldn't want to waste it. Because a normal person does not have the amount of talent as I've got.

Billy-Joe - gifted individual (p. 12, lines 13-17)

Because I was bored in the rec gym because I wasn't going anything; I wasn't going anywhere; I wasn't being pushed either; We were just allowed to mess around. I didn't really enjoy that. I liked the idea of being able to learn new stuff and do new things, which I couldn't do.

Corey - gifted individual (p. 3, lines 34-37)

I enjoyed being involved in something; I enjoyed being involved in something to do with the school or something to do with the club.

Corey - gifted individual (p. 5, lines 21-22)

I think I was then more to kind of test my own skill in that situation than to test my skill against other people and I found that even when I got to international level archery that thing still applied. I was always there to kind of test my own skill against the skill around me, as opposed to actually test my skill against other people. I'd never felt like I was in competition with people. You know erm, a lot of people like me, I used to talk to in archery used to er, say that they didn't care what they did in life they wanted to win to beat people, literally beat people you know 'I want to beat you and make it plain that you're not as good as me' and that was just, it's never ever been a concern I've never been interested in beating other people. If I came third it was a testimony to how well I had done, so it was more a kind of inner, seeking a kind of inner erm, what's the word? It's not an answer or anything but it's like it's a kind of feeling that I got within myself that I'd achieved something which was much more important to me than actually beating other people. And that kind of feeling was definitely the feeling I had at this competition and I think that's perhaps with the air-rifle I think that's perhaps why I did so well; I wasn't nervous about beating other people, I wasn't putting myself under that pressure, you know. It's like, I think if you think in terms of 'I'm in competition with all these other people' there's a tendency to think that all them other people are watching you as well. It's kind of like you know I want

to beat them, therefore they must be thinking the same about me. And I used to try and kind of completely avoid that. Naturally, I didn't do it, which was I think for me was an advantage erm, yeah I mean I think I just can't recall a time when I've ever wanted to really beat someone. It was always more a kind of a personal competition if you like.

Daryl - gifted individual (p. 2, lines 16-39)

...enjoy it as an action or a motion, which is latterly, that's one thing that became really, really important to me, was that erm the actual feeling of it being correct, was a really, really beautiful feeling as far as, well as far as I was concerned it was anyway.

Daryl - gifted individual (p. 13, lines 34-37)

It's just sitting round, I don't like that. I'd even rather go shopping or do something. I just can't sit around for more than like ten minutes 'cause I'm always at gym, or always got something to keep me busy.

Della - gifted individual (p. 7, lines 4-6)

I didn't really get much out of team sports. Erm, I used to play team sports and I was in every team sport I erm applied for I suppose er I as in basketball, hockey, rugby, football, cricket I was in all the teams. Erm, but I didn't get much out of them er I found that sometimes I'd play well and lose and other times I wouldn't play well and we'd win I didn't have a feel of control or complete satisfaction over it erm but I did it because they were the more, the majority of the sports at the time. Yeah, without doubt.

James - gifted individual (p. 2, lines 26-32)

I think I was maybe about 15. I understood that I maybe I could do this. It was not easy, because I know that I needed to work, very hard. But it was some, maybe option to, maybe understand that I can do something, that I'm not small grey mouse, that I am a person, I've always wanted to be a person. But not because my Father he was big boss or a famous name in my country, that everyone know him. I had some problem because people ask me "is it your

Father, you have the same surname.” I said “yes, this is my Father.” But some people thought that my Father, he is quite famous, and he has a daughter, so daughter maybe, how say this, has nice life, just because Father is rich, but in my life was absolutely opposite, my Father never helped me. If we talk about pushing or do something nice and my Father he ...turn on the ground...helped me to stay there. He said “you need to do your life, if you want to have your name you need to do this by yourself.” So I just tried to do as best as I can.

Leia - coach (p. 7, lines 1-13)

I think for me I preferred it to be more competitive, than, because I wanted to do it more seriously than just at a school level.

Noah - gifted individual (p. 1, lines 28-29)

If I've come third at a competition they know I've done well. But to me, it might not have been a very good performance if say I had done as well as I'd done at the last competition.

Noah - gifted individual (p. 7, lines 37-39)

The interview data showed that the gifted individuals had been very trusting and open in how they had shared their philosophies and underlying values. It then became apparent that these gifted individuals were all very open people with an almost transparent set of values. If their values were so easy to see, then it should have been relatively easy to understand them well enough to relate to them effectively in a coaching situation. Certainly Csikszentmihalyi et al. (1993) was able to form some clear profiles of gifted individuals from their study. This also augments Lyle's (2002) theory about the congruence of values between coaches and performers. Perhaps the values of coach and performer need not be the same, but that the coach is able to understand and work with the values of the performer.

Confidence

It is surprising that confidence as a trait does not feature more prominently within the talent development models of Gagné (2000) or Abbott & Collins (2004). Likewise, confidence was not highlighted in the work of Csikszentmihalyi et al. (1993) or Ericsson et al. (1993). Yet

confidence was highlighted by the coaches in this study as a very desirable quality for the achievement and maintenance of elite performance.

I mean...you've got to know you're talented, haven't you? If you're like that...if you're like Ray Somerfield, you've got to know you're talented. He knew that what ever he wanted to do he'd do it. What ever he chose to do, he could do to a really high level. So you've got to know that, and I think that actually gives you a sort of arrogance. It is a sort of arrogance that most people don't like. If you look at most successful sports people, they have a level of arrogance about them. Umm...and most other people resent them, particularly in our country. We hate elite performers because they're arrogant aren't they? I love 'em. If I see someone who's a bit that way I think, you've got it mate. And maybe that's talent...being...having that belief...that self-belief.

Don - coach (p. 12, lines 15-24)

Certainly Bompa (1985) and the AIS (2001) suggested that gifted individuals would feel more confident if they were selected because of their gifts. However, this does not necessarily make them confident people, but it does suggest that they are trusting. When selected because of their gifts, they trust that the selection procedure accurately detected giftedness within them and subsequently believe in those gifts. Bandura (1986) noted that confidence can be built a number of ways, but these all depend on the individual accepting the evidence of their own ability. This acceptance requires trust, which seems to be at the root of the gifted individuals' confidence.

Trusting Their Coaches

The interviews with gifted individuals showed that they trusted their coaches and responded to the belief showed in them. This adds more weight to the suggestible personality of the gifted individuals (see p. 182).

I think it's the coaches. Like, June was really good at getting me to do things because, as you grow up, I've been working with June for ages, since nearly when I started. So I have a certain amount of trust in her. So it's not just about

the move, it's whether the coach thinks you can do it. She said I can do it and I believe her. So, if you were doing Tsuk preps on vault, and you weren't sure if you had the courage or talent yourself and you need that little push, as you say, by the coach...pushing you to do it.

Billy-Joe - gifted individual (p. 7, lines 25-31)

I know she's got 100% my best interests at heart...I know that and I guess I know that because she's my mum as well as my coach. I know she has everyone else's interests at heart as well, but I just trust that implicitly, I don't even ever, ever question it, ever. Whereas I'm sure other people...Well it's hard to trust anyone but yourself 100% isn't it...yourself and your mum and I'm lucky that she's in the position of being my mum and my coach so you know I just trust her.

Kira - gifted individual (p. 2, lines 31-36)

Trusting Themselves

Although the confidence of the gifted individuals may begin with trusting their coaches, it would seem that eventually they learn to trust whole heartedly in their own abilities. The interviews with the gifted individuals suggest that some required time to accept their abilities, while others seemed to have an intuitive knowledge of and faith in their abilities from an early age. What was certain was that they eventually came to trust in their own abilities.

...my real strongest memories of when I was shooting bows and arrows as a kid was with this same chap Norman, who used to try and beat me with his gun, erm made me a bow and arrow from wood...and he said something about "oh right we've got to prove how good you are with this thing" and I said to him "Right I can shoot the head of that daffodil" and he said "There's absolutely no way you'll ever shoot the head off that daffodil" and I said "Right. I'll shoot the head off a daffodil" and I shot, and it went and knocked it's head off...I mean and what was really weird about that whole thing, I never knew whether it was luck that'd done it. When I was saying I'm going to shoot the head off a daffodil I wasn't saying I'm gonna prove you wrong I was just saying 'course I

can, but not in a real certainly not in a cocky or an arrogant manner not even in a confident manner, I was sort of saying “I will, come in watch me watch me for a joke, try me” kind of thing and I never kind of did work out whether it was real luck, but it wasn’t luck because I aimed at it erm and I didn’t know whether that whole thing of if you say “yes I can” and then it actually happens, I think those things inject kind of masses and masses of confidence or belief into you very, very rapidly even if you don’t know what’s happened to you I think that subconsciously kind of give you a real injection of something... I think if get clicked in your brain in the right way I think your body can do anything.

Daryl - gifted individual (Extracts from p. 7, lines 4-43)

Courage

Within the more high risk sports, such as gymnastics and trampolining, trusting themselves seemed to relate closely to what the coaches viewed as courage. Although it could be argued that faith in their coach and carefully constructed skill development played a part, these coaches felt that with some individuals courage existed to a point that made them special.

He (Corey) believes in himself, he has fear. He does have fear. He’s just done a double straight somersault a couple of weeks ago and didn’t know how to get out of it, this is in the middle of a track not at the end, and landed on his back and ended up in bed for a day. But that is also a good lesson to learn. He didn’t, thankfully, do himself any long-term damage...So he does have fear, he does recognise the sport is very, very risky, and if you talk to him about his double straight he doesn’t like it at the moment. I’m making him do more than he wants to do with this...he’d be quite happy to come in and just do a couple and “I’ve done that and now I’m going to leave that”. But he’s still doing them. That’s the difference.

Alison - coach (extracts from pp. 2/3, lines 42-2)

He (Billy-Joe) has always had a go, maybe, he gets a bit nervous now, I think because his skill level is getting a bit higher so he's sort of umm prepares himself a bit longer but he'll always have a go, he's never one to walk away from anything.

June (p. 1, lines 43-45)

Just as Gagné (2003) suggested that intrapersonal catalysts were the result of both genetic and environmental factors, the coaches seemed to favour the view that courage was generated in a similar way. Although an individual may display great courage initially, how resilient is that courage in the face of dangerous near misses? Certainly what is evident is that coaches in high risk sports value a level of courage as an intrapersonal catalyst.

Self-Management

Another feature of both Gagné's (2000) DMGT and Abbott and Collins' (2004) model is how an individual applies themselves. Being able to apply one's self is a determining factor in Ericsson et al.'s (1993) notion of deliberate practice and the need to overcome constraints (see p. 37). Abbott and Collins (2004) noted goal setting, planning and organisation, while Gagné highlighted concentration, work habits, initiative and scheduling. Either model could have been used to organise the themes that came from the interview data. However, the themes that developed from the interview data seemed to equate particularly well with the DMGT, which maintained consistency with a phenomenological approach. These themes were concentration, wanting challenge, taking sport seriously, dedication, aspirations for the future, work ethic and taking control.

Concentration

In addition to concentration being noted in Gagné's (1985; 1993; 2000) DMGT, Csikszentmihalyi et al. (1993) also highlighted the superior powers of concentration demonstrated by those who had been identified as gifted. As a primary indication of giftedness is accelerated learning, it would be logical to assume that concentration could be a prerequisite with gifted individuals. As would be expected, the coaches highlighted the powers of concentration within the gifted individuals.

But he had the most remarkable thing. We...we did a lot of video work and we were videoing from the front and someone took a shot of his head position from the front and when we looked into his eyes it was sort of, I don't know how to explain it, his eyes were absolutely totally focused on what he was doing, I mean you look at most peoples eyes when they're shooting and its sort of a bit ordinary but his were absolutely focused, totally focused, its remarkable. He could have been World Champion.

Don - coach (p. 3, lines 8-14)

And...I mean I've got some photographs of him when he was little of actually...going to the line and actually shooting and his powers of concentration, his determination when he was actually shooting was really quite viral.

Albert - coach (p. 2, lines 26-28)

However, what was particularly noteworthy was that these expert coaches, who were all very professional people in their working lives, were surprised and even shocked at the level of concentration the individuals exhibited. Re-emphasising the atypical nature of giftedness, their concentration was extraordinary in its acuteness and would be conducive with Gagne's notion that it can be recognised through accelerated learning.

Wanting Challenge

With the application of their extraordinary powers of concentration, gifted individuals tend to learn more rapidly than others (Gagné, 1985). This can present a problem for educators and coaches as they have to continually challenge their accelerated rate of learning. Earlier, the coaches and parents shared their views concerning the gifted individuals' desire to be better (see p. 172) and need for challenging goals. Here we see that the gifted individuals also valued challenging goals.

And you think, yeah, OK, and you have a go, and it's like...I've just done a Kazamatu. It's all about your goals again, I'm saying it again, but it is. It's how you set your goals and the time to quit is when you don't have any goals left, basically, and you always have goals. You can always improve.

Billy-Joe - gifted individual (p. 10, lines 45-47)

So, for me the hunger comes from seeing a goal or objective where I would really want to be there because...I don't know...because I don't know whether I could; because it's just on that parameter...it's just out of grasp...you know...if you know your arm is a certain length and you're trying to reach underneath the couch and you know that a coin is a little bit too far away you still just try and stretch a little bit more, so you set that goal just where it doesn't look as if it's quite possible, but you still think you can reach it. And if you can actually reach it...I don't know if many people get a chance to really experience what that's like, but I tell you it's really...it's something that's monumental to yourself...you can really feel proud of yourself; it's a real success. But then once you've done that you just want to emulate it all over again, so you set it just a little bit further, you stretch just a little bit further, with anything, you'll dislocate your shoulder, you'll grow your finger nails, you'll just...any pain or anything...you just go through anything just to try and just reach that few millimetres that aren't possible...and that's where the hunger comes from. Some people may look at it and go "Can't reach it" and pull their hand away. That's the metaphor I'm trying to use, I don't know whether you can understand it?

James - gifted individual (p. 12, lines 16-33)

In addition to these quotes that emphasised their value for challenging goals, some of these gifted individuals (i.e. James & Corey; see appendix 1) also chose to change sports to seek out more challenges. It would seem that easy wins were empty victories as they felt frustrated if they sensed that they had become a big fish in a little pond. In order to keep developing they had to keep testing themselves and seeking out competition and challenge.

If the nature of giftedness is that they must find adequate challenge for their extraordinary abilities (see pp. 156-158) then sports need to be prepared for such individuals. For example, the promising beginner who loses interest all too quickly could have been a future elite performer if only the sport could have offered challenge to suit their rate of learning.

As argued earlier, the gifted individuals were intrinsically motivated with a strong desire to progress. Coupled with their need for challenge it was hardly surprising that they wanted to take sport seriously. What was surprising was how young this occurred with some of the gifted individuals. From the interviews with the parents it became apparent that this desire to specialise occurred during the typical age range for the sampling years (Côté, 1999). This supports Beamer et al.'s (1999) notion that the stages of learning might occur earlier depending on the demands of the sport.

...he was just different you could see, you just thought oh that's a bit flash, you know oh my god he's doing it properly how embarrassing because everyone else was going look at that boy going oh isn't he lovely, I mean it was just strange, he just wanted to do it right...

Lucy (p. 4, lines 28-31)

But I think so far as getting on in her sport, achievement-wise I don't know if it's had a positive or negative affect. I think that's down to her being very, very determined to achieve something and that has affected her close relationships. I mean her ex-boyfriend has pretty much had to back off and bow out, because he's in the sport as a coach and he knows that she's actually having to be more selfish than she wants to be in order keep focused on the sport.

Mike (p. 1, lines 39-44)

Through their motivation and need for challenge, taking sport seriously seemed to be the logical option to ensure that their gifts were developed. As with addressing the need for challenge (see p. 174), sports need to be prepared to cater for those who learn fast and feed off the excitement of achieving really challenging goals. If sports wish people to dedicate themselves to talent development, then there must be avenue for them to do so. It would seem that systems like AIS's Talent Search would have been ideal for capturing the enthusiasm of these gifted individuals and providing them with suitable challenges.

Dedication

From the work of Ericsson et al. (1993) and Côté (1999) it is perhaps easier to appreciate how much work and dedication is involved in the field of talent development. Being dedicated in the pursuit of talent development was particularly emphasised by Ericsson et al. (1993) and was also evident in the accounts of the coaches.

You can only do two things in life well. That's...if you're at school, your school work and a sport. You can't be going football, rugby, cricket, archery, running. You can't do all that. If you've got the talent, you'll do them all reasonably well. But you won't be fantastic at one, because you're putting so much effort into all the others as well. You've got to be totally committed blinkered and say this is it, this is what I'm going to do and this is it. I know what our regime was when I was shooting with Angela. I'd finish work, the wife would meet us on the door step of the house. She'd unload the vehicle with Angela, while I was having a shower, they'd load the vehicle while I was getting dressed, I'd get dressed, I'd be in the vehicle, drive down to the club, shoot till dark and we'd pick something up on the way home for eating. And that was every day, we never missed, it didn't matter what the weather was, we shot. That was the way it was.

Terry - coach (p. 3, lines 23-34)

Certainly gifted individuals could be spoilt for choice. Their abilities may enable them to become competent quickly in most tasks but the difficulty is that they could be equally good at a number of sports. Choosing to dedicate time and effort in the pursuit of talent in one sport at the expense of other opportunities may be hard but these coaches would argue that it is necessary to fulfil potential and keep challenging such gifted individuals.

Aspirations for the Future

Dedicating such a vast amount of time and energy towards sport at the expense of pursuing other opportunities could be viewed as restrictive and detrimental to an individual's overall development. Certainly Csikszentmihalyi et al. (1993) pointed out that the career opportunities for gifted individuals in sport are far bleaker than those in more academic fields.

Nevertheless, the interview data suggested that these gifted individuals were undeterred and saw a future for themselves in sport.

So I got into athletics, redirect that erm interest in the competition and the hunger is sort of fed, erm but at the same time it working towards where my actual income will come from because I wanna work with athletes as a chiropractor. I reached the stage where I've gained a lot of respect from other athletes. I train with quite a few of the guys on the British team and I have their respect and also they appreciate my knowledge so with regards to that I'd say I'm succeeding and there's still a bit further wanna with the athletics. My goal is to make the 2006 Commonwealth relay team which is a feasible goal erm and also at that time as well erm I'd be looking at just finishing my qualification as a chiropractor and go into the industry erm at that stage then I'll readdress seriously my archery but until then erm... it wouldn't be appropriate.

James - gifted individual (p. 8, lines 8-18)

Similar aspirations were also noted by the other gifted individuals. The dedication of time and life seemed to them affordable in the hope of a career in sport. Perhaps such aspirations contribute to continued commitment to talent development, shedding further light on why some people persevere to see this process through to the end. Even though their opportunities were few and hard to reach, they aspired to them nonetheless.

Work Ethic

A crucial element remains in the self management of the gifted individual. Gagné (2000) described this as a work habit, but adopting the language of the coaches it has been described here as a work ethic. More than a capacity for hard work, it is an habitual approach to such work. Ericsson et al. (1993), Bloom (1985) and Côté (1999) all emphasised the need for prolonged hard work in the pursuit of talent. In particular, Ericsson et al.'s (1993) theory of deliberate practice over 10 years to develop such expertise is particularly relevant. In order to endure deliberate practice, they emphasised a need to overcome motivational and effort constraints. Although motivational constraints have been discussed already (see p. 174) the

issue of effort constraints and any tendency to be lazy through possessing natural ability (see p. 156) would seem to be countered by the work ethic of the gifted individual.

...she's actually literally had to leave her training to one side while she concentrates on her revision, and when you see her revise, and I know what revision is about, I've done it myself, but when I seen what she's done, it's incredible, she just won't give up once she's set her mind on something. She is very single minded but she seems to make progress by planning her life out very closely. She knows where she'll be, what she's going to be doing, she's got that all ticking away in her mind well ahead, she's got a very good memory of what's gone on behind the time, and I suppose very much like her mum really. It means that she squeezes 24 hours into 24 hours, instead of about 2½ hours into 24 hours, because most people think they have a busy life until you see Kira. You can be on your knees and she'll be back up ready saying "Well I'm going shopping now" and she'll go off and do 2½ hours of hard shopping, and, you know, she'll love her retail therapy, she's a real girly, you wouldn't believe what a girly she is, and things like clothes and shoes and watching soaps but she'll do all that as well as you know, it's like having two lives not one, and that is something that... I think if she wasn't doing trampoline she would be doing the same in another sport...

Mike (p. 3, lines 10-26)

He likes to get things done. He works very hard; I never have to push him. In fact I'll probably be the one to say "Oh Charlie...common...you know...have a night off" or something "No! Mummy I've got a competition I have to do this." So he's very focused. As I said he works very hard. He enjoys it...he enjoys it. He likes to achieve.

Vanessa (p. 1, lines 10-14)

Although some of the parents noted an inherent capacity for work in their children, they also emphasised how that work was fuelled by motivation. Whereas these parents took the relatively simple view that their children would apply themselves if they chose to, their perspective as parents of gifted individuals should be considered critically. Not wishing to dismiss the obvious message that motivation will lead to an effective work ethic, there is also

a need to entertain the giftedness and atypical nature of these individuals. Could their position as parents make them blind to their gifted child's extraordinary capacity and approach to work? The coaches have not had the sheltered experience of raising a gifted child, as their experience should be much broader, having been exposed to the full spectrum of aptitudes in a given population.

Interestingly, the coaches held two different views to a work ethic. Some regarded a work ethic as a talent in itself, while others saw it as an alternative to giftedness or at least as a compensation for lack thereof. If the coaches considered such a work ethic to be a talent in itself, then perhaps these gifted individuals have an ability to work with the necessary diligence to achieve once they have been motivated to do so.

The kids I have are hardworking um moderately talented gymnasts who've got there by sheer graft...They'll get close with hard work. Carman will get close with hard work. She's a tremendously hard working gymnast, she is a reasonably well talented gymnast. She is probably good enough to make the top ten in the world, certainly she's already in the top ten in Europe in her first year as a senior, but she will never make "the top" I don't know if she recognises this yet or not but her coaches know it...

Pat - coach (p. 2, lines 1-2; p. 17, lines 17-22)

But, what I picked up in Martin was very much what I picked up in Colette. It wasn't that wow factor as in physical, it was the work ethic. Umm...and the desire; the want. You now, Martin stuck with it through thick and thin.

Sandra - coach (p. 15, lines 33-35)

Work. We've been around archery a long time and you see the people that shoot all day. People like the Americans...they would shoot maybe a thousand arrows a day. And that's just normal...And I think it's one of the few sports like golf, where it doesn't matter about your size, your age, really your technique, as long as you're willing to put the time in, you can achieve it. Yeah. It's just pure arrows. If you look at the ones at the top, they've been at the top a long time. The Baughursts have been at the top a long time, they still represent Sweden and do well in their sport, that's a long time. You've got Angela, Sam, Russell, you just go through the national team. They're not two minute wonders; they haven't just

come in and done it. They've shot thousands and thousands of arrows in their time...hundreds of thousands and so they can always be relied upon to shoot really well, they will never be at the bottom of the rung, because the others have got to shoot so many to catch up.

Terry - coach (p. 3, lines 1-20)

What comes through from the accounts of the coaches is that a work ethic was necessary for talent development. They also emphasised that great achievements were possible with hard work, but ultimately it did not take the place or fully compensate for an absence of giftedness. Yet such was the value of a work ethic and what that attribute meant to the coaches that they would still invest their time in such individuals, even with the knowledge that they would not reach the heights which they ultimately aspired to (see p. 194). This suggested that the coaches believed that the ultimate benefit in talent development was the process rather than the eventual goal (see p. 145).

Taking Control

Gagné (2000) also highlighted initiative within the DMGT, which did not feature in the Abbott and Collins (2004) model. Even within sports that involved relatively simple tasks, there was a need to apply initiative to find effective ways of managing training, which could often be complicated.

Although the parents noted examples of initiative from their children, the title of initiative did not seem to fully reflect what they were describing. It seemed more appropriate to describe the accounts as examples of how the gifted individuals had taken control of themselves and their environment in the pursuit of talent development. Furthermore, these accounts are suitable for discussion under self-management because they portrayed the proactive way that the gifted individuals approached tasks.

...it became a way of life early on. And the furniture used to go back and we had a trampette in the garden and we used to have some scaffolding poles for him to do chin ups and things on. Very young, that's what he wanted... "What do you want for your birthday?" "I want some scaffolding poles" "What!" Or "I want a

trampette” This is what I want to do, so he would be doing somersaults and things in the garden without mats.

Lucy (p. 11, lines 1-6)

...like when we did the World Age Games “Come on Mummy you’ve got to book your flight...What time ‘you coming? What day ‘you going?” Duda, duda, duda! Gets on...makes me do it. He does it. “Right where are you going to stay? I think you should stay in that hotel.” “OK.” Does it...doesn’t leave it, you know...organises it...gets us going. You certainly know if he wants something...he’ll push for it.

Vanessa (p. 13, lines 14-19)

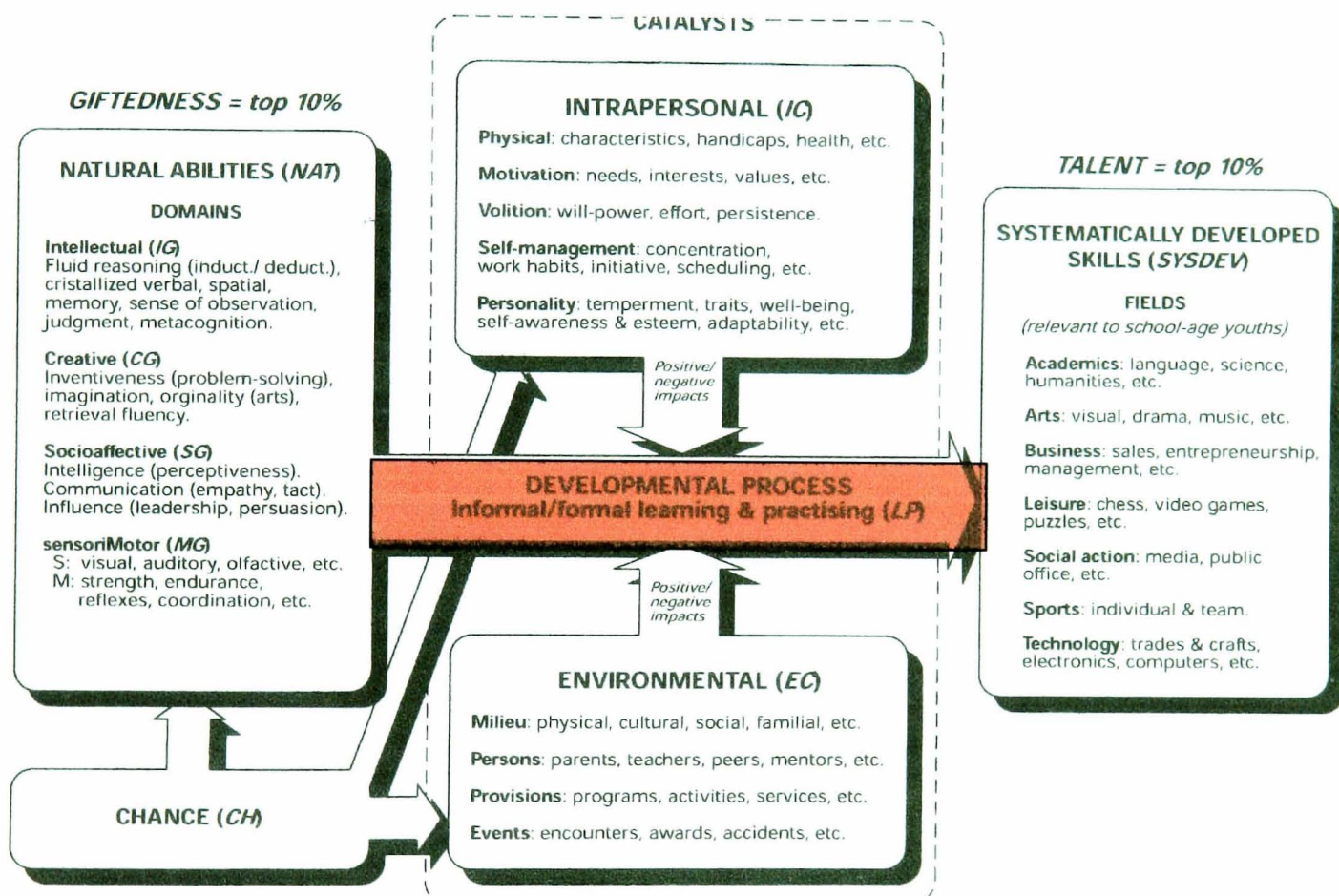
The volition and proactive nature of their approach to work seemed to contrast with their almost vulnerable and impressionable personalities (see p. 180). It would seem that once inspired, these gifted individuals would be prepared to go to great lengths to achieve in a given field of expertise.

If the commonalities between these gifted individuals are in anyway an indication of the intrapersonal qualities which might be desirable in other gifted individuals, then there are lessons to be learnt for coaches and sport in general. First and foremost, intrinsic motivation would seem to be essential for talent development (Csikszentmihalyi et al., 1993; Ericsson et al., 1993; Abbott & Collins, 2004). Not only is this necessary for the gifted individuals to commit to talent development, but also for the coaches to develop their gifts ethically. As stated already, these gifted individuals could apply themselves to developing talent in various fields. In order for the coaches to feel justified in guiding the development of talent in their chosen field, at the expense of others, they needed to know that the gifted individual was there by their own choice.

The data suggests that other factors relating to personality and self management also serve to affect the detection and development of talent as intrapersonal catalysts. Desirable aspects of personality were identified by these coaches as being charisma, competitive spirit, confidence and courage. The gifted individuals were found to be very amenable, trusting and open natured. Desirable self management qualities identified by the coaches were concentration, dedication and a work ethic. Furthermore, the gifted individuals were found to value challenge, doing things properly, developing a career using their talents and taking

control of their environment. The coaches felt that attributes facilitated the development process for these gifted individuals. Tentatively, it could be suggested that such qualities are worth assessing as part of talent detection, as they were with these gifted individuals. However, these qualities do not identify giftedness, rather they suggest compatibility with the developmental process and a possibility for talent development. As discussed already, it is the potential for talent over giftedness itself which is of primary interest to coaches (Côté et al., 1995; Tranckle & Cushion, 2004).

Developmental Process



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

Having discussed the relevance of chance, natural abilities and intrapersonal catalysts, it remains to take a closer look at the development process itself. According to Gagné (2003), this is the fourth most determining component in his CGIPE acronym. The developmental process is where natural abilities interact with intrapersonal and environmental catalysts to work towards and achieve goals on the path to talent. This process is distinctly different from the other components of the DMGT (Gagné, 2000) because it represents an interaction rather than anything that could be held as separate from the other components. Without some form of

melding between natural abilities, intrapersonal and environmental catalysts, the developmental process would not exist.

The developmental process is closely linked to the nature / nurture debate because it represents the evolution of natural abilities to expertise from birth, not merely from the onset of formal learning. This has implications for understanding how gifts are discovered as nature and nurture are inseparable within the developmental process.

Interviews with the coaches, parents and gifted individuals generated a great deal of data relating to the developmental process. However, due to the interactive nature of the process, most of the themes were appropriately discussed in terms of their link to other components of talent development. Therefore, within this section, the discussion focuses on themes relating to early learning, response to training, stages of learning, important steps for the gifted individuals and the concept of flow (see figure 14).

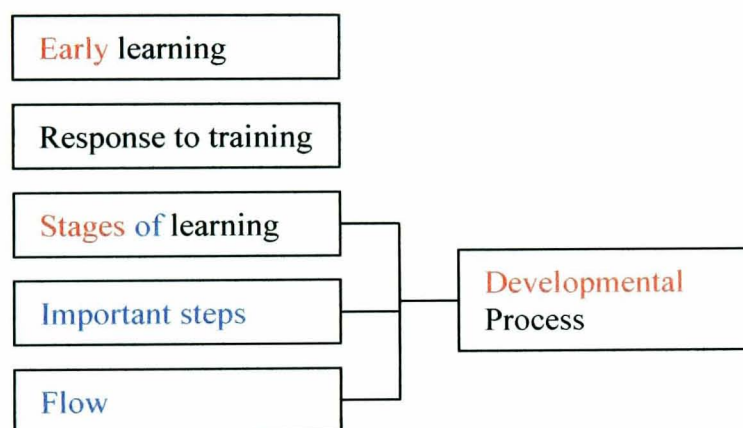


Figure 14. Data themes relating to the developmental process.

Early Learning

As stated already (see p. 197), natural abilities cannot be viewed in isolation from the developmental process. According to Gagné (2003) the developmental process consists of maturation, informal and formal learning. Therefore, all natural abilities are in a state of maturation, even before birth. At first glance, this might cast doubt over the existence of natural ability and strengthen Bloom's (1985) and Ericsson et al.'s (1993) environmental deterministic position. Early learning was certainly noted by the parents and coaches.

Alexis and Kira were... good at listening because she (Sandra) brought them up like that. When they were little tiny toddlers they would sit and read stories all day. She'd be sitting on a great big floor cushion, back against the wall with the

fire on and snow outside and just be sitting for hours reading stories to the kids and then they'd go out for walks. They were always doing something, but always learning from Mum and so going into one of these pre-school groups they were the ones who were listening and getting a lot out of it and doing things, and a lot of the other children were having to be taught to listen. They had no idea how, and a lot of the mums who were there didn't, it took them a long time to realise why their kids were running off the other way or not doing anything or not even understanding.

Mike (p. 5, lines 32-42)

You talk to any trampoline coach about gymnastic kids that have come through the door. Quite often they will say this kid is enormously talented, but actually it's the way they have been trained that has produced the amount of spatial awareness that they possess, which is greater than the average; the ability to make decisions about rotations that work, about twists; the ability to look elegant in the air, to have the shapes and that sort of thing.

Trevor - coach (extracts from p. 13, lines 23-29)

In particular, the coaches recognised that previous or early learning contributed to the aptitude they saw in individuals. However, Gagné (2003) argued that such cases do not weaken the contributive force of genetics. These examples simply show a level of ability that was not expected at such an early age, most likely due to previous learning. This should not be confused with the rate of learning, which Gagné purported to be the indicator of giftedness.

Response to Training

Although coaches may value an initially higher level of development than expected upon their initial meeting with individuals, ultimately it is the rate of learning which is decisive (see p. 130). The notion of training to appreciate fully an individual's giftedness (Harre, 1982) and to differentiate the level of development from the rate of learning was supported by the coaches.

Although I think you can pick out talent quite quickly. You can see if a kid's got ability to do things...physical ability to...coordination...balance...is able to do certain elements. You can identify that sort of talent very quickly...if they are the right sort of size and right sort of proportion...err...got good posture. You can spot all these things straight away. But to succeed in gymnastics requires an awful lot more. Things like parental support, err...cost...being mentally capable...the gymnastics is an individual sport...they're out there on their own, but the training situation is in many ways a team thing. You come across some kids who don't work well in a team. They work hard on their own, but they don't work well with other kids. That often leads to problems in the training situation, like warming up. It creates problems. The other side of that is kids who will train very, very well in the group situation. But take them away from that and put them in a competition on their own in the middle of a floor area in front of 200 people and they can't cope with that. There's so many different aspects that will identify whether or not a child is gonna succeed. You can't do that immediately, that has to be done over some time. So yeah you can identify raw talent ability, but there's much more involved than that and you need the strength at 10-11 years old to be training 5-6 times a week, up and down the country for competitions...at such a young age, it takes a lot of mental strength and character. But you know you if they wouldn't have that...it won't last, but you can't identify that straight away.

Ben - coach (p. 12, lines 8-12)

Talent is something that cannot be identified until you have worked with a gymnast for a certain amount of time.

Alison - coach (p. 1, lines 31-32)

The coaches had come to understand what Abbott and Collins (2004) have been campaigning for, which is the combination of the talent identification and development processes. Although the notion of training to reveal giftedness has been around since 1982 (Harre), very few talent identification and development models make this combination explicit. The DMGT (Gagné, 1985; 1993; 2000) does not show where talent detection and identification occurs. Future models or revised versions of the DMGT should consider

portraying a more amalgamated relationship between talent detection, identification and development within the sampling years.

Another limitation of the DMGT with regard to the development process is the lack of any form of temporality. Talent development theories that consider temporality include Bloom's (1985) phases of learning, Ericsson et al.'s (1993) 10 year rule, and Côté's (1999) stages of learning. Gagné simply noted that the developmental process can take a variety of forms (i.e. maturation, informal and formal learning) and is impacted by various components (natural abilities, intrapersonal and environmental catalysts).

Stages of Learning

The developmental process described by Gagné (2003) can be further augmented by overlaying Côté's (1999) stages of learning, as Abbott and Collins (2004) did for their talent development model. Côté's (1999) stages of learning consisted of the sampling years, specialising years, investment years and maintenance years. The sampling years would typically take place between the ages of 6 and 13 years of age. During this time, children would experience fun and excitement through a range of extracurricular activities. The findings of this study supports Côté and Hay's (2002) notion that a child's active and voluntary participation during this stage is pleasurable, providing immediate gratification and developing intrinsic motivation, described as 'deliberate play'.

In the playground, racing kids, running...erm...and I was doing other activities at home or with friends during the holidays, so be it with catapults or little cane bows and arrows and things like that. Messing around.

James - gifted individual (p. 1, lines 5-8)

I had an air rifle as a kid...erm, just living on the farm...erm, my Dad bought me just a really tiny air-rifle and, yeah, I'd spend hours in the garden shooting at bean cans or setting up targets.

Darren – gifted individual (p. 1, lines 48-50)

He (Corey) was just so busy into things and running around and...oh he loved his swimming, he loved all the different sports as well, across the board.

Vanessa - parent (p. 1, lines 34-36)

Bloom's (1985) research suggested that this was the stage when giftedness would be noticed. As stated earlier, current models (e.g. Gagné, 2000; Abbott & Collins, 2004) do not identify when or where giftedness could be noticed. However, in order to assist coaches it may be worth making talent detection explicit in any future models.

Following the sampling years, Côté (1999) described how children's attention narrows to focus on one or two sports between the ages of 13 to 15. Côté called this the specialising years, where fun and excitement remain as central elements in a child's participation, even though there is a growing importance placed on sport specific skill development. During this age band, these coaches in particular noted the importance of fundamental training. Although Bloom (1985) emphasised fundamental training more within the early years, it seems to fit more within Beamer et al.'s (1999) idea of an even balance between deliberate play and deliberate practice, which is a characteristic of the specialising years.

Well we must have spent...an hour and a half, a couple of hours, six days a week in the holidays down the field...just grinding away. He's probably one of the only kids who had a box of carbon arrows that I wouldn't let him use. James's saying "Dad's got me these arrows. Let me use them. And I said "No" when you can use these tin ones...He's got an old 75p flat basic tab, tin arrows. He was at least using a Hoyt bow. And his Dad was saying, you know, 'Why can't he use his carbon arrows?' So I said "Did you learn to drive in a Ferrari." I said 'it's the same sort of thing. With carbon arrows, it goes bang and it's all done and you've got no feel...No idea really of what you're actually doing with the bow. It's all over so damn quick, with one big bang.' I said, 'This way, he's getting a feel for what he's doing'. Finally at the end of the year, we took the carbon arrows out and his scores just went off the scale.

Arthur - coach (p. 2, 34-44)

Côté (1999) described the stage that follows as the investment years, where involvement in sport narrows to focus on a single sport, in which an individual will become committed to achieving elite levels of performance. This decision typically occurs about the age of 15 years in most sports, which begin the investment years. Within Gagné's model, the investment years are characteristic of the later stages of the developmental process. During this time, there

would be more importance placed on strategic, competitive and skill development aspects of sport, along with an extremely intense commitment and tremendous amounts of practice (Côté 1999).

This is also the stage where we would typically expect to see evidence for Ericsson et al.'s (1993) theory of deliberate practice and the 10 year rule for development of expertise. However, this was reflected better in the gifted individuals' approach to practice, which is discussed within the context of intrapersonal catalysts (see p. 195).

Important Steps

Progress through the stages of learning towards talent was linked to an ever growing concept of identity. This was brought about by important steps along the way which began to reveal to the individuals where their strengths lay.

A week ago, I done a Kazamatsu on vault. That's half on, half off, going into the front somersault, the half twist back somersault. So it's quite a hard move. Well, very hard move, I only think about two other people at this club have done it. And that kind of proves that you're quite good. I mean I knew I was quite good, obviously, but you think, I'm developing more. So you work harder moves, and that's one of the hardest moves you can do.

Billy-Joe - gifted individual (p. 10, lines 19-24)

...when I first learn to do like a double straight somersault in the middle of the track to do a round off flick, double straight, whip, whip, whip and carry on going. That was kind of like the big stepping-stone because that kind of like a hard...hard move that all the people that are good do basically. Because that's basically the move that I thought once I could do...I was doing something.

Corey - gifted individual (p. 16, lines 21-25)

These examples illustrate how the gifted individuals achieved along the way and began to think of themselves as a sports performer, rather than just a child who did sport. Such achievements spurred them to make more investment in themselves, thus progressing them

through the stages of learning. By achieving these goals it also helped them to overcome the motivational constraints (Ericsson et al. 1993) associated with deliberate practice.

Flow

In addition to these important steps, encounters with flow experience also seemed to reinforce feelings of competence and identity with their evolving talents. Csikszentmihalyi et al. (1993) suggested that gifted individuals would be more prone to autotelic experiences such as flow. Furthermore, he theorised that such experiences would lead to a commitment to the talent field and the development of talent.

The run actually...I can't really remember it. It was the weirdest, weirdest feeling that I've ever experienced in my whole life. It was the weirdest, weirdest experience. It felt like my muscles didn't ache; I had as much spring in me as I could possibly want; it was all going on automatic; I wasn't thinking about it at all, I was just doing it. I felt like it wasn't that warm in the venue, but when I was doing it, it was like warm air going past me. And my muscles...it was the weirdest feeling ever. Really like...it's just...Can't really remember it really. Nothing like...normally when I hit the track it aches a bit really; and the muscles...it strains all the muscles, but didn't hurt at all and felt like I was floating really.

Corey - gifted individual (p. 10, lines 39-47)

But I think the feeling with that, the daffodil thing was it was a totally unpolluted erm sort of a feeling and vision and then when it actually happened it was exactly what I'd said it was going to be without any kind of the doubts in there, so it's this really weird almost perfect scenario, which is rare. I mean, there are perfect scenarios in that when you shoot you do a shot, in archery terms anyway, that is incredibly beautiful and it just feels like you know, it's a really, really sort of a an internal kind of feeling of correctness erm and then on the contrary to that there's the feelings where even if it goes in the middle you still don't feel that feeling. There's something not quite so perfect about it.

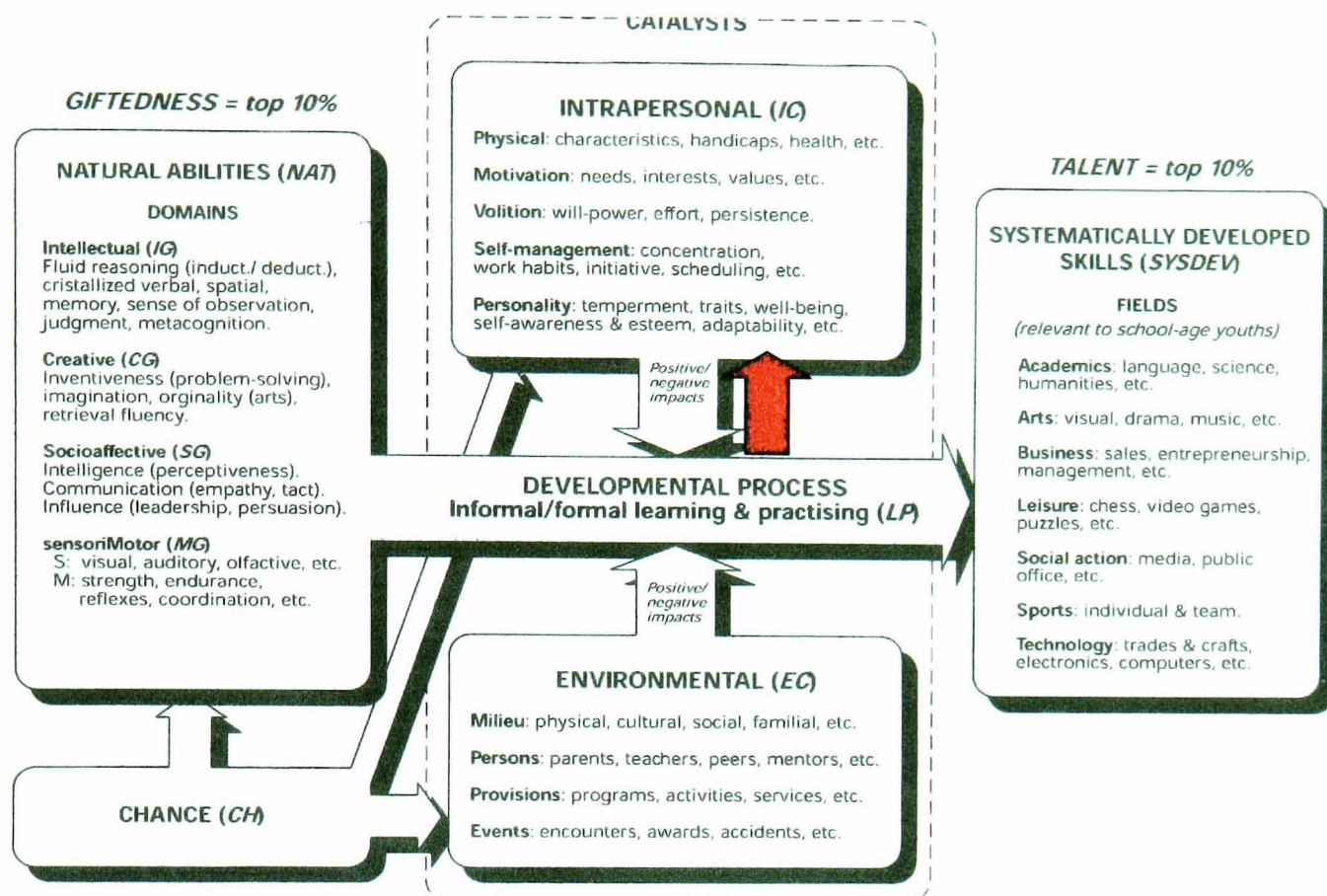
Daryl - gifted individual (p. 10, lines 5-13)

...the next memory that comes into mind was the junior national championships in '95 in the north. That sticks in my mind. Umm...because I won the under 16s national championship, that was good. I got recognition from the national coaches etcetera, etcetera, plus I think first dozen, I think I was leading or second place in the under 18s. I remember being on the leader board for that. Again, as I was shooting those arrows for that first dozen, I was able to...I was in a very, very focused state...the highest focused state I had experienced at that time while shooting. I mean I was really in what developed to be where I would shoot my best scores. Umm...it's a very relaxed focused zone. The only way to describe it is being at one. You...the whole...as soon as you put your fingers on the string to the time you let go, to the arrow flying through the air to it hitting the target, you have complete control and complete feel over what's happening and it's the lightest feeling ever. And they just...there've been several occasions when I've shot FITAs where I've only had one, maybe two shots outside the red, so the level of consistency is very, very high throughout the day. It's a very bizarre state to be in. You're not consciously controlling anything, you're just in a state of very high focus. You're not saying do this do that, really you're...it's just at one...it's a zone that you're in...it's the only way I can say it, it's a zone.

James - gifted individual (p. 14, lines 13-30)

These examples of flow are but a few of the many cases reported by the gifted individuals. Certainly they did seem to be very prone to such autotelic experiences, which supported Csikszentmihalyi et al.'s (1993) theory. Whether they did lead to them committing to the talent field is certainly open to debate. It could be argued that the important steps and the encounters with flow served to bring their self concept and sporting identity closer and closer together. Therefore, important steps and flow facilitate their commitment to the talent field and enhances our understanding of why talent develops. However, this implies the existence of an impact arrow from the developmental process to the intrapersonal qualities of the individual, which is currently absent from the DMGT.

How Talent Development has affected the Gifted Individual



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

The DMGT shows how intrapersonal and environmental catalysts impacted the development process towards the formation of talent. However, in the quest to understand the discovery of gifts and the development of talent, it does little to explain why individuals commit to the talent field. In order to explore this, the discussion turns to the exploration of a bidirectional link between the developmental process and intrapersonal factors. Throughout the interviews, the participants reflected upon the negative and positive affects of developing talent (see figure 15).

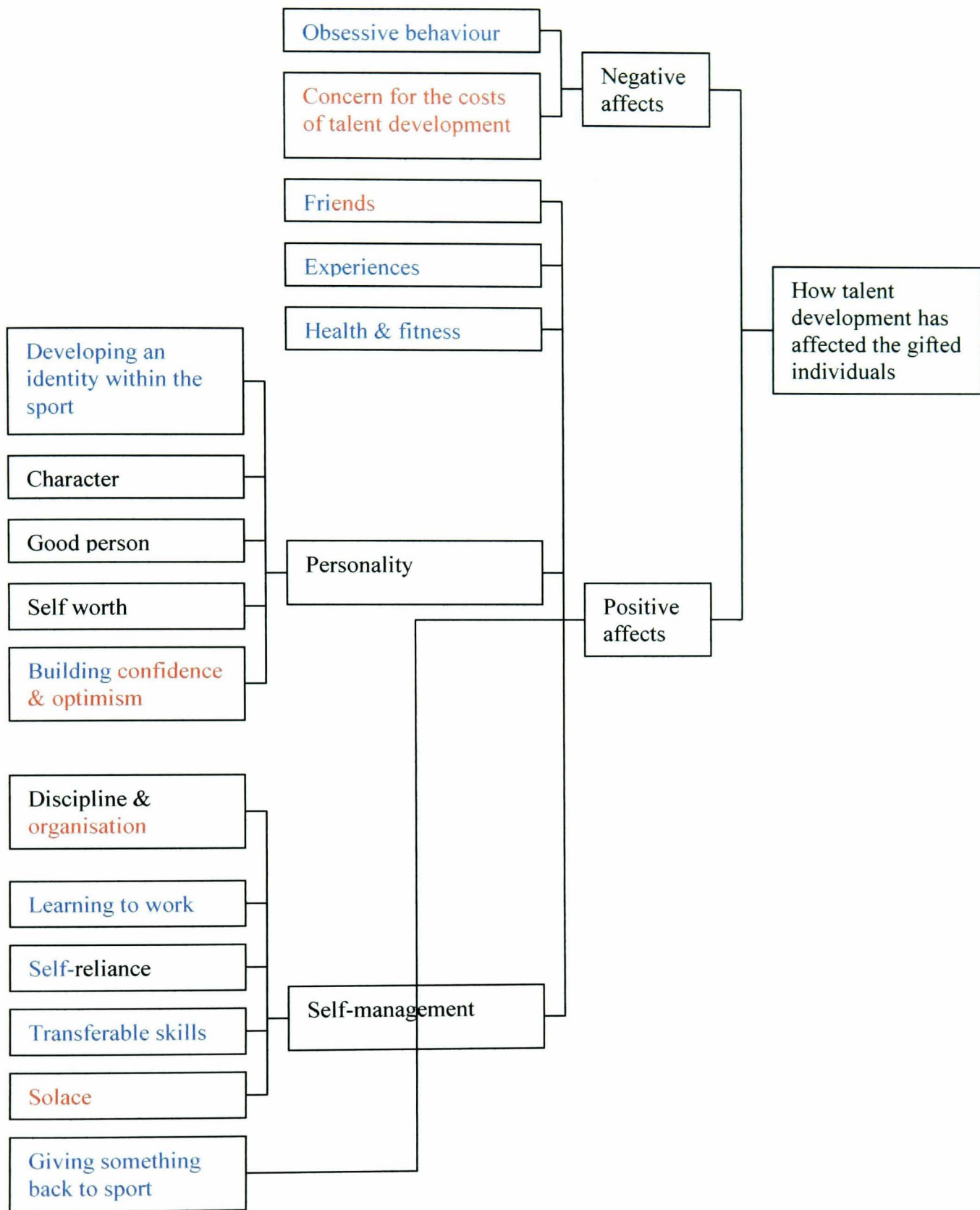


Figure 15. Data themes relating to how talent development has affected the gifted individuals.

Negative Affects

Obsessive Behaviour

Ericsson et al. (1993) stated how costly talent development is in terms of motivation, effort and resources. In overcoming motivational and effort constraints, the gifted individuals

submersed themselves in the sport to the extent that they were prepared to and often did make great sacrifices and behaved in an obsessive manner to achieve their goals.

And it was the Nationals and we were against them. And I broke my foot six weeks before and didn't tell anyone...well, what happened was I hurt my foot and limped out, and umm...my Mum said do you want to go to hospital and I said no it's OK. Three weeks later it was really hurting so I went to hospital and they said I'd broken it, but...I didn't go when I first broke it so the two bones had fused together. So I couldn't really train on it before the competition. I trained on it a week before the competition and competed in the National Championships with a broken foot. I was below my average, but still, we pulled higher, we did really well and we beat Metro.

Billy-Joe - gifted individual (p. 5, lines 4-12)

...archery was my life and at one point when it all went wrong he got really worried because he said "Daryl you've got to get something else in your life. You're doing nothing but eat, sleep, drink archery."...he'd say things like "right you know I've got I've got my job, and I've got my wife and I've got my child at home so, whatever happens I've got all them things. Right now I'm gonna win and I'm gonna do my best" so he would like lock all these kind of securities in there first and then go and compete freely whereas I kind of got a bit too mixed up and it was all the same thing it was all one big world, and if it went down my world went down and I think essentially what it boils down to with me was just an absolute obsession, obsession with every aspect of it as well and also always constantly wanting to match or better my own my own performances was you know a big thing.

Daryl - gifted individual (pp. 21/22, lines 33-12)

I did archery for 9 or 10 years and so that was from a very young age which is a really long time to be submerged in a sport, and I mean, I was as submerged as you possibly could be. All I did between the ages of 13 to 18 I'd say was archery. It was my main objective in everything that I did. When I went to school, I was thinking about it or repairing arrows, I used to shoot before I went to school, I'd

come home and I would shoot, and then I would go back, watch archery videos and read archery magazines, wake up to do the same routine again.

James - gifted individual (p. 5, lines 31-38)

It is interesting to reflect on how natural abilities initially affected the individuals before talent development (see pp. 153-158). In the cases of Billy-Joe and James, they initially behaved poorly because they did not have the means to satisfy their inherent need to exercise their abilities (see p. 155). However, having provided them with an outlet for this need to use their abilities, they became obsessive about how much of themselves and their life that they poured into the process. Such behaviour was noticed by their parents who were understandably concerned.

Concern for the Cost of Talent Development

The risk of serious injury and making sacrifices that affected their child's overall development and happiness were behaviours which did not go undetected or unmonitored by the parents. The parents expressed their concern over the costs of talent development for their children.

I do sometimes worry about the impact on her joints, I must admit. Um...I have always said to her that this won't take precedence over her education, you know, she needs to do something with her life other than this, so that if she was to get an injury or whatever and this had to stop, that she needs to have other things in her life, of which she hasn't got a great deal, because she doesn't have a great social life because she's always here. I mean, she quite likes her own company, she quite likes, she's quite happy at home, um, on the computer, um, or watching TV, or whatever. She's not someone that's always out with her friends. Um... She... she's quite aware that she will not earn a living, even if she becomes world champion in tumbling. She, she knows that she needs to do something else and I'm quite keen that her education, probably at the level that she's going to go up to the next couple of years. I know that sometimes there's a choice between your education and your sport...

Donna (p. 8, lines 6-20)

Billy-Joe's one of the most dedicated and obsessive athletes or gymnasts I know, umm so much so it scares me slightly, because I think it can be all encompassing sometimes with a detriment to other things umm its almost like he gets withdrawal symptoms if he doesn't do gym, all the time! And even if he's there from 4 o'clock till half past 9 he'll come home and do press ups against the wall while I'm trying to watch Morse or something which is really annoying, and he's so worked up about it that its just, sometimes its scary how much it means to him and how much he is dedicated to it, its scary, just all encompassing everything is gym, its just. I suppose you have to be like that if you want to get to the top of the tree or if you really enjoy it but you know it is scary.

Lucy (p. 1, lines 3-12)

The major concern raised by the parents related to the balance of sport and education. Although the parents were very supportive of their child's involvement in sport, they were also concerned about how their child might cope if they were no longer able to participate. The parents wanted their child to have the skills to survive outside of sport as well as they had done within sport.

Despite the parental concerns and sacrifices from the gifted individuals, they endured. The costs of talent development were accepted because the benefits were perceived to outweigh the costs, as in social exchange theory (Thibault & Kelly, 1959). However, was talent development really worth all of the sacrifices? Was talent development really responsible for all of the positive affects that might outweigh these costs?

It difficult isn't it...we used to say when we joined the army, we had to go and do our national service, we went in when we were 18 and we used to say you went in when you were a boy and you came out two years later and you were a man but...that happens anyway do you see what I mean? That happens anyway at that particular time and we were often putting...so its...things happen anyway so you can't go claiming credit for things that would happen anyway but there is an element of that in it, there is an element of what you have done...

Albert - coach (pp. 17/18, lines 48-5)

Despite the possibility that talent development within a sport might not be the only way an individual might flourish into a self determined adult, the participants placed a lot of belief in the merits of what they were doing. Certainly they thought that the learning process had reaped substantial returns and credited it with the development of a lot of favourable intrapersonal qualities.

Positive Affects

Positive affects attributed to talent development were wide ranging, including favourable intrapersonal qualities and experiences. Certainly, the gifted individuals and their parents readily identified how talent development had given opportunities to make friends and have experiences which they would not have had otherwise.

Friends

...a lot of things that you notice are the people as well, and the people in archery, I love them, they're brilliant and I've got a lot of friends that I'll keep forever are in there.

James - gifted individual (p. 9, lines 49-51)

Given the atypical nature of gifted individuals' lives when they were engaged in talent development, socialising was often very restricted. Therefore, it was very important that they were able to make friends within their sport, not only to create a social context but also so that they had people to interact with who could relate to what it was like to work hard to develop talent.

Experiences

A variety of experiences were highlighted as valuable from the interviews. These were expanded upon within these quotes from the gifted individuals and a parent.

Oh wow. Umm...yeah...brilliant. I've met so many people, different types of people. Err...I've been over quite a lot of the world already. I've been all

over the country. I've experienced competition at the greatest level or competed against people who have competed at the greatest level in their particular fields. So I've really gained a lot from that. Senses of satisfaction of complete disappointment as well. I mean you've got to take the other end of the spectrum. That's the other thing, is when you're actually going through something bad or something's not working...we all have bad days, they're inevitable. You know, you experience the complete highs and lows, but they also combine, that's also what makes you what you are is all those experiences combined. So...and as I say I've always been able to do the things that I've purely enjoyed and I've done nothing against protest...nothing that I've never ever wanted to do. Umm...I'd say I'm very lucky. I've stood on the line with the best archers in the world...Olympic medallists and I've trained and stood on the athletics line with the best in the world and Olympic medallists. So I mean, to be able to do that in two completely contrasting sports is...in my eyes, very lucky. And as I say, I've met some very nice and interesting nice people through it...some very knowledgeable people.

James - gifted individual (pp. 16/17, lines 45-10)

I've gained best friends I will ever have in my entire life, experiences, competitions abroad, I've travelled to just...everything, I couldn't have wanted for more. I've been so lucky, ever since the age of 11, I've been on British Youth Team and then on obviously seniors when I turned 15...I've travelled the World basically. I think the only...haven't been to the Artic or the Antarctic. I've been to just about every other continent.

Kira - gifted individual (p. 7, lines 22-27)

So I think she's learnt, she's had a lot of disappointments in her little life that she probably wouldn't have had if she wasn't in gym, um, gym, but I suppose she's also, she's travelled um ... and I think she's hoping that the better she gets the more travel opportunities there'll be.

Donna (p. 13, lines 5-18)

It would seem that the gifted individuals and their parents valued the experiences that sport had given them, recognising the good and the bad as worthwhile. The value that they placed on experiencing disappointment, suggesting that it was a very beneficial experience also sheds more light on their acceptance of the costs of talent development as worthwhile (see p. 212).

In addition to the opportunities for experiences and friends, the participants also noted more specific examples of how they have gained from the talent development process. These have been organised under the same subheadings as intrapersonal catalysts.

Health and Fitness

The gifted individuals within the sports of gymnastics and trampolining felt that they had gained physically from developing talent. Although the coaches of these sports had viewed physicality as a natural ability, the gifted individuals were aware of how training had contributed towards their health and fitness.

Healthy, fit body and confidence in myself. It's like some people, hopefully, if you carry it on, are less prone to illness, because you're mentally fit and outside you're fit too. Yeah, so, hopefully, I'll stay fit for a long while.

Billy-Joe - gifted individual (p. 6, lines 2-4)

Whether these physical factors were the result of maturation, training or a combination of the two is not under debate here. What can be suggested is that these gifted individuals perceived that the developmental process contributed positively to their health and fitness, as illustrated by the quote above.

Personality

During the discussion of intrapersonal catalysts it was shown how the coaches valued various aspects of personality (see p. 176). However, in this section the discussion focuses on how the developmental process affects an individual's personality.

Developing an identity within the sport. Early in the talent development process, the gifted individuals were very motivated to show other people what they had learnt. This was when they were very much within what Côté (1999) described as the early years, characterised

by a higher ratio of deliberate play to deliberate practice. The gifted individuals described how they would show off the skills that they were learning during this period to anyone who would watch.

Really happy. I went home and told everyone at home and then anyone who came through the door, you tell them, and then you want to show them, get them to come to the gym and look through the viewing area and just do it (front somersault) over and over again really, just keep on until you've told everyone...so, yeah, show off really...that's it showing off, when you know you can do something.

Billy-Joe - gifted individual (p. 2, lines 36-40)

I was quite a show off when I was younger (laugh). I would do it on the field and stuff, which...and in gym lessons. People quite liked to watch it so they got me to do it and stuff because people quite like to watch things. Mostly do it on the field and things during like breaks and stuff...

Corey - gifted individual (p. 4, lines 18-21)

In some ways, these early experiences relate to Donnelly and Young's (1988) theory of developing sporting identities within subcultures. By showing their skills, advertising their accomplishments and behaving like sports performers, they were reaffirming their sporting identities.

Character. The coaches seemed to notice the influence of talent development in the characteristics of the gifted individuals as this was more overtly displayed than their evolving identities. One coach also reflected upon how talent development had developed their own character.

Yes, sport did for me everything. My character, built my attitude and everything.

Leia - coach (p. 9. line 46)

Della has the experience of having competed internationally, for her country, which will be a memory that will last her forever. She has travelled to five foreign countries now, um met gymnasts from different cultural backgrounds that she'd never met before um has been to stay with them in their homes. Has had them to stay with her in her home which is an experience she would never had had otherwise. Um she has experienced what it's like to have to slog your way through problems in life, physical and mental as a part of her sport, which will equip her I suppose, I hope for life outside sport when she's retired. Umm she's much, much stronger as a personality than I think she would have been if she'd sat at home and watched telly all day long. Um there are no thick, good gymnasts, the two don't mix. So they're all actually quite bright kids to start with. She's experienced balancing the demands of, of a very demanding sport against the demands of her school and education. Um and the discipline, the self-discipline involved in that is, I think, probably really character forming. She's learned to work as an individual, she's learned to cope as part of a team so she can switch from whichever one suits her the best. Um she can cope with a variety of personalities up front. So the group that she trains with are quite various in personalities, she can handle them all, they don't phase her any more. Um I think she's actually quite well equipped for life out side.

Pat - coach (pp. 13/14, lines 51-18)

The perceived contribution of character development is another example of how the talent development process is valued. It would appear that these coaches, as well as the gifted individuals had perceived personal gain from their involvement in sport.

Good person. Being a good person has already been discussed as an intrapersonal catalyst which was noted by the parents (see p. 178). There it was theorised that the gifted individuals might have been perceived as good people because they were either very amenable to guidelines or simply the product of good parenting. However, another possibility is that the learning process has contributed towards the development of 'good people'.

Umm...and she (Lucy) now comes in and she can't believe the change in him (Billy-Joe). I think going back to say that it makes good people. I think she now sees that she's got...and people continue to tell her how good a child he is and how much respect they have for him as a person. And I think when she thinks back 3 or 4 years ago that she was worrying that he was going to fall onto the wrong track but became more involved in the gym. I think this is going back to when he was just training at recreational level, just once or twice a week. And she can't believe it at times, to see such a well rounded good person come out at the end.

Ben - coach (p. 10, lines 37-45)

It is also interesting to note, in Côté et al.'s (1995) study, that a gymnastics coach also mentioned how his philosophy was to make his gymnasts good people. Certainly we cannot determine for sure whether the gifted individuals became good people from the influence of talent development, their upbringing or some element of their own nature. However, as there is a suggestion that all three are involved then it is reasonable to conclude that all three contribute towards the development of a 'good person'.

Self worth. The coaches in particular noted how the learning process had developed a sense of self worth within gifted individuals which they felt had made a significant change in their lives. This concept is distinct from the intrapersonal catalysts discussed previously, such as confidence. Self worth refers to the discovery that they have a gift and that that gift is valuable.

...it was terribly important for him because it was a...um...farming family...um...and...he didn't like farming, in fact he's gone on to become an artist now he's....um....an artist working with his hands and he's sold quite a bit of his stuff, not enough to make a living but.... but he's done ok but what was important was, I mean he'd been told that he was lazy and that he was stupid and...um...I didn't know that and I could see that he was very good and within a short time he was shooting and winning national medals and then he went abroad and won a world silver as a junior and European gold so...and that was very, very important to him in that he had begun to believe

that he was stupid, he'd begun to believe that he was lazy, but the amount of work he put into his shooting there was no way he was lazy, and then when I took him on the field courses...Um...I mean you've got to think about each target...um...you're not going to shoot field properly if you're stupid, you might, if you're not very bright you could shoot target quite well by just repeatedly doing the same thing over and over again if you wanted to, but you couldn't do that in the field and that gave him the confidence, and he is now a very confident young man and he is now trying to make his way in the very, very difficult world of selling art to people.

Albert - coach (p. 1, lines 30-47)

But once he learned to tone that down, he suddenly realised that...I think that 'cos the secret was that, once he suddenly became good at archery, all his peers knew that he was good at it too. He got their respect so he didn't need to kick over the traces to be noticed. He was looking for acclaim from his peers. Originally the way he got it was by acting up being not the buffoon but being the class stirrer to wind up the teachers and get the acclaim of his mates. But he suddenly realised that he got the respect from them because they all knew how good he was at archery. So he got this positive feedback, the better he got, the more self-worth he had in himself, the less he needed to play up, therefore the more he was able to concentrate fully on what he was doing. So the whole thing just spiralled up and up and up. His Mum and Dad thought I was God, because up until then his school work had been pretty grim really, because, of course, he wasn't paying attention. He must have been six or seven months into the archery and his Dad said to me, "You wanna see his reports, it's all changed and it's all down to you" I said "No it's not, it's down to him." I said, I tried to explain to him how to shoot and how he ought to feel quite proud of himself, because he's shooting exceptionally well and he's now settling down and learnt the secret of how to express himself through positive things instead of just being a bloody nuisance.

Arthur - coach (pp. 4/5, lines 47-14)

It would seem that the discovery of giftedness and the start of the developmental process served to raise self worth and self esteem. In the cases cited above, the developmental process

helped the gifted individuals to see that they were not lazy and that they did not have to behave badly to get recognition.

Building confidence and optimism. In the discussion of intrapersonal catalysts, confidence was noted by the coaches as an advantage in the development of talent. However, the gifted individuals and parents attributed confidence to learning. The gifted individuals particularly noted how they had become more confident with meeting people, whereas the parents described how their children had become more confident in general as a result of developing their talents.

A lot more confident with meeting people and things; quite confident in talking to people.

Corey - gifted individual (p. 18, lines 21-22)

But he could do something none of them could, he could walk on his hands, he could bend over backwards, he could stand on his head, he could pull up his own weight they couldn't, and it changed his life from being a small, bad eyesight little boy, to being all of those things but he could do something that they couldn't, that they actually quite would have liked to have done if they could have had the chance. He knew he could do these things and it changed him, gave him so much confidence, changed him really did and more so when he lost his glasses and he got contact lenses, he could do the twists and somersaults that he also wanted to do once he knew he could do that with his contact lenses, I mean you wouldn't say Billy-Joe was not confident.

Lucy (p. 5, lines 26-36)

I think with all of us, I think it gives you that little bit of confidence. Everybody...you know...loves a little bit of success don't they, in whatever field, however big – small, even if it's just achieving something that you've set a goals for yourself and you do it you feel jolly pleased don't you. You think "I've done that" and it also proves that you can do it if you work hard and try hard.

Vanessa (p. 8, lines 21-30)

The interview data shows how the experiences of meeting people, seeing how their talents were distinguishing them from their peers and achieving goals were serving to build their confidence. This in turn raised their optimism so that they would feel more positive about progressing towards talent development.

Yeah, because it makes me feel that I can do even more stuff. And once I've done something I didn't think I can do, then it makes me think that I can do even more stuff that I didn't think I can do.

Corey - gifted individual (p. 17, lines 15-17)

It would seem from the examples of character building, becoming a good person, developing a sense of self worth, building confidence and optimism that talent development was perceived to contribute positively towards the personality of these gifted individuals. In addition, the influence of the developmental process upon any of these aspects of personality seemed to facilitate the development of other aspects. For example, self worth facilitating the development of confidence or confidence facilitating the development of optimism. Thus reinforcing the notion that talent development is complex (Kozel, 1996), multidimensional (Abbott & Collins, 2004) and interdependent (Bartmus et al, 1987).

Self-Management

As well as developing favourable aspects within their personalities, the participants also felt that the developmental process had helped them to manage themselves better. They remembered valuable lessons learnt relating to discipline and organisation, learning to work, self reliance and finding solace within sport.

Discipline and organisation. The coaches and parents alike both felt that talent development within sport teaches self-discipline.

I think all sport teaches self-discipline...And also I think it makes them realise, or it teaches them, that if you put enough effort in you will achieve, and I think that is a fantastic lesson to learn early on in life, that er...to be

able to...to guide your own future, to be able to...work at something, enjoy something and to get great achievement out of it is a good lesson to learn in life.

Alison - coach (extracts from p. 8, lines 30-37)

Um...I think discipline, because they have to think for themselves, I mean, when she went away to Lillehall when she was 7, she had to pack her, her own stuff up to come home.

Donna (p. 12, lines 42-45)

With self discipline, they were able to take more responsibility over organising themselves. The parents and coaches seemed to agree that discipline was one of the most valuable lessons that sport could teach a person, which would benefit them throughout the rest of their life.

Learning to work. It has already been discussed how giftedness can make it hard for such individuals to appreciate the need for a work ethic (see p. 156). However, the interviews with gifted individuals suggested that they were able to learn to work hard, thus developing a work ethic.

I've always put myself more in other people's shadows. And this time I was the special one, I was the one who made the final, I got the place...you know. I always considered it would be someone else before me that would. And I'd never ever worked as hard, for this competition just gone, as I have in my life basically. It was everyday, six hours a day for the competition and it paid off so I knew that everything I did in that competition was 100% because I worked and it was a really good feeling to know that I made it all happen. Whereas other times I haven't trained quite as hard and I've competed well because I'm a good competitor, but I haven't had the satisfaction that I had this time, because part of me said "Oh that was lucky." Whereas this time it wasn't luck, it was because I'd made it happen, which is different...very different feeling.

Kira - gifted individual (p. 10, lines 4-14)

In this case, a gifted individual had great natural ability, but lacked an equally formidable work ethic. Through the developmental process, they eventually developed a work ethic. As the following section illustrates, the development of this missing link in their talent came as somewhat of a revelation. Certainly discipline and the ability to work hard are determining factors in Ericsson et al.'s (1993) theories of talent development.

Self reliance. During the discussion of intrapersonal catalysts, a theme was discussed called 'taking control' (see p. 195). However, it was not apparent where this proactive approach to managing situations came from. An interview with one of the gifted individuals was able to shed some more light on this subject, suggesting that the developmental process was somehow responsible for this realisation of control.

It's kind of been a bit up and down for me mentally over the years with the sport. And...I would say there was a massive turning point at about the age of about...18...19. I had had a bit of a fear problem before then and I just got myself back on track and something clicked in my mind that I could actually do, exactly what I wanted to do. Umm...because I think for years up to that I just sort of trolled along and did what people told me and...I can't really explain it (nervous laugh). I just...I just reached a stage where I thought if I'm doing a move, I can change the way I'm doing it, if I want to learn a move I can learn a move, if I don't want to do a move, I don't have to do a move. And I just reached that point where I started to make 100% decisions and take responsibility for everything I was doing and that kind of a major step for me. There's obviously been sort of major physical steps for me along the way as well like competition results and things like that but...I'd say that was actually the most significant time for me.

Kira - gifted individual (p. 1, lines 27-40)

This realisation could possibly be described as an epiphany. More than a realisation of giftedness, it is the realisation that they are self determining beings who can exert control over their life and destiny. Arguably, the most formidable human beings in the world are those who have ability and can control that ability. Although it could also be said that people learn such things as a result of growing up (see p. 210), not everyone learns to take control of their life

with such clarity and conviction. Their ability may have arisen from their giftedness, but the realisation of control probably arose from somewhere in the interdependent and dynamic process of talent development.

The coaches also noted that the gifted individuals learnt to take control of their lives. They shared their views of how the experiences and lessons learnt throughout talent development resulted in such self-reliant individuals.

There are many good reasons not to, an easy life being the first of them. Once you get involved in gymnastics it eats your life. You'll spend every waking minute of your life thinking about it, walking about it, talking about it, doing it, preparing to do it, analysing what you've done, trying to get to the next session. It takes your life over very rapidly. At the top end of it umm I suspect most gymnasts will come out of it as the most self-confident people you've ever met. They are totally self-reliant, they know exactly who they are in the world, where they're going, how they're going to get there, it's a huge life education. Umm If they survive the injuries, they are usually physically very healthy umm very co-ordinated, many of them go on to other sports. I've just had one go on to diving, made the world-class diving team. Umm it opens up all kinds of possibilities, it opens up the ability to mix with other people, travel to other countries, see other gyms, see other people. My kids regularly now go backwards and forwards to Belgium to stay with Belgian kids, now Belgian kids come over to stay with them as part of our for, for eighteen months I coached the Belgian team, so we established links with all their clubs and I've got all the Belgian team arriving over at Christmas. So we have now a foreign exchange programme running with the Belgian teams. Umm We went to Portugal last year thanks to contacts that we made at the World Age Games the previous year. I've now had 5 kids go to Portugal and take part in a big International Festival over there. Umm as a result of which they've now got an invite to go to Denmark. So they're getting a lot of experience they wouldn't have otherwise. Umm and some of them are getting to be top level gymnasts too. Umm 2 of my kids now live here. It's, it's been their fantasy all their life if you like to be a centralised gymnast as a mark of success, the status and who they are in the world. They always had the

ambition to be invited to live at Lilleshall, that's the peak of their career if you like umm and it's happened for both of them and I am immensely pleased for them both. Umm as I say Jo spent years failing as an artistic gymnast and suddenly at the, at the eleventh hour, when her career was all but over, a new door opened and her life time ambition of being a centralised gymnast at Lilleshall reappeared and she took it with both hands and has never looked back. It'll be a springboard for a...for a future career for most of them as well, they'll go to University on the back of having been National and International gymnasts. Carman has chosen to go into the fitness business so she will go in and be a fitness instructor, a masseur or whatever else she wants to be um with an established name as an International and World performer behind her. Umm Jo wants to go and do sports psychology and she'll do it having been an International elite performer herself, which will give her a whole career.

Pat - coach (pp. 12/13, lines 49-34)

It is interesting to reflect upon the discussion of intrapersonal catalysts which were seen as desirable by the coaches (p. 168). Seemingly a great many of these desirable attributes developed in the pursuit of talent rather than being a prerequisite. This creates a very different view as to how crucial the intrapersonal qualities are in the development of talent. Gagné's (2003) view suggests that intrapersonal catalysts simply exist. However, the accounts of these participants would suggest that the developmental process in pursuit of talent was also instrumental in the formation of those qualities. This viewpoint only serves to strengthen the notion of a compensation phenomenon (see p. 21) and devalue the identification of determining qualities in the development of talent.

Certainly, the coaches, parents and gifted individuals alike all valued the positive affects of talent development and felt that they outweighed the negative affects. This is not to suggest that every individual or indeed every gifted individual who engages in talent development will reap these benefits. Certainly these coaches felt a great deal of frustration over talent that did not develop (see p. 163). However, there are also the perspectives of gifted individuals to consider. While it could be argued that Aaron (see p. 87) gained a great deal, for him, the negative affects were outweighing the positive at the time of his attrition. Although for the

individuals within this study, the positive affects that influenced health and fitness, personality and self-management seemed to be universal, thus proving valuable in contexts beyond sport.

Transferable skills. The gifted individuals reported how the mental skills they learnt through talent development had transferred to contexts other than sport. Among these skills were imagery and coping with pressure.

You know that that's kind of the difference between that and other things that I've been interested in, is that I used it for an awful lot of my you know my understandings of things what, interviews, I'd use the same techniques to keep myself calm and I'd...I'd run through scenarios in my mind and run through the worst scenario, run through the best scenario, run through the scenario which makes like you know if it doesn't happen what, what could go wrong? And the scenario if it doesn't happen what are the other options you've got. All that stuff was totally, was totally derived from archery

Darren (p. 15, lines 8-15)

But it has taught me a lot of things that I just wouldn't have a clue about if I hadn't have done it. Like...simple things like diet, exercise, discipline. Everything that you need to do to be good at sport I suppose. It's taught me a lot mentally as well, because it's a very...I say mental sport (laugh), but that doesn't sound too good. It's a very mentally demanding sport and you learn a lot of techniques to overcome a lot of mental obstacles when you're a trampolinist and it's similar for gymnasts and divers and things like that. Umm...and that's helped me a hell of a lot in life, when I've faced problems...I think I know how to cope with them a lot better...definitely. Umm...exams at school actually (laugh)...it's helped my exams. Sounds kind of strange, but when you learn the powers of visualisation, I've actually had teachers come back to me after exams and say, "Look, I know you didn't copy, but you've written exactly what was in the text book." And I've written it word for word because I can imagine it on the page when I'm doing my exam. And that's only...that's not like some photographic memory I've got, that's just built up through years of learning how to visualise my moves. So

just loads of skills I learnt, both mental and physical really...I've gained from it.

Kira - gifted individual (p. 8, lines 6-22)

The ability to transfer skills and lessons learnt within sport to other contexts must surely help to validate the time spent in talent development. From the accounts thus far, it can be seen that the coaches, the parents and the gifted individuals all appreciate that their talent development has wider implications than medals, records or championships.

Solace. In addition to how sport had helped their wider development, the parents reported that their children had, from time to time, found solace within their sport. As a consequence, they felt that it helped their children to manage themselves more efficiently.

The only real thing she doesn't question so much is that she really loves her sport and um... that's just taken her... it's given her a lot of solace and taken her through sort of the difficulties and the difficult time that teenagers have...

Mike (p. 11, lines 47-50)

I think it really helps. I think that when he feels frustrated and horrible or in a bad mood or anything, he'll...we've got a huge trampoline outside in the garden...he'll go out there and go on the trampoline. And I'm sure, and I know it, and you will know it too from doing exercise, how much better you feel after you've done it. So you've got rid of all those anxieties or tension. So if you've managed to release all that tension somewhere else then it hasn't built up and it hasn't ignited...you know. So I think that the sport has helped to get through all sorts of different ups and downs. I'm quite sure that if he hadn't had his sport, or both of them hadn't had their sport, that I think life would be very different.

Vanessa (p. 13, lines 31-40)

While valuing sport for what it could teach their children, the parents also recognised its cathartic function. As a form of solace from life's troubles it continued to contribute positively to their overall development.

Giving Something Back to Sport

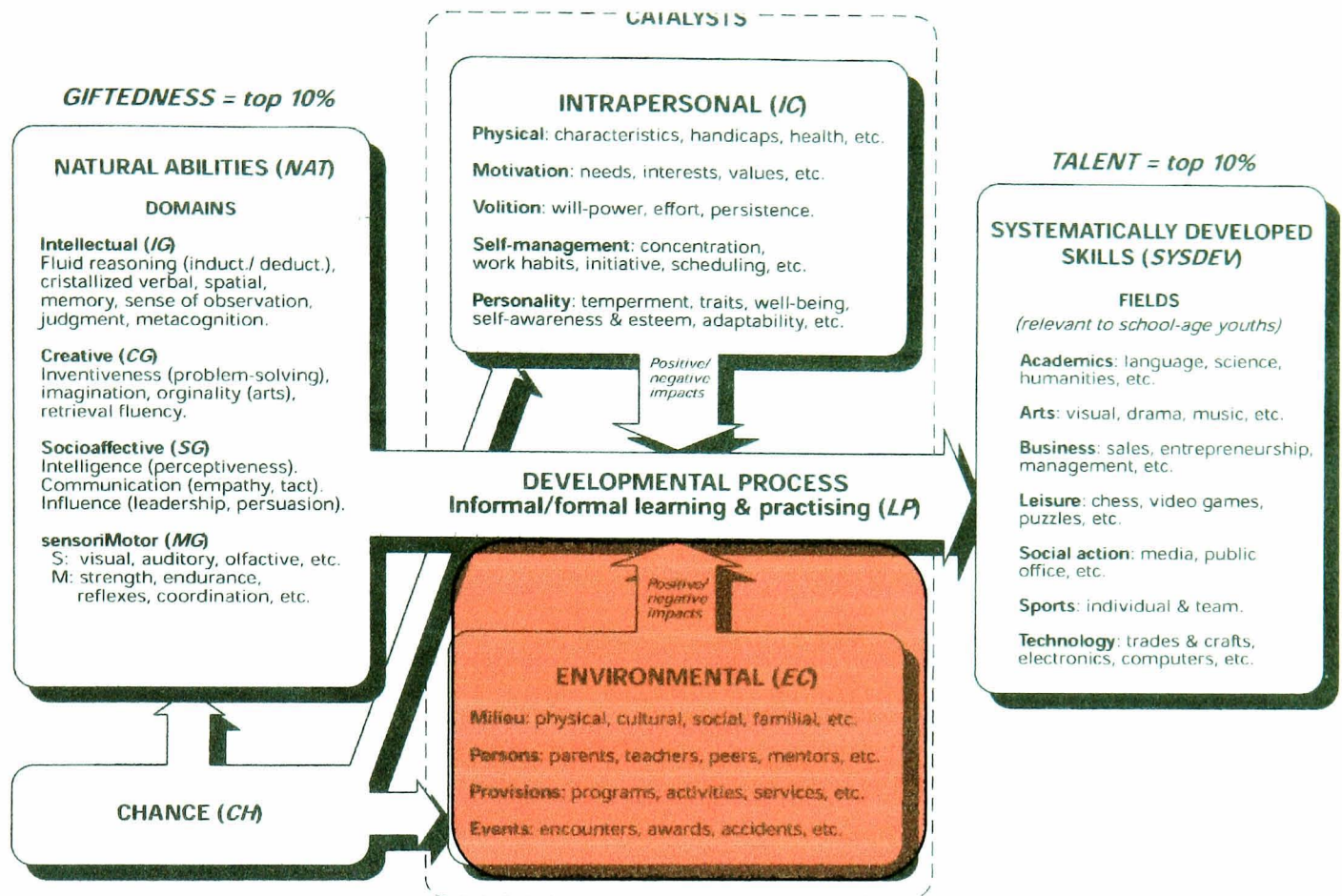
These gifted individuals had gained so much from the developmental process, they had a desire to help others benefit as they had. This suggests that the gifted individuals believed in the virtues of their sport and felt a need to give something back to the process that had helped them.

It's teaching....I enjoy it. It's like passing on your knowledge of gymnastics to others. It's the achievement of coaching someone and getting them...say to do a forward roll, and they do a forward roll, and they are so pleased about themselves to have done it. And you know it's only a little thing, but to them, it's a huge achievement. If they've never done a forward roll before, as a coach, you've shown them they're good at something.

Billy-Joe - gifted individual (p. 6, lines 24-29)

Having discussed how the developmental process affects the individual it becomes appropriate to return to the question of why people commit to formal learning in the development of talent. Upon reflection of how these gifted individuals have gained from the process, it is hard to imagine parents not wishing to have such virtues instilled within their children. It is unfortunate that most models (Gagné, 2000; Abbott & Collins, 2004) only show the factors that contribute towards talent development, rather than also showing how the process benefits the individual. Future models should take such bidirectional relationships into account in order to show why individuals commit to the developmental process.

Environmental Catalysts



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

The last component within Gagné's (2003) CGIPE acronym is environmental catalysts. Gagné purported the importance of all of these components and based his downgrading of environmental catalysts upon Rowe's (1994) argument, that such factors are relatively common.

Gagné subdivided environmental catalysts into milieu, persons, provisions and events, which compared favourably for discussing how the themes that evolved from the data relate to the literature (see figure 16). This section also discusses Gagné's placing of environmental catalysts as the least determining component, the role and importance of these elements in the discovery of gifts and the development of talent for the participants.

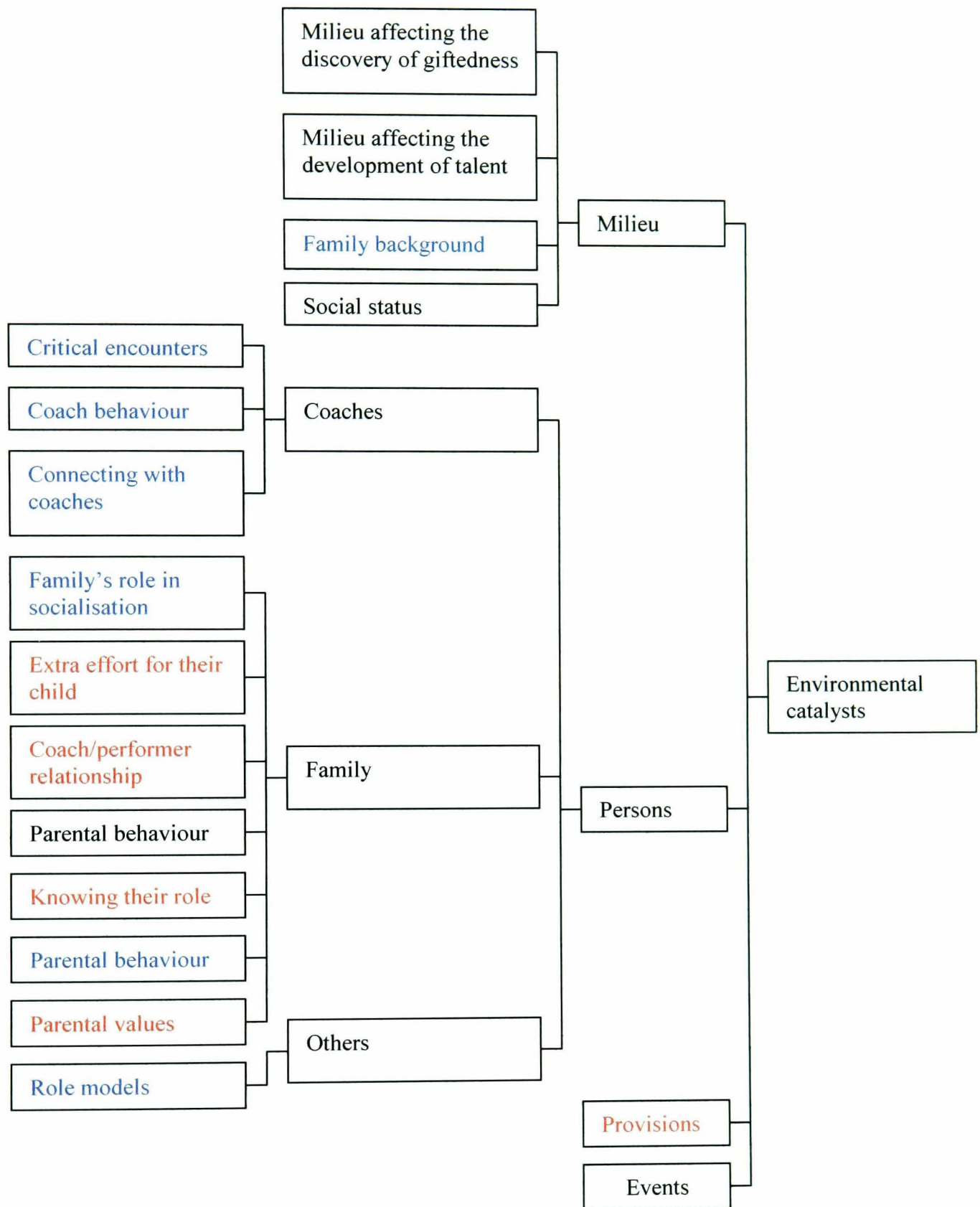


Figure 16. Data themes relating to environmental catalysts.

Milieu

Gagné (2003) described milieu or surroundings as the cultural, social or familial environmental catalysts. These factors were the settings within which the discovery of giftedness and the development of talent took place. The perspectives of the coaches, gifted

individuals and their families have been shared in an effort to gauge how these contextual factors affect the process.

Milieu Affecting the Discovery of Giftedness

The coaches felt frustration and some regret over the milieu that affected their coaching, particularly with regard to the recruitment of gifted individuals. Unlike the nationwide structure utilised by the AIS, the coaches felt that they were not working within an effective system that would allow them to be internationally competitive.

In this country talent identification I'm afraid revolves for the most part around who happens to walk in the door of your gym when you happening to be looking, and that's the selection process. The right coach happens to see the right kid at the right time. Umm and that's our talent identification process for the most part. We'd only see who walks through the door clutching money to join our class. There is very little proactive talent identification um unlike the Eastern block systems. Um I've been to Russia twice now, I've had a Rumanian coach work for us, I've got a Bulgarian working for us. I have picked their brains to the nth degree about talent identification. And I know what I want to do and I pretty much know how I want to do it. I just don't have the manpower or the time or the money to do it. I know how they do it and I know how we don't do it which is perhaps more to the point. They have a system whereby, all their schoolteachers go through University alongside their sports coaches initially for three years. So they all have a common understanding and a common background and it's in their interest, if you like, to promote their gymnast from their school to the local sports clubs. And the sports clubs, will at regular intervals, send in coaches to look at the entire school's population. And they, quite often the PE teachers in conjunction with the sports coaches will vet all the children and actually direct them in different directions. "You should go and see the football coach, you should go and see the gymnastics coach, you should go and join the basketball team" and they are actively encouraged to do so. Whereas we at the moment, wait to see who turns up at the door of the gym. We are, we are worse than passive, we have to wait for them to walk in the door with a cheque in their

hand and say “Can I please do gymnastics?” We are not out there chasing them into the gym to be gymnasts.

Pat - coach (p. 11, lines 23-47)

The other coaches showed similar frustration and also expressed the need for talent detection on a large scale. At best, selection was made by large clubs who would attract the majority of interested gifted individuals from reputation. Disenchanted with the lack of systematic talent detection, coaches looked to the systems employed by other countries with envy. They would prefer to see proactive efforts to screen entire year groups at school which is similar to how the AIS’ Talent Search operates.

Milieu Affecting the Development of Talent

In addition to contextual difficulties related to the discovery of gifted individuals, the coaches also felt that the milieu they found themselves in was not always conducive to talent development. The quote below illustrates one coach’s frustration, which was not dissimilar from those expressed by the other coaches.

...it is definitely non-cool to apply yourself to anything. The minute you’re shown to be trying, oh ho! Look at him! I don’t like it. I think this is why the school’s academic standards are falling. Can you think of anything worse than being the class swot? It’s the way life has become. Mainly because we’re being... We’re getting the lumpen proletariat. They’re trying to drag the better ones down to their level. It may be the sociologist in me, but it does seem to me that the whole of the country for the last 10 – 20 years has been on the process of dumbing down so that the lower of the strata were happy with their lot because there’s nobody above to feel envious over. Really convoluted thinking but that’s the way I’m going.

Arthur – coach (p. 12, lines 21-30)

Despite the difficulties the coaches experienced within their milieu, they were still able to discover gifted individuals and develop talent. However, they were of the opinion that the process could have been facilitated within more supportive settings.

Family Background

Although the family can have a direct influence on the development of sports performers (Côté, 1999), the family also acts as a context within which talent development begins (Salmela & Moraes, 2003). Some families are rich, some are poor, some like sport, while others disapprove of sport. The question here is how relevant is the family background for the development of talent?

Nearly all of the gifted individuals had grown up within sport. In most cases, their parents had been or were still heavily involved in sport, which was similar to the participant parents from Côté's (1999) study. The exception was one participant who came from an agricultural background, but had always played with air rifles and home made bows and arrows on the farm.

I come from a very sporty background. My Mum used to be a swimmer and a runner, she was very sporty; her Dad and her brother were cricketers; her mum was a runner; my sister in athletics, into sport; and me into sport; my brother used to do rugby until he snapped his Achilles tendon, but he watches sport, he's into it, but wouldn't say he's involved in it as much as me and my sister. So, we've got a sporting background, it's in our blood.

Billy-Joe - gifted individual (p. 8, lines 15-20)

My involvement in sport...Umm...I've been trampolining all my life. Ever since I can remember really, because my mum ran a club before I was born, so I've just always gone along. So I've been a trampolinist all my life.

Kira - gifted individual (p. 1, lines 2-4)

Having a family that held an appreciation and empathy for sport seemed to be advantageous for these gifted individuals who were engaged in talent development. Certainly growing up in such an environment seems to breed a familiarity with the ethos and conventions of sport that would set the backdrop for talent development.

Social Status

The coaches also augmented the understanding of the family background of the gifted individuals. Although they noted the social status of the families, this was seemingly more of a casual observation rather than an implication that status was necessarily relevant.

His parents were also archers and they were both supportive too. Because they were...if you look at it on the social scale. The Somerfields were pretty well set up, whereas the Westerns weren't. It was a totally different social scale, but the support was the same.

Don - coach (p. 5, lines 43-46)

In addition to the interview data, it was evident that the coaches, gifted individuals and their families represented the full range of the social scale. What was evident from observation was that social status did not restrict their capacity for meeting the demands of talent development. However, it seemed to be more a case of prioritising. If talent development in sport was valued, then it was given a high priority. Therefore, providing the family valued sport, their social status did not stand in the way of talent development.

It would seem that talent development requires a favourable milieu as an environmental catalyst. However, so long as the gifted individual can access the sport, then the details of milieu are less critical and can, and do vary.

Persons

After Milieu, the DMGT shows 'Persons' as the next element within the environmental catalysts. Gagné (2003) noted that the most commonly cited environmental catalyst relates to the influence that other people can have on the talent development process. Within sport, these are often coaches and parents. Bloom (1985) and Côté (1999) researched the varying influence of coaches and parents (respectively) on the stages of talent development along with Hellstedt (1987) who theorised the appropriate levels of parental involvement.

In order to make sense of the themes that evolved from the interview data, they have been organised under the heading of coaches, family and others. This structure is similar to the

elements listed by Gagné (2000) who cited parents, teachers, peers and mentors as examples of people who can influence the process.

Coaches

Coaches are a critical component in talent development as they are the judges of who has the potential to achieve talent (Kozel, 1996; Mocker, 1987; and Ulmer, 1987). Furthermore, their expertise is often the key element in formal training which constitutes the talent development process (Gagné, 2003).

Within this section, the gifted individuals share their views of how their coaches have impacted their talent development. This impact is expressed through the themes that evolved from the interview data that show critical encounters between coaches and gifted individuals; coach behaviour; and how coaches relate to gifted individuals.

Critical encounters. As one of the coaches already stated (see p. 229), talent detection is often a case of who happens to walk in through the door when you happen to be looking. There is often a strong element of being in the right place at the right time (see p. 117) which seems to be how these gifted individuals began on the road to talent development.

...well I was going Sports aerobics as well and I'd been doing the extravaganza, which is like a Pegasus show that they do every year.... Christmas show. And Umm...they were doing Sports Aerobics there and the national coach pointed me out and said that I should be doing Sports Aerobics.

Corey - gifted individual (p. 7, lines 47-50)

I met this lad who was in a local archery club. I said to him "I've got this bow and arrow can you get me string for it?" and he said you know "why don't you come through to the club and we'll find a string for the bow?" so I went through with this fibreglass bow, and the person who kind of met me apart from Steven, the mate, was Albert who became my coach and he sort of looked at this bow and said "Oh no, you've way overgrown this it's way too small for you. You know you really must have this one here" and gave me a much bigger one, and said "have a go". So I remember shooting this night and kind of got into it, and Albert

was really encouraging and erm you said “Well why don’t you come next week?” So my Mum used to take me every Tuesday night through to the club and erm either wait or go off and then come and pick me up. And that went on for, however long it went on...

Daryl - gifted individual (p. 5, lines 15-26)

Whether by design or chance, the meetings between these gifted individuals and the coaches who detected their gifts were critical encounters. Without such contact, their giftedness may have gone undeveloped. It should also be emphasised that these critical encounters were not always with coaches who could or did develop the individual’s talent. More often, it was good advice to refer them to a more experienced coach or better resourced club that could develop their talent. At the time, these encounters might have seemed relatively unimportant, but retrospectively, they were critical environmental catalysts that accelerated the learning process. This would suggest that the coach’s eye for giftedness is critical in the discovery of gifts and subsequent development of talent.

Coach behaviour (gifted individuals’ perspectives). In addition to being able to recognise giftedness in order to recruit gifted individuals, Csikszentmihalyi et al. (1993) noted other desirable qualities in the coaches. They found that gifted individuals preferred their coaches to be supportive and have a love for the sport.

From the interview data, the gifted individuals highlighted three different kinds of behaviour which they valued in their coaches. These behaviours related to their coach’s approach, putting the gifted individual’s interests before their own, and good knowledge of the sport.

I’ve known him (Bill) all my life as well. He’s been in the sport for years and years. He himself was an Olympic bronze medallist in high diving...umm so that alone impressed me to start with. And I’ve just...he’s just got so much knowledge and he’s so enthusiastic. Everything he does is really positive and he was so positive with me as a child. There are other coaches that I’ve experienced who weren’t as positive, although they technically gave me just the same, they weren’t as positive. And he just has a passion about the sport, which is kind of catching, and he’s just so enthusiastic. And I think when you’re a kid it’s just so

inspiring. And even up to a few months ago...I trust me so much, I learnt a triple twisting double back, and didn't particularly want to do it in a safety harness, but I also wanted someone to stand up on the side to catch me at the end if it went a bit wrong. And so I asked Bill, and he's 60 now I think, or nearly 60, but I wouldn't have trusted many other people to do that there to catch me and that's now at the age of 22. I still would turn to him. He's one...I'd say there's sort of four or five coaches in the country who has got great technical knowledge and he's one of them. Umm...but he's got another quality, like I say I think it's a passion, he's just so in love with the sport and so enthusiastic about the sport, that it's infectious...which is...which is nice, particularly if you're at a competition or what ever or training before the competition and want to feel good about yourself and he's just really supportive.

Kira - gifted individual (p. 4, lines 22-35; 37-42)

Yeah, the PE teacher that was there when I was there was really into gym, so the school had a really good gym team. We won the... I don't know...whatever it is...the schools cup for gym. He was very into gym. That helped as well because he was very encouraging about what I did. And he would like get me to help out in classes when we were doing gym and stuff like that. He was real good because he was like very supportive.

Corey - gifted individual (p. 4, lines 45-50)

She (Mary) was very like...I can't think of the word...but she wanted me to do good so she sent me away to be good.

Corey - gifted individual (p. 13, lines 34-35)

But then one day she called me to the classroom and she said to me "Look, you're now in the level where I can't help you. So ah, I think time when you need to go and find somebody else who can move you the higher levels because I see that you can do better without me, than with me, I'm not good enough for you?" It was really...really sorry to hear this, I loved her, I trust her, and she said to me go and find another coach. It really upset, I was in this year about 14 years old maybe a little more than 14 and for this age it was very difficult to understand it.

Plus of course I cried. It was crush of all my dreams, I didn't understand why.
Because I was not how you say, old enough to understand it.

Leia - coach (pp. 2/3, lines 41-5)

Also she...when I started trampolining when I was younger, she already had a lot of knowledge. It wasn't, for example, a parent that...whose child had got involved in the sport and then they started coaching or they fancied trying their hand at it or whatever. So basically, she was the expert already, she had international performers when I was at the age of about five or six...I think that's about right (laugh). But, you know...she knew her stuff already and she's obviously learnt from me and from all the other performers over the years. But at the same I never grew up knowing more than her. She always knew more than me and so I always had that respect for her that...I should listen to her... I don't think...I don't think I would have possibly respected her knowledge as much if I had started the sport before she was involved. Because there would have been an element of me that "I know just as much as you do." And I would have...some of the things she said I wouldn't have just accepted.

Kira - gifted individual (pp. 2/3, lines 37-45; 50-2)

Certainly, the coaches' love for the sport, as noted by Csikszentmihalyi et al. (1993) was also noticeable in the accounts of the gifted individuals. Furthermore, their supportive behaviour was also apparent from their positive approach to coaching. However, perhaps more interesting was how the coaches put the interests of the gifted individuals before their own. This was evident from the coaches who sent gifted individuals away to ensure that they kept learning at an appropriately accelerated rate. Lastly and contrary to Csikszentmihalyi et al. (1993), these gifted individuals valued knowledge and experience in their coaches. This may in part be due to the competitive nature in sport, where participants look to the skills of coaches to account for different levels of performance between individuals.

Connecting with coaches. Ultimately, the coaches and gifted individuals needed to connect to develop talent, both in terms of recognising the gifts of the individual (see p. 117) and in terms of being able to relate to them. The accounts of the gifted individuals illustrated

that it was not necessarily important how connections were made, as they all varied, but that they were made.

Umm...basically because he (Skip) didn't give me any attention at all. And when I was quite young he put us into separate groups and said I'm not going to work with you because you don't have any potential I'm going to work with these guys. That's the only reason why I didn't like him. Because he put us in these groups and then didn't coach us. Put us with like the assistant club coaches like the 13 year olds and stuff, who were just coaching to get a bit of extra money (laugh). So I knew that I wasn't going to do anything so I didn't enjoy it.

Corey - gifted individual (p. 7, lines 7-13)

Jackie was the coach of the boys' squad and she liked remembered me, so she was quite friendly. So we talked for like an hour before it even started. Just like "What had we been doing?" She's quite nice so it was a big shock difference between her and this other coach (Skip).

Corey - gifted individual (p. 7, lines 26-29)

I think it was the fact that I listened to him, not like kind of a dog, who kind of gets "sit down and do that" but I actually did kind of you know, I understood that he was the coach, and that he knew a heck of a lot more than I did and so I tried the things he told me to do so you know, keep the hand open and the way he'd actually approached it, or whether you gripped a bit then and he'd never say "don't do that" he'd say "oh you gripped a bit then. Next time just imagine you know as you release push your arm out a little bit and just sort of spread your fingers out, just that touch" and I think the fact that I, regardless of whether I could do it all the time or not didn't matter it was the fact that he obviously could see I really wanted to do that, I wanted to do what I knew. Or what I was being told was the correct method. In order to get to that position that I told you I wanted to be on the eighteen metres forty centimetre face targets getting all my arrows in the middle, you know I really wanted to get there as soon as I could and so I actually took his advice, and went with it.

Daryl - gifted individual (p. 12, lines 24-38)

It is also interesting to note from the accounts the occasions when connection were not made between coaches and gifted individuals. When comparing the failed connection to the previous two quotes it becomes apparent that the coach failed to recognise giftedness and was consequently unsupportive.

Certainly the interview data supports the often held notion that coaches are critical to the talent development process. However, this data suggests that only the coaches who were able to recognise giftedness and demonstrate desirable coaching behaviours were able to develop talent with these gifted individuals. This suggests a need for coaches to adopt these behaviours that as suggested as being conducive to the discovery of gifts and the development of talent.

Family

The family can have a direct influence on the development of talent (Côté, 1999). Although the family is not charged with leading the development of talent, its role is complex in the balance it must strike between under and over involvement (Hellstedt, 1987).

This section describes the role of the family, but more commonly the parents, from the perspectives of the gifted individuals, the coaches and from the parents themselves. The gifted individuals note how their family socialised them into sport and then consequently how they supported their talent development. From their vast and varied experiences, the coaches describe a range of both positive and negative parental behaviours. In addition, the parents themselves had a lot to say about their role in talent development. They detail how they apply extra efforts for their child; monitor the coach/performer relationship; the specific role that they play in talent development; as well as sharing their own values as parents which helps to explain how they were able to maintain their role.

Family's role in socialisation. Previous research suggests that individuals' engagement in sport would usually be initiated by their family or more specifically by their parents (i.e. Côté, 1999). However, their work focused upon the phases of learning within talent development and did not report upon why the parents made the decision to introduce their child to a sport.

The gifted individuals recalled how they came to be involved in sport and how their family influenced that process. At the time of their initial participation, the gymnasts and trampolinists were very young, certainly at the very earliest times of the sampling years.

My sister used to do gymnastics and she'd come home and show my Granddad and that, what she could do and I used to copy. It's like, I couldn't do some of the stuff, but I could do a lot of it and my mum was watching and thought yeah, he's quite good at this. It's like, just watching and trying to copy what they do, and I could do some of the things, like handstands. They would do a handstand and I would copy and do a handstand at quite a young age. And it was like, oh, he's getting quite good at this, let's get him involved in it, let's try a bit harder to get him in.

Billy-Joe - gifted individual (p. 8, lines 43-50)

I thought about it and I think when I was younger, my drive came from my family's involvement. And I think that's when most kids' comes from. You know your parents are the ones who take you to, even if you nag them to take you, they encourage you and it's hard to separate whether you 100% want to do something at the age of five or whether it's your parents who want you to do it. And it wasn't that I was pushed but my drive came from everybody's involvement and the life that I had in the gym and my friends in the gym, my sister's going too. Everything was pushed in that direction as it were.

Kira - gifted individual (p. 8, lines 41-51)

In most of the cases, the gifted individuals made contact with a sport through the involvement of older children in the family. With the assistance of parents, they were then allowed to pursue these sports with the older children.

Extra effort for their child. The notion of these parents going to great lengths for their children is not surprising and might be considered as common of most parents. However, this discussion is related to gifted individuals and the support parents provided within the context of sport. It can be argued that their accelerated rate of learning due to their giftedness gave these individuals a wide range of opportunities. Therefore, the volition with which their

parents supported their involvement in sport, at the expense of other opportunities, was particularly noteworthy.

...you explain to me how you would tell a 14 year old whose just become so thoroughly excited because he's going off to his first international that "actually son you can't go because mummy can't afford it." You can't. There is no way. You would sell your soul. You would do anything to get the money to make sure they go.

Lucy - parent (p. 13, lines 43-47)

Sandra's managed to spread her time and I think she's been very, very aware of not letting that parent portion slip, but it... in hard nosed objective terms she has had to put a lot more time and I suppose its not so much the time, it's the mental input, the things that have taken up Sandra's mind and attention in keeping Kira able to bounce, keeping her safe, keeping her progressing or at least not working back to losing moves and I think dealing with all of the dross that's come out of the trampolining world, the sports side of thing, all the politics, the back biting, the competitiveness, the nastiness.

Mike - parent(pp. 3/4, lines 45-1)

The response of these parents was hardly unexpected. However, it was relevant to note that even with the extraordinary abilities of their children and wider range of opportunities, the support and willingness to make sacrifices for their progress in sport was just the same. Furthermore, the accounts of the parents also linked to the point that was raised earlier during the discussion of milieu (see p. 232). The parents of the gifted individuals prioritised to give their children the opportunities they wanted to take. Although financially, this came as more of a sacrifice to some than others, the parents were determined to support their children however it was necessary.

Coach / performer relationships. The relationship between coach and performer is a well developed avenue of enquiry (Lyle, 2002). However, it is now relevant to consider the relationship as a triangle between coach, performer and parent where coaching children is concerned (Hellstedt, 1987).

It was interesting how the parents of the gifted individuals perceived and affected the relationship between the coach and their child. For the most part, all that the parents were concerned about was whether their child was happy.

Um, she's much more able to communicate... certainly with Pat than, and I suppose I feel more comfortable that they've, they've got a better relationship. I mean, he wasn't horrible to her before or anything like that but I think she felt that he had favourites and she wasn't one of them. And I suppose when it's your child you want them to be the favourite and, you know, but I don't think that's necessarily a fair comment to make but she...she wouldn't tell him things, whereas she does now so... um... she is a lot more... forceful in what happens

Donna (p. 11, lines 39-46)

...his coach then basically said he had to make a choice between gymnastics and football, because he was also very good at other sports not just gymnastics and I felt at that age, its far too young for him to make a choice, you can't turn around to a 11 year old 12 old and say but you've got to choose, you can either carry on playing football or you do gymnastics and I thought that was wrong so I said no.

Lucy (pp. 2/3, lines 47-1)

Although the parents were not always concerned with getting involved in their child's sport (see p. 168), they were concerned with their overall personal and social development. So long as talent development made their child happy and continued to contribute positively to their overall development these parents remained content and distant. Their involvement could be described as somewhere between optimal and under involvement, according to Hellstedt's (1987) continuum of parental involvement. It could be argued that for these participants, optimal parental involvement was not the stereotypical midway between over and under involvement as Hellstedt (1987) suggested, but more towards under involvement. However, when talent development fell out of harmony with their child's overall development and caused unhappiness, the parents were prepared to intervene. It may be worthwhile for coaches to bear in mind the power that parents can exert within the triangular relationship (Hellstedt, 1987), whatever their apparent level of involvement and interest.

From the work of Hellstedt (1987) and Côté (1999) we know that parents can be an influential factor in talent development. As noted by Hellstedt (1987), parents can help or hinder their child's involvement in sport. Whereas Côté's (1999) work emphasised the positive impact of parental involvement, Hellstedt (1987) recognised it as more of a dynamic element. This supports Gagné's view of parents as an environmental catalyst that can impact talent development either positively or negatively.

Parental behaviour – coach perspective. In all their years of experience, the coaches had seen a wide range of positive and negative parental behaviour. Given that the expert coaches selected for interview appreciated what was required for talent development, they shared their experiences of beneficial and less helpful parental behaviour. In addition to noting how critical parents were to the process of talent development, their highlighted behaviours could be described as being supportive and interested; not interested; interfering; being proud or holding an inflated view of their child.

The school was very supportive, his (Corey's) parents were very supportive. Mum (Vanessa) is very, very much aware of how important his results are and she tends to ... I would say panic is too, too strong a word for it but she's cautious about... balancing the academic side with the other side, so I think parents that ring me and talk to me about things like that must be very supportive. Um. They always get him here, he's always got a lift here and back, he's, he's very, very, the only problems they have is if I have to take him away over to the north of England or something, that would be a problem for them because they work over the weekends. Um... I don't think Corey could, I don't think any gymnast could do it without the support of their parents. I think parents are a very, very important part of the equation, but I think, while they're being supportive, I think they must know their role like I know mine. I mean, I don't overstep my mark and go into the parental world, and they mustn't overstep their mark and come into the gymnastics world. If you work side by side with the gymnast with the parents, then you're a good team around them. It's when either the coach or the parent oversteps the mark and tries to go in each other's territory.

Alison - coach (p. 19, lines 30-45)

Although the coaches suggested that parental interest is a crucial factor, there were also examples of extreme under involvement from parents in the development of talent. Even though talent development was achieved, the coaches found this level of under involvement to be very problematic.

...they (Daryl's parents) wouldn't go to a competition anyway they were busy farming and the only thing that matters is farming, lovely people but if you're not a farmer then you really don't do anything that's worthwhile, farming is everything and that is their approach.

Albert - coach (p. 5, lines 33-37)

Just as under involvement was highlighted as negative in the eyes of the coaches, they also disapproved of over involvement. In particular, over involvement was interpreted as interference in the coach's role.

Steven his father wanted to be there because he liked seeing him win, and of course parents can put too much pressure on their children, I used to say "Gary just go away" and I knew him well enough to say it, and he knew it was the right thing to do, "if you want him to win leave him alone, just go away" and he would go away and then he would come back and by then I'd pulled the lad round. And he was actually shooting properly again. I've seen parents put so much pressure on their children that they have actually disintegrated and its just that they want their children to do well you know.

Albert - coach (p. 5, lines 26-33)

The other coaches also reported similar accounts of how some parents overstepped their role and became over involved. Although surely fuelled by good intentions, the parents had allowed their own ambitions for their children to interfere with the talent development process.

In situations where talent development had to be negotiated to compensate for parents who were not prepared to be involved, they still contributed but in a more subtle way. Although the coaches had to make compromises and go to extra lengths to ensure talent

development, the parents added something subtle to the process that perhaps served to help both their child and the coach.

They were proud of the fact that he (Daryl) was going abroad and winning medals, they were proud of that and they liked to see his name in the paper, and he did, and Connor again their parents didn't come but they were pleased we were looking after him...

Albert - coach (p. 5, lines 37-40)

It would seem that even when parents were not apparently involved, the pride that they held for their child's achievements and the acknowledgement of the coach's efforts were sufficient to validate the coach/performer relationship in the pursuit of talent. Perhaps the coaches needed to feel that they had the confidence and appreciation of the parents in order to compensate for their lack of involvement.

In addition to inappropriate parental behaviour during talent development (i.e. under or over involvement), the coaches also voiced concerns over the input of parents during talent detection. According to Bloom (1985) and Côté (1999), parents of gifted individuals tend to notice a specialness about their child that often prompts them to introduce them to formal training. This may be a very valid observation, but it also appears that even the parents of lower aptitude children their child is endowed with exceptional abilities.

Parents will tell you all this when they first meet you...How talented and good their kid is...can do this, can do that...but as a coach you don't... Every single parent says that to you...Every single parent's kid is special and can do all sorts of things, so you don't pay an awful lot of attention because you get all sorts, and you get some kids who are so uncoordinated and obviously not.

Ben - coach (p. 2, lines 14-19)

It appears as if the coaches have learnt to be sceptical about the talent detection abilities of parents due to their bias. Even though the coach judgements are also subjective (Kozel, 1996; Mocker, 1987; Ulmer, 1987), it would seem that the parents were too close to the individual to give an assessment that the coaches would value. Furthermore, it could be argued

that very few parents would have the background knowledge and experience to make such judgments about giftedness for sport.

From the coaches' experience it is apparent that they valued a degree of parental involvement that facilitated the talent development process without interfering with the learning that occurs as part of the coach/performer relationship. This augments the basis which Hellstedt (1987) and Côté (1999) created by suggesting how parental involvement can be optimised in the talent development process.

Knowing their role. Hellstedt's (1987) concept of optimal parental involvement is basically a mid point on a continuum between under involvement and over involvement. The coaches generally supported this concept by indicating their wish for parents to be involved but only to facilitate the process, not to interfere with talent development. It was evident from these parents of gifted individuals that they had an appreciation for what their role was within the talent development process. Furthermore, their perception of their role further serves to augment our understanding of optimal parental involvement.

But you can't stand in their way, you've got to be a good mummy and let go and not look (laugh). "Don't tell mummy what your doing, just go and do it (laugh). Tell me after, I don't want to know." I suppose I've supported him in that. Even though it frightens me, I've done it because that's what he wants. You can't stand in their way, ever, you mustn't. Mustn't let your view cloud them, that's why I've stopped watching him train 'cos I used to sit there going (gasp....gasp), and they were going "get out you'll frighten him. Don't tell him you know its dangerous," so I didn't watch anymore. I used to just hate it.

Lucy (p. 11, lines 6-14)

So I can just be there and really enjoy it...enjoy watching him...But again I try not to be too...you know...I'm delighted. Just thrilled for him...very, very pleased. But hopefully not pushy, just supportive. I...I just let him get on with it. Do what he wants really. He tell me...like he said he's giving up Sports Aerobics for the moment "OK fine" he knows what he wants to do. And if he takes it up again "OK fine...whatever." He knows what he wants.... generally he's right.

Vanessa (p. 11, lines 27-35)

From the perspectives of the parents, their role could be summarised as that of a facilitator. They show interest in what their child is doing but only to the point of being able to appreciate their accomplishments. The support that they show is also of a facilitating nature, by ensuring that they get to training and competitions and just being in attendance at their major competitions to demonstrate support of what their child is trying to achieve.

The final and defining element of their role was not to overstep their role as a facilitator. They avoided letting their interests overlay that of their child's and they supported their child rather than push or influence. From the interview with Vanessa it was apparent that she got a great deal of pleasure from watching Corey perform in Sports Aerobics. As a former dancer, she had a deep appreciation for this discipline and thought he had a real flair for it. It was also apparent that, although she found tumbling impressive, the risk involved did worry her. However, she was careful to keep her feelings hidden so that she did not influence his decision to quit Sports Aerobics in favour of Tumbling. This was the tough and critical final role of the parents which had been so well illustrated by Corey's mother. She chose to stand back and allow something that gave her great pleasure to be replaced by something that filled her with worry for her son's safety. The parents of these gifted individuals had the necessary role clarity to know how to separate their wishes from their child's which allowed them to avoid over involvement.

Parental behaviour – gifted individuals' perspectives. In addition to the coaches and the parents, the gifted individuals who were at the very heart of the process also reflected upon how parental behaviour impacted the development of talent. The themes which emerged from their interviews showed parental behaviour could be described as supportive, not being pushy and staying out of it. As the data illustrates, these behaviours were all perceived as positive in their talent development.

She has, always come to competitions and stuff. Cheering me on, she does that a lot; cheers me lots...she shouts, you can definitely hear her. She definitely shouts. Everybody knows my Mum. She comes to competitions, supports others as well. So yeah...she doesn't really force me either...doesn't force me. She would say did you enjoy it, do you want to go back next week, sort of thing. She would let me do what I want and when I was asked about a two hour class, she asked me first, instead of going straight to them and saying yeah he'll do it, she

asked my opinion, even though I was a bit young, she asked my opinion first. So, she's involved a lot in club actually, she's on the parents committee, she comes to competitions, like club championships, she'll be asked to do the scoring or do the music, she likes to be involved in things.

Billy-Joe - gifted individual (p. 3, lines 1-11)

Yeah, same when she's at home she's my mum. Umm...firstly my dad doesn't have much to do with it at all. Umm...I think trampolining bores him a bit...watching it (laugh). I know he's really proud of me, umm and he comes to watch when...when it's local. But he tends to steer clear and I think that...well I know that's the right thing for me. I would have had complete overload otherwise. When mum and I leave the gym, she's no longer my coach, she becomes my mum. However, her life and her passion is trampolining, so even though she's not specifically being my coach at home, she's still trampoline, trampoline, trampoline, 24-7. So we leave what I've done at the gym in the gym. We don't take that home with us, so that helps. But at the same time, I still have 100% trampolining all the time and so I've got my dad who never talks to me about it and it's not that he doesn't care, it's just that we don't communicate about trampolining because as long as I'm doing OK and I'm happy, then he's happy and that's his philosophy and that's a great balance for me (laugh)...I've got two extremes. That's good.

Kira - gifted individual (pp. 4/5, lines 50-12)

From the perspectives of the coaches, the parents and the gifted individuals there was noteworthy consensus on optimal parental involvement. Furthermore, the coaches, parents and gifted individuals all shared the same view of what behaviour constituted that optimal level of involvement. Specifically, to facilitate talent development and be a positive environmental catalyst, the parents needed to show interest, be supportive, but keep a respectful distance from the talent development process.

Parents' values. The consensus between all three perspectives is worthy of closer examination. Was this consensus purposefully engineered or was it a fortunate union of like minded individuals? The values of the parents would suggest that the former would not be

accurate in this situation as value systems that influenced the parents were in place long before the talent development of their children. Interestingly, the values of the parents were almost as transparent as those of their children. However, rather than their values being innocently apparent, the parent's values were more deliberate in how strongly they were presented.

From the interviews with parents, a number of values became apparent. These consisted of: wishing to do things properly; doing sport for personal satisfaction, rather than anyone else's; seeing sport as a life lesson; taking opportunities when they arise; being responsible; offering unconditional support for their children; doing their best; and putting something back into sport and society.

I've always emphasised that if you're going to do something, do it properly, don't half do something because you don't get the pleasure from it. If you just fiddle with things you never get the same pleasure as if you try your best.

Jim (p. 7, lines 37-39)

The parents valued doing things properly and raised their children to do the same. Arguably this also facilitated the formation of desirable intrapersonal catalysts for developing talent, such taking sport seriously (see p. 190) and a work ethic (see pp. 192-195). Furthermore, the knowledge that their children had been raised to do things properly could have helped the parents to maintain their role and not push.

It is also interesting to note that the values of the coaches also included doing things properly (see p. 145). Although Lyle (2002) suggested that coaches might choose to recruit like minded individuals, possibly these coaches subconsciously recruited like minded parents. Perhaps coaches could consider the values of the parents when assessing the likelihood of developing talent. Such a consensus of values between parents, gifted individuals and coaches would surely facilitate the talent development process.

Furthermore, the parents seemed to view talent development as a personal journey. Consequently, they felt the need to stay out of the process and just be there in support of their child's endeavours.

The success that you get from that opportunity is based on your own input. We can't do it for you. It's what you do, it's what you get out of it and when you do it you do it for yourself. You're not doing it because you want other people to

acclaim you for doing it. You're doing it because you want to get a personal satisfaction with yourself that you have done the best that you can do. And you can ask no more of yourself than that.

Jim – Parent (p. 9, lines 40-45)

The quote above illustrates how this parent valued sport and considered the long hours which their child engaged in it was time well spent. By viewing sport as a life lesson they saw the process of talent development as synonymous with their child's overall personal and social development. Therefore, it was easier for the parents to support their child in their talent development and allow them to cope with the process on their own.

But there's always going to be ups and downs in everything. And it's all part of character building as well isn't it. The disappointments too.

Vanessa - parent (p. 7, lines 44-45)

It was also apparent that the parents were passionate that their children should have every opportunity. Whereas this could be interpreted as a motivation to push, this seemed to spur the parents to be supportive by making sure they prioritised time and resources to ensure they could adequately support their child in what they wanted to do. This philosophy also links to the parents' willingness to make extra efforts for their children (see p. 239).

I think a lot of it's got to be down to me and my attitude to life...if you want something bad enough you should try for it. I'm not saying you'll get it, but you shouldn't think "oh well I probably won't so I won't bother to try". I think you should try and if it doesn't work out well hey. You at least know that you tried, whereas if you never do it, you'll never know... I don't want my children to ever turn round and say "well of course I could have been really good, but you couldn't afford for us to go", or "we didn't have time to do it" or "you couldn't take us." Never...I never want anyone to say that to me. Like I said to you, I would sell my soul. I would never stop them from having that opportunity. It's so important.

Lucy – Parent (extracts from p. 6, lines 33-40; p. 14, lines 35-39)

Although the parents made great efforts to support their children's talent development in sport, they also believed in being realistic about the future. Eventually, their children would have to find a role in life that would support them financially. Csikszentmihalyi et al. (1993) also noted that the career prospects for gifted individuals in sport were much bleaker than those in more academic fields.

But he's also...from me in particular...he's had to be aware as he's growing up that he's got to earn bread and butter. You know, you can't just live by talent alone or your indulgences. You've got to be focused to earn a living, you've got to be responsible enough.

Joy – Parent (p. 13, lines 16-19)

Valuing responsibility emphasises how important it was for the gifted individuals to be realistic and consider the future (see p. 191). Valuing responsibility not only illuminates our understanding of where the parents' behaviour comes from, but also the origin of the gifted individuals' hopes of a career in their talent field (see p. 191).

The parents also made it clear that they believed in offering their unconditional support, leaving their children free to make choices. In emphasising their unconditional support for their children, the parents also showed how they were prepared to stand aside and allow their children to have their sport for themselves.

I cannot stand these mothers who are always pushing their children and I've seen it...ghastly dreadful people. I think the children would probably just end up "Just leave me alone" I just can't bear it and it's almost...I'm not talking about gym parents...that would be...you know...I'm not saying that. I've seen it so many...with children I've gone to castings with...you know when I've done stuff for myself. And it's them living their lives through their children...their unfulfilled lives. Well I haven't had that sort of thing, so I'm only too delighted for him to do it because I can understand it, but I've had my fulfilment; I've done that; It's not...I'm not looking for something I haven't done.

Vanessa – Parent (p. 11, lines 16-25)

It would seem that these parents were able to let their children make choices in part because they were not trying to live unfulfilled lives through their children. Interestingly, all of

these parents had developed expertise in their lives, most having attained such expertise in sport as well as in their professional lives. Other studies have also reported that parents of elite performers have been successful people (Bloom, 1985; Duncan, 1997; Côté, 1999). Such observations have usually been used to explain how children become socialised into sport. However, it might also serve to shed light on how such parents are able to separate their own interests from their child's, thus allowing their child to control their own participation.

The parents also felt strongly that their children should strive to do their best. In some ways this also related to the values of doing things properly and taking opportunities.

Never let it rest until your good is better and your better is best.

Jim - parent (p. 10, lines 32-33)

You've just got to bring them up the best way that you feel possible. Very strongly I feel that they should be...try to be caring; try not to hurt other people; do their best and what ever their best is that's good enough. It doesn't have to be...I mean they've been very successful and if they weren't that would be fine. As long as their best is their best, as long as they know that they've tried. Or they've worked as hard as they can for something. The only time I would get sort of upset for them is if they...if I'd felt that they hadn't...not necessarily the sport or the school, if they hadn't just given it that extra then I would be...then I'd think that was a shame really.

Vanessa – Parent (p. 7, lines 34-42)

Valuing best efforts and being all they could be seemed to have deeper roots. Further exploration revealed that the parents felt that their child's talents had a wider relevance than their own development and satisfaction.

I just hope that he can use them for his own personal satisfaction and I hope that he can pass some of it on to others so that they can get some form of reward from it as well. You know, I think it's nice if you can put your talent back into society and I think that is the responsibility of everybody. That you...however small it is, everybody is talented. Talent isn't just restricted to sport, it's in every part of your life. And what you've got to do is use what ever talent you have to

contribute towards society. And it may not all...well I know it isn't. It may not always be in a sport. There are some people who are talented in many, many other fields, and I think that they should be recognised just as much as those in sport and there are some people who are very, very gifted and very, very talented in totally unrelated things from sport, and yet they are talented. You know so you can talk about talent in sport, but there's also talent in society and I think it's the responsibility of people that do have talent, whether it's sport or whatever it is, to put that back into society. And so far it's happened, because otherwise we wouldn't have progressed as a human being. And I think everybody has a responsibility that if they have a talent, no matter how small it is, that they should put it back into society. I mean I always said to the children "Even the person who would sweep the shop floor where you work can always teach you something. Don't ever think that because someone is doing a lower job they can't teach you something" because those people will have a talent that others will never ever see, or never ever experience because... You know. So talent is in us all, it's just a matter of how do we use that talent. And I think as a human being you have a responsibility that if you do have a talent to actually try and put it back into society in some way.

Jim – Parent (pp. 13/14, lines 51-14; 16-21)

Certainly Gardner (1993) and Csikszentmihalyi et al. (1993) emphasised the value of talents for society. Indeed, these parents were very pleased that their children had developed a talent and had also found ways of using this to give something back to sport and society. This reinforces the assessment that the parents viewed their child's talent development as time well spent. Furthermore, this indicates that the parents appreciated the value of developing talent within every generation and the part their children had to play in that evolutionary role.

The role of parents in talent development certainly seemed to be critically balanced. There was considerable consensus concerning desirable behaviour between these parents and the literature concerning the parental role in talent development (Côté, 1999; Duncan, 1997), but the level of involvement seemed to be the most critical. Their ability to maintain an optimal level of involvement showed an affinity for the parental roles within Côté's stages of learning and seemed rooted in their own values.

Others

Arguably, the coaches and parents had the greatest environmental influence over the talent development process. However, there were also others who contributed in the development of the gifted individuals.

Role models. The gifted individuals also noted the influence of role models upon their talent development. These individuals included other competitors and older siblings.

But he (Tyler) was always good at cricket, and I was always good at gym. Just the way that it was. That was probably another reason why I wanted to be good at it because he was really good at cricket so...I wanted to be really good at something else, but I wasn't as good at cricket so I had to be good at something else.

Corey - gifted individual (p. 17, lines 28-31)

...there's a girl who used to train here. She's now moved on to live at Lilleshall and she's just come back from the World Championships and a team gold medal and.. she... I'm really pleased when she like helped me and says "Hopefully one day you'll be there" and I'll be saying like "well done to you" and just... she helps me, she never puts me down, she always says the positive side to things, never the bad.

Della - gifted individual (p. 10, lines 5-10)

Although the role models were most probably unaware of their influence, it would appear that they contributed positively and may have accelerated the developmental process. Just as these role models were unaware of the impression they were making on these gifted individuals, these gifted individuals are possibly unaware of the impression they are currently making on the next generation of gifted people. It would seem that the ever present resource of role models perpetuates the turnover of gifted individuals within a talent field and subtly provides the gifted individuals with a means of giving back to sport (see p. 226).

Having discussed in some detail the influence of coaches, family and even other competitors, Gagné's (2003) view that people are the most influential environmental catalyst

seems very supportable. As with all of the environmental catalysts, the roles of these people varied both positively and negatively as well as in terms of their influential magnitude. Optimal involvement, drawn from a consensus between coaches, parents and gifted individuals has been highlighted in the discussion as all of the participants have been involved in the development of talent.

Provisions

Gagné (2000) noted provisions, such financial resources, as another environmental catalyst and in 2003 showed them as the most commonly present and adequate component of the DMGT. It may well be that provisions were well resourced and available as only one parent noted how hard it had been to support her son's talent development financially.

Finding the time, finding the dedication, finding the money. It's quite hard, especially when your on your own like me. I've been on family support...income support when they were young and working families tax benefit and I've applied to this bursary and written letters and I don't think you should have to do that. I think the country should support their talented people. Especially when they have proven themselves to be dedicated in that way, I don't think enough is done to help people like us.

Lucy – Parent (p. 12, lines 1-7)

Despite the hardship which this highlights, it did not stop Lucy from supporting Billy-Joe's talent development. As illustrated by Lucy herself earlier (see p. 240), she would always find a way. This is not to suggest that finding the provisions for talent development is in anyway trivial, but these parents have shown that their influence can compensate for limited provisions. This reiterates Ericsson et al.'s (1993) emphasis upon the need to overcome constraints related to resources in the development of expertise. Similarly, Gagné (2003) emphasised that he did not consider environmental catalysts to be less important, but less difficult to compensate for or remedy than an absence of natural ability or intrapersonal catalysts.

Events

Events are the final type of environmental catalysts described by Gagné (2000). These events were described as encounters, awards or accidents; essentially any event that serves to slow or accelerate the learning process. However, a great many of the influential events mentioned by the participants impacted on the catalysts perhaps even more than upon the learning process alone. For this reason, only events that were described as primarily influencing the learning process have been discussed here.

As the coaches have the perspective of overseeing the learning process, perhaps they are most qualified to assess the influence of significant events. They illustrated decisions and coaching actions that resulted in accelerated application and learning in the development of talent.

Once we started to put a mix team together we would go out umm start winning everything I think he realised, that 'I can actually achieve in this sport', and that's made the biggest turn around in his behaviour, and more respect for me.

June – coach (p. 3, lines 17-20)

Umm...I think a lot has to do with when she first went on squad. We worried about her. She was selected to go on squad. We sat down at home and decided no, she couldn't go. She was young, the chap in charge of squad was an alcoholic, and we knew him. We didn't know him personally, but we knew of his reputation. Then another chap on squad we knew very well, one of the assistant coaches, so we thought it wouldn't be fair to take her away from that so we let her go. He was brilliant, he was just unbelievable. The youngsters would have done anything for him. He had them eating out of his hand. He could have done anything with them. If he said go out there and walk on water, they would have gone out there and tried to walk on water. He was just unbelievable, That was a big turn round.

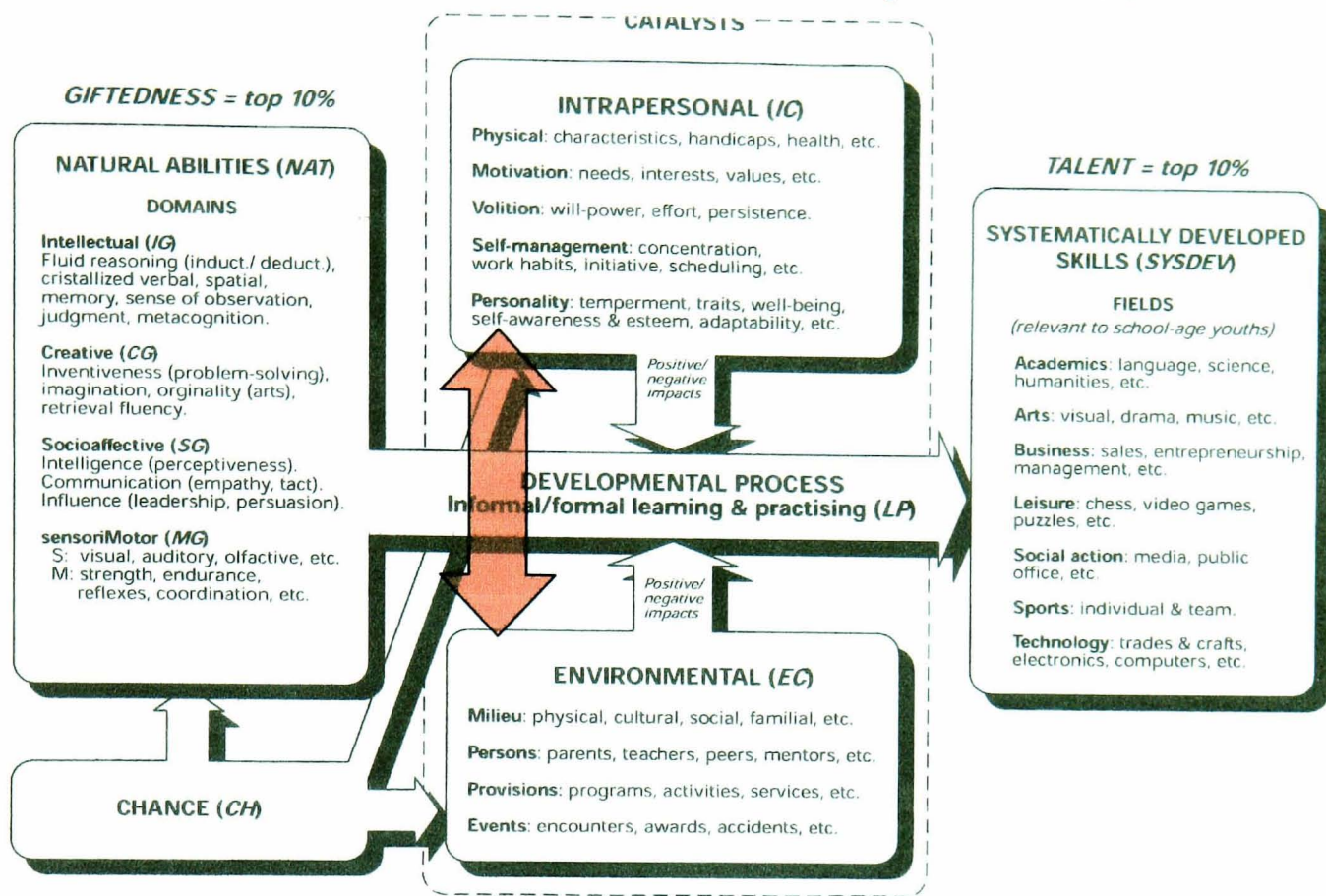
Terry - coach (p. 4, lines 15-24)

It is interesting to note that these significant events did more than just promote learning. The accounts from the coaches suggested that the coach-performer relationship was also

affected in a positive way, which facilitated further progress. This is the essence behind the idea of these events being a turning point; the relationship between the coach and performer improved, thus facilitating an increased rate of development.

Gagné (2003) considered environmental catalysts to be the least crucial of his CGIPE acronym because they could be compensated for, not because they were unimportant. Data presented under the headings of milieu, persons, provisions and events support this notion. However, from the data it could be argued that other people are crucial to the discovery of giftedness and the development of talent, especially where other environmental catalysts are less favourable. They show a mixture of positive and negative accounts in the retelling of successful talent development journeys. The people involved in these stories of talent development were not free of hardships, setbacks or tragedies yet a dynamic interaction of other catalysts occurred that compensated and resulted in effective support, even if by different means. Although Gagné (2003) portrayed environmental catalysts as the least crucial and more commonly available component of talent development, it is also perhaps the most versatile. The crucial role of other people in the discovery of giftedness and the development of talent might be illustrated more clearly if it were shown independently of the less critical environmental catalysts.

How the Environment Affects Intrapersonal Factors



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

The interview data revealed numerous situations when milieu, persons or events impacted the individual without necessarily affecting the learning process directly which further emphasised the wide impact of environmental catalysts (see figure 17). This suggests the existence of a direct link between catalysts, which was not explicit within the DMGT (Gagne, 2000) as the environment affected the individual. It appears that environmental factors made direct contributions to the development of self esteem and determination.

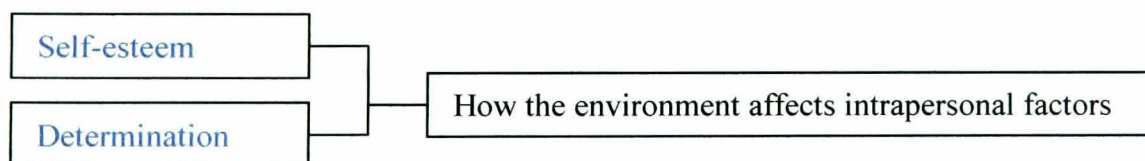


Figure 17. Data themes relating to how the environment affects intrapersonal qualities.

Self Esteem

It would seem that these gifted individuals were not born with an innate knowledge of their giftedness or any air of superiority. Like most people, they had doubts and insecurities which were positively or negatively affected by milieu, other people and events. The gifted

individuals reflected upon these environmental catalysts and how they affected their self esteem.

It makes you feel kind of important...really important, because the school and the club are doing that much for you and you think to yourself that you're the best, and if their supporting me this much it must be right.

Billy-Joe - gifted individual (p. 11, lines 45-47)

...my sport psychology. Um. She's helped me a lot because she was my turning point from being so negative and turning into positive.

Della - gifted individual (p. 4, lines 38-40)

I don't think it just changed me in terms of my interest in sport, I think it actually changed me slightly as a person as well. Erm, I mean it's a big deal when you go back home, and everyone's kind of very happy with you, and when you go to school, and you say you won this thing and everyone's like "Oh my word" and then in assembly someone says everyone's got, you know teacher says Daryl's come second in this thing everyone clap, you know them sort of things, if you're not accustomed to them I think are very, very kind of character building. I wasn't accustomed to that before, so it was I definitely think, you know if I could go right back there now, I think I would probably realise just how much of an effect it did have. I think it had a definite effect, To say it didn't have an effect would be a complete lie, it definitely did. Erm, To what degree, I don't know, but it definitely, definitely did have an effect.

Daryl - gifted individual (p. 4, lines 18-29)

Whether it was from their school, club, another person or through receiving an award, the individuals seemed to need some form of persuasion to convince them of their giftedness and raise their self esteem. The meaning of these environmental factors for the individual suggests that their self esteem did not equate with their level of giftedness. For these individuals it seemed as if achievement itself was not enough. They required their achievements to happen within a supportive environment where their progress would be

acknowledged. This highlights the important role that families, clubs and schools can play in building the self esteem of gifted individuals.

Determination

Determination might have been seemed absent from the discussion of intrapersonal catalysts. However, this seems to be something which the gifted individuals developed along the way and perhaps not by design. The interview data shows how injuries and traumatic events have hindered the development of talent, but ultimately how they have generated determination.

...when I come back from injury, and I was so determined to catch up with other people, it just like clicked in my brain that no matter what everyone else says, if I won it I will do it, and um I started progressing and everyone like stood back and watched and said “Maybe she can do it. Maybe I was wrong to say that she couldn’t do it”.

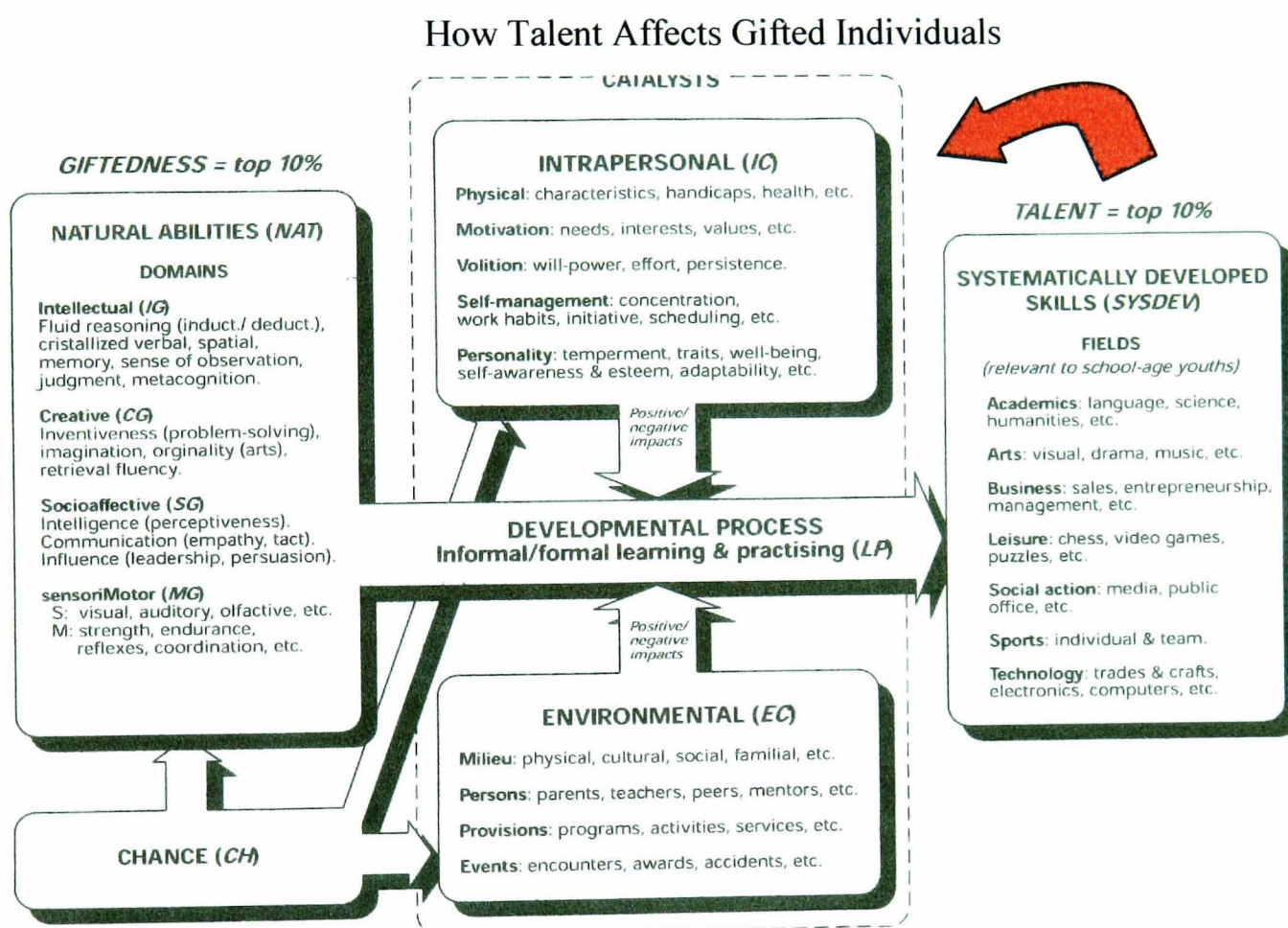
Della - gifted individual (p. 4, lines 7-14)

It was more life event outside trampolining that made me view the trampolining differently. I went to university; spilt up from a long-term relationship; my Grandparent died. Everything was kind of traumatic at that time. It was a horrendous time. And my trampolining just went right down hill. I had no confidence; it was dire; it was horrible. And I just felt so bad about myself. It took a few months, but I really sort of pulled myself up and sorted my life out and just... And it was almost like I had to hit rock bottom to...And it just changed my perspective on everything and it made me focus on what I wanted to do...what I was doing and why I was doing it for. And it made me focus on university as well, you know. Made me think, “I’m not going to waste the next three years.” But umm...It just made me think differently about it I suppose.

Kira - gifted individual (p. 13, lines 1-11)

How these traumatic events did not result in these individuals quitting requires closer re-examination of the other intrapersonal catalysts that were identified as setting these individuals

apart from their peers (see p. 169). It can certainly be argued that environmental catalysts affect far more than just the learning process. Milieu, persons and events seem to have the potential for profound effects upon an individual's mentality, as these examples have shown. Although the effects of these influences upon the intrapersonal catalysts surely fed back into the learning process, the chain of action began with environmental catalysts affecting a change within the intrapersonal catalysts before the learning process was affected. This direct link between environmental and intrapersonal catalysts serves to enhance our understanding of why people develop talent.



Gagné's Differentiated Model of Giftedness and Talent (DMGT.UK.2K)

Within Gagné's DMGT (2000), talent is portrayed as an end product, while all other factors are discussed as components of talent development. An interesting revelation from the interview data suggested that talent could impact upon other components, but particularly upon the individual (see figure 18). What follows is a discussion of how talent links back to the individual and their intrapersonal catalysts.

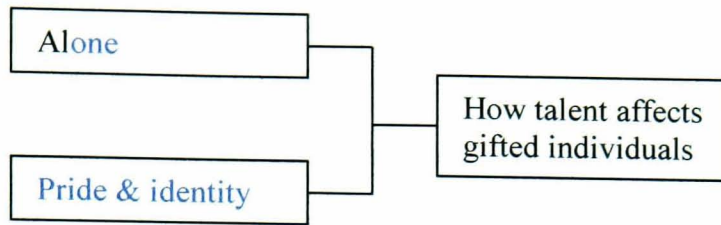


Figure 18. Data themes relating to how talent affects gifted individuals.

Alone

If giftedness is a rarity, then talent is even rarer. Their giftedness made them atypical, with their extraordinary rates of learning placing them within the top 10% of their peers (Gagné, 2000). But having developed talent, they were now considered to be within the top 10% of the talent field (Gagné, 2003).

How do these talented individuals feel about being that special? To borrow the commonly used phrase ‘it’s lonely at the top’, these talented individuals had plenty of people who looked up to them and admired their abilities, but very few who could understand the life they led.

Some of my teachers, like the Deputy Head and the senior members of staff used to like tell me off and everything, shout at me ‘cause I was late in and now they like ask how the morning’s training went. But they know, whatever you say to them they’re not gonna understand because they don’t really understand gymnastics...like if you say “Oh today I did round-off flick double somersault” they go “you did an Arab spring” and I can’t stand it when people say that only, you did a flick-flack or something. It’s just really hard to talk to them about it unless they’ve got something to see of what it is.

Della - gifted individual (p. 7, lines 13-25)

Although a lot of people have done it at school, they’ve never seen top level trampolining. Everybody’s seen top-level gymnastics, top level diving. You know, top level practically most other sports, but trampolining no one ever sees it really, at all. So they just don’t...sometimes, it’s not that they’re derogatory about it, they’re just ignorant about it because they...they’ve never experienced it. And also when you’re watching things on telly as well, you can’t quite get the

feeling of how powerful a trampoline is and the height you go and the strength you have to have and everything else. It just looks like a person turning easy somersaults on the trampoline. So that's the reactions I get "Oh can you somersault then...they don't have any concept of top level trampolining at all. Whereas everybody knows what it is like to be a top level footballer or what it takes to be a top level footballer...I'm constantly having to explain what I do, how I train and they're surprised by how much I train because to them it's just messing around on a school trampoline. They really have no concept of it. Umm...people who do sport themselves have more of an idea because I think they tend to have a basic...more basic understanding that all sports are demanding, but umm...I get quite often "Didn't that start in the circus" and "Can you compete at that" that's what I get "Can you compete at that sport" "Well yeah, it's at the Olympics." And then they look at me as if I'm strange "In the Olympics?"

Kira - gifted individual (pp. 6/7, lines 39-8)

Although their teachers and friends tried to relate to them, it would seem that the talent development journey must be lived to be fully appreciated. Among the small number of coaches and other talented performers who have made the journey is an exclusive club of understanding and appreciation. It would seem that the price of being special was that they could only be understood by other special people. This further emphasises the need for a supportive social context during talent development and for the process to bring gifted people together (see p. 211). Perhaps squad training is one such strategy through which gifted individuals can be helped to mediate the feeling of being so dissimilar to their peers.

Pride & Identity

It would also seem that the talented individuals had not perceived the price of talent to be too high. Despite the isolated pedestal that their extra ordinary life had placed them upon, they valued their atypical identity and were proud of their giftedness and talent.

What does trampolining mean to me? I was thinking this the other day actually because we were at the world championships and I saw a girl that trampolined

from a really young age until she was about 30. Umm...and you imagine training everyday all your life for something. It's like getting up and eating or...it's just so natural for you to do it and so much of your time is consumed with it and I just couldn't imagine what it would be like to just give it all up and that's it...nothing. It's like it's my identity. When people say what are you, I don't actually don't usually say I'm a trampolinist because then I have to explain it (laugh). Then I get the whole "Oh that's not a sport" type attitude sometimes, so I don't bother, I say "I'm a student," but in my head, when people say what are you, I say "I'm a trampolinist." That is...that's my identity and I couldn't imagine being anyone else. I think I'll always...when people say to me "What are you"...I think I'll always think I'm a trampolinist, even if I'm 60 or 70 years old (laugh)...It makes me proud because I have worked all my life. I've dedicated all my life to this and I've made it priority over everything else basically along the way. Umm...so I am proud...It means a lot to me to be able to... It makes me feel different from the average person ...everyone's different obviously, but the stereotypical working person who gets up, they go to work...nine to five, or eight to six as it usually is now (laugh)...come home in the evening, do a few things but not...it makes me feel different from that...it makes me feel special. And people seems to think that too, they say "Wow, I'd love to have something that I'm really good at or a hobby that I dedicate myself to" or "That's really different" you know, so it sets me apart from the rest I suppose.

Kira - gifted individual (p. 5, lines 27-40; p. 6, lines 17-22; 26-34)

Giftedness exists within the DMGT as separate from the individual. However, from these accounts it would appear that the talents of these individuals could not be separated from them as people. They had become their talent and their talent had become them. From the data it could be argued that as talent develops it becomes a component in its own right that can strengthen commitment to the developmental process.

CONCLUSION

Enhancing the Understanding of Giftedness and Talent

The DMGT

Gagné's (2000) DMGT has played a prominent role throughout this research, both in terms of providing suitable terminology and for structuring the discussion in relation to literature. However, having compared the view the model portrays of talent development with that of experts in sport, it is now appropriate to re-evaluate its role within the context of sport.

The DMGT was designed to distinguish clearly between the concepts of giftedness and talent (Gagné, 1985). However, in addition to its designed function of differentiation, its potential for structuring our understanding of how gifts are discovered and developed has been suggested (Tranckle & Cushion, 2004).

Gagné's (1985) distinction between raw materials (gifts) and the end product of learning (talent) created a clear standpoint from which to comprehend the discovery of gifts. With this clarity of terminology, Gagné then showed how gifts could be recognised as accelerated learning. However, the application of Gagné's (2000) DMGT was arguably more suited to structuring our understanding of how talents develop (see p. 113). The appeal of Gagné's (2000) model was its consideration for the multidimensional factors of talent development and its contributive, rather than deterministic nature (see p. 60).

Bearing in mind that the DMGT was designed to clarify terminology, its potential for application beyond this to the discovery and development of gifts in sport was impressive (see p. 113). However, during this research some limitations have been revealed within the capacity of the DMGT in this regard.

Although Gagné (2003) pointed out that bi-directional influence was possible between any components of the DMGT, this was not represented in the model. From the interviews, bi-directional influences between components were discovered which were vital in order to appreciate how gifts were discovered and why talents developed (see pp. 113-263).

Gagné (2003) stated that he had anecdotal evidence for all of the bidirectional arrows of influence, but these were not specific to sporting contexts, but subsequent interviews in this research with experts in sport have revealed a subtle difference. In particular, this related to

the coaches viewing physicality as raw material rather than an intrapersonal catalyst (see p. 135).

A major concern and neglected area of research within sport is how gifts are discovered (Tranckle & Cushion, 2004) and why talents develop (Csikszentmihalyi et al., 1993). The DMGT has contributed a clear distinction between gifts and talents, which must inherently help the process, as well as explaining how talents develop. However, the model seems ill equipped to explain how gifts are discovered and why talents develop.

A New Model

Gagné's (2000) DMGT stands as a source of reason and clarity in a field of study that has endured so much terminological inconsistency. The DMGT continues to serve a purpose in establishing conceptual clarity, with an added application for explaining how talent develops. This intended function (Gagné, 1985) and extended function (Tranckle & Cushion, 2004) has been a driving inspiration and source of structured thinking throughout this research. When considering the intended function of the DMGT, it is inappropriate to highlight its shortcomings when applying it to the discovery of gifts and the development of talent. It seems more appropriate and respectful of Gagné's work to propose an adapted model, inspired by the DMGT, but intended to explain how gifts are discovered and why talents develop within sport (see figure 19). This adapted model has the distinction of being grounded in empirical evidence reaped from sporting contexts.

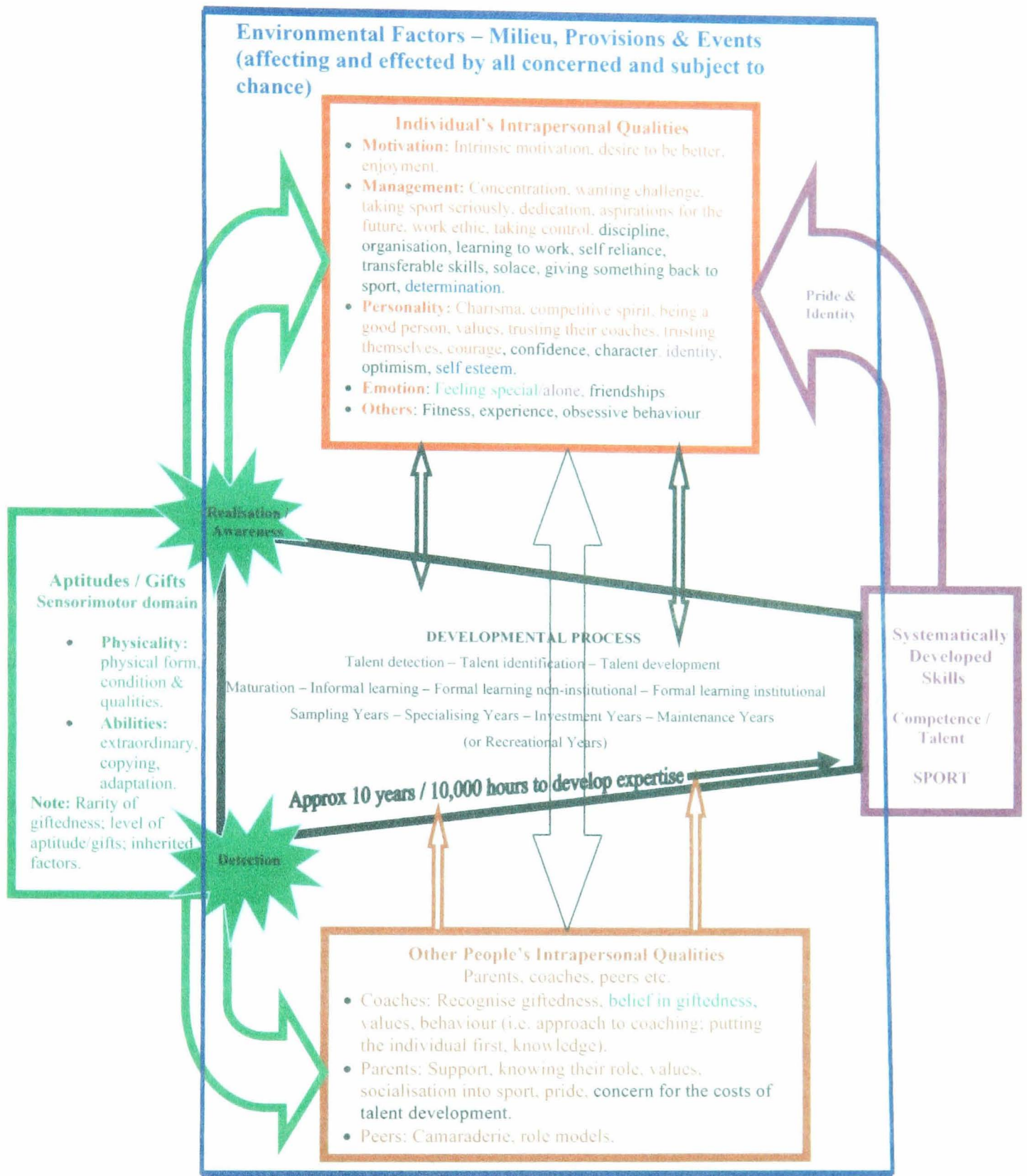


Figure 19. Adapted version of Gagné's (2000) DMGT showing how gifts are discovered and why talents develop.

Figure 19. Adapted version of Gagne's (2000) DMGT, showing how gifts are discovered and why talents develop.

Aptitudes or Gifts

The model highlights physicality and the sensorimotor abilities that were particularly noted by coaches. However, this is not to deny the relevance of other domains, such as intellectual, socio-effective or creativity which may also contribute towards the concept of giftedness (Gagne, 1993). Within this model, aptitudes or gifts have been represented in green (see figure 19). Green coloured texts within the red and brown boxes that represent intrapersonal qualities were considered by the participants to be affected by giftedness.

Empirical evidence from this study (see pp. 118-120) supports Gagne's (2003) notion that giftedness, or at least the perception of giftedness (Howe et al., 1998) is a prerequisite for developing talent. Due to its subjective nature (Kozel, 1996), the concept of giftedness is particularly critical for coaches and parents in the detection process. This supports Howe et al.'s (1998) notion of the 'talent account' and Bloom's (1985) observation that there was at least one person in the lives of talented individuals who believed in them completely.

Developmental Process

Aptitudes/gifts feeds into this component to represent a seamless evolution towards the development of expertise (see figure 19). The modes of learning represented, as Gagné (2003) outlined, included both informal and formal learning (see pp. 18-26; 197-203). Furthermore, this process is augmented by reference to Côté's (1999) stages of learning (see pp. 60-63; 200). In addition, the recreational years (Côté & Hay, 2002) exist for those who continue to engage their gifts, even though they no longer strive for talent development (see pp. 43-47; 60-63; 87-89). It is also acknowledged that talent detection will occur somewhere along this continuum, followed by talent identification and development. Consistent with Ericsson et al.'s (1993) theories and the views of the coaches in this study, it is suggested that the talent development process would take approximately 10 years or 10,000 hours worth of deliberate practice. The illustration of the developmental process with a funnel shape serves to indicate how the generally applicable gifts are refined and developed into specifically applicable talents. Furthermore, the impact of the developmental process upon the intrapersonal qualities has been shown in black text.

Detection

Within this model, detection has been shown in green to emphasis how it stems from giftedness (see figure 19). However, observation of pure giftedness is unrealistic as this is continually evolving from birth through maturation and daily informal learning (Gagné, 2003). When the application of maturing gifts is noticed by an expert, such as a coach, detection occurs (pp. 115-116). Although detection occurs along the developmental process due to giftedness being exercised, this does not necessarily lead to recruitment. Recruitment requires the individual to find something meaningful in the use of their gifts which they wish to pursue. Therefore, detection programmes that intend to recruit gifted individuals should attempt to maximise the potential for flow and crystallizing experiences. Empirical evidence (pp. 203-205) and previous research (Walters & Gardner, 1986; Csikszentmihalyi et al., 1993) suggests that crystallizing experiences and flow can facilitate commitment to talent development because of the satisfaction and enjoyment involved.

Realisation/Awareness

Realisation or awareness also occurs where giftedness begins to develop but does not require a valid audience. It is the point where individuals engage their gifts and start to form opinions of where their strengths and weaknesses lie (see pp. 149-153). Within this model, realisation and awareness have also been shown in green to emphasis how they can stem from giftedness (see figure 19). This realisation has a powerful shaping effect upon the intrapersonal qualities of the individual and the type of talent fields they feel inclined to explore. Although crystallizing experiences may not be necessary for developing talent (Walters & Gardner, 1986), empirical evidence did support their contribution towards intrinsic motivation in less than supportive environments (see pp. 221; 259-259).

Intrapersonal Qualities

These are both genetically and environmentally determined, being influenced by every other component of the model. To show this influence, the colour of text corresponds to the component from which that intrapersonal quality was thought to have originated (see figure 19). Red text represents those intrapersonal qualities which participants thought evolved

through maturation and informal learning. Parents and the individual's own aptitudes seem to have the greatest influence before formal training (see pp. 149-153; 238-240; 247-253). From the discovery of giftedness, coaches, peers and the developmental process begin to contribute towards intrapersonal qualities. Even as individuals begin to develop talent that too feeds back to influence them, until it becomes difficult to separate the talent from the person (see pp. 260-263).

Pride and Identity

The developmental process forms expertise or talent, which is seen as a source of pride for the individual. More so, the development of expertise or talent feeds back to the individual and helps to construct a sporting identity which contributes towards their commitment to sport and their talent (see pp. 261-263). Within this model, expertise or talent have been shown in violet, as has their influence upon the intrapersonal catalysts (see figure 19).

Other People

A distinctly different feature to this adapted version from the DMGT is the interdependent roles other people play in an individual's talent and personal development. The role of other people and their influence upon the developmental process has been shown in brown (see figure 19). Furthermore, it is acknowledged that the gifted individual also affects the lives of other people as part of the talent detection and development processes. Most prominently, contact with giftedness can trigger crystallizing experiences and a subsequent belief in giftedness (Bloom, 1985; Howe et al., 1998) for coaches (see pp. 158-166) as well as the individuals themselves (Walters & Gardner, 1986).

The inclusion of this feature was prompted by the powerful influence that coaches and gifted individuals had upon each other from talent detection through to the development of talent. Therefore, this model is not purely about the discovery and development of an individual's gifts in isolation, but the journey of all those involved in the development of that talent.

Environmental Factors

All of these components are influenced by environmental factors, such as milieu, provisions, events and chance (see pp. 227-255). Although Gagné (2000) chose to separate chance from environmental catalysts, it is perhaps too influential to illustrate properly in this manner. To show the fullest possible influence of chance, Gagné would have had to litter the DMGT with arrows. Therefore, it seemed more appropriate to show that chance had the potential to influence all components, including other environmental factors. This all encompassing influence of environmental factors has been represented by a blue box that encases the entire process of talent detection through to development (see figure 19). Blue text is used to show where environmental factors directly influenced intrapersonal qualities, as considered by the participants.

The Discovery of Gifts and the Development of Talent: An Alternative View

This research has undertaken to explore how gifts are discovered and why talents developed within sport. The findings have been drawn from people who have experienced these processes, having either been gifted or having worked closely with gifted individuals. Their experiences were very thought provoking and have resulted in the proposal of this adapted model (see figure 19) to illuminate their understanding of how gifts are discovered and talents developed.

Inspired by Gagné's (2000) DMGT and shaped through empirical research, this adapted model suggests a new way of viewing the discovery of gifts and the development of sports talent. Most models portray how gifts develop into talent in isolation from the individual (Gagné, 2000; Abbott & Collins, 2004) by focusing upon the skill with no indication of the person. However, this model shows the process as more of a journey, including how discovery and development impact upon the individual and others associated with these processes. The research illustrated the truly complex nature of talent and how the study of the processes is incomplete without considering the integral role played by others apart from the gifted individual.

The vital role of other people is perhaps more crucial within the discovery of giftedness and addressing the problem of wasting giftedness (pp. 115; 139; 228; 232). It was found that the discovery of giftedness required an encounter between a gifted individual and a coach who

could recognise their gifts (see p. 117). The extent to which the coach and parents believed in the individual's gifts then seemed to determine the extent to which they would affect the environment to give the individual the opportunity to develop (see pp. 168; 240).

After the discovery of giftedness, the model then shows how the achievement of talent development seems to require role clarity and compatible values between the coach, gifted individual and their parents. Although positive parental involvement has been suggested in the past (Côté, 1999; Hellstedt, 1987), this model suggests how the roles of all three parties can be harmonised to facilitate talent development.

By setting the whole interactive process within a net of environmental factors that affects everything within it, the model clearly shows the extensive influence of environmental factors and chance upon the discovery and development roles of the individual, their parents and the coach. The model arguably comes closer to portraying the complexity and full impact of these factors upon the development of talent than previous attempts (e.g. Gagné, 1985; 1993; 2000; 2003).

As part of this different view, the model not only shows how talent develops, but also why, by highlighting the value of the process for the individual. Therefore, we are now afforded a view of how and why people become involved in talent development, an area which has not been well understood in the past (Csikszentmihalyi et al., 1993; Côté et al., 2003).

The person orientated feel to this model reflects both the research philosophy and phenomenological methods. This approach has steeped the model in not only the words, but the lives and underlying intentions of people who have experienced the discovery of gifts and the development of talent. These extraordinary people are the ones of whom researchers (Bartmus et al., 1987; Kozel, 1996; Williams & Reilly, 2000) wished to have a better understanding. This research has facilitated that understanding by forging a link between their experiences and scientific theory.

The Future of Giftedness and Talent

Implications for Practice

The model and the findings from which it was based make a case for a more person orientated approach to talent detection, identification and development. Indeed, these processes would seem to be worthless without the recognition and appreciation of what they

contribute towards the individual concerned and everyone else involved. Coaches and parents can maximise the value of talent detection and adherence to talent development by using these processes to benefit the person over any additional gains to the subculture or wider society. It would seem that such selfless efforts on behalf of the gifted individual can often evoke reciprocation, where they use their talents to give back to the sport that did so much for them (see p. 226). Such a person orientated approach to the discovery and development of talent can make the processes deeply meaningful for all concerned; stimulating intrinsic motivation and highlighting the value of sport for the individual and society. This is about using the sport to help the individual; to teach them what they need to live happy, meaningful and productive lives. Coaches who can empathise enough to set individuals off on this path can facilitate the discovery of gifts and inspire commitment to talent development. These people resemble Csikszentmihalyi et al.'s (1993) concept of 'flow teachers'.

Summary

This research has explored how gifts are discovered and why talents developed. To illustrate the findings, a model has been presented (see figure 19) to show the multidimensional and interdependent nature of these processes.

Organising the current theories into a comprehensive view required more than just clear terminology. It also required a closer examination and consideration of the presuppositions of the theorists. In particular, this related to their position on environmental and genetic determination and whether they valued an objective or subjective approach.

The next logical step would be to disseminate the main findings to inform current practice. Specifically, this would include the defined terms of giftedness and talent (Gagné, 2000), talent detection, identification and development (Williams & Reilly, 2000) and potential (Tranckle & Cushion, 2004). Furthermore, there is a need for a more person orientated approach to the discovery of gifts and the development of talents to maximise talents reaped from each new generation. This also requires a subjective view to appreciate the multidimensional and interdependent nature of these processes that must be individually crafted to navigate the complex path to talent.

Valuing the subjective experience of experts has been important in shedding new light upon how gifts are discovered and why talents develop. Future research into such a multidimensional and interdependent area would do well to consider valuing the rich source of qualitative data that lies within the memories of these people. Sometimes it takes a method like phenomenology to appreciate how these experts understand their world.

It is suggested that the time has come to review currently accepted theories of sport science which are based on the typical to see how they relate to atypical gifted individuals (i.e. Tranckle & Cushion, 2004). For example, to what extent does a belief in giftedness, by the coach, performer or parent speed the development of expertise? Would such a belief shorten Ericsson et al.'s (1993) 10,000 hour rule as previously suggested (Baker et al., 2003; Singer & Janelle, 1999).

This research proposes that the adapted DMGT can explain how gifts are discovered and why talents develop. Although this conceptual model has been created from the experiences of practitioners, it remains to be seen how useful it will be in practice. Certainly it has the prospect of facilitating the assessment of potential by considering the multidimensional and interdependent nature of the discovery and development processes. However, application and time will tell to what extent this model can be used to help the discovery of gifts and the development of talents, not only for the good of society, but ultimately for the good of the individual.

REFERENCES

- Abbott, A., & Collins, D. (2002). A theoretical and empirical analysis of a 'state of the art' talent identification model. *High ability studies, 13*, 2, 157-178
- Abbott, A., & Collins, D. (2004). Eliminating the dichotomy between theory and practice in talent identification and development: considering the role of psychology. *Journal of sports sciences, 22*, 395-408
- Ackland, T. R., Bloomfield, J., Elliott, B. C., & Blanksby, B. A. (1990). Talent identification for tennis and swimming. *Journal of sports sciences, 8*. 161-162
- Alasuutari, P. (1995). *Research culture: Qualitative method and cultural studies*. Sage publications.
- Atkinson, J. W. (1978). Motivational determinants of intellectual performance and cumulative achievement. In J. W. Atkinson & J. O. Raynor (Eds.), *Personality, motivation, and achievement* (pp.221-242). New York: Wiley.
- Australian Institute of Sport (2001). *Talent Search*. Australian Institute of Sport. Retrieved October 10, 2001, from <http://www.ais.org.au/talent.htm>
- Auweele, Y.V., Nys, K., Rzewnicki, R., & Veerle, V. M. (2001). Personality and the athlete. In R. N. Singer, H. A. Hausenblas & C. M. Janelle. *Handbook of sport psychology*, (pp. 239-269). Wiley (New York).
- Baker, J., Côté, J., & Abernethy, B. (2003). Learning from the experts: practice activities of expert decision-makers in sport. *Research quarterly for exercise and sport, 74*, 342-347.
- Bain, L. L. (1989). Interpretive and critical research in sport and physical education. *Research quarterly for exercise and sport, 60*, 1, 21-24.
- Bain, L. L. (1995). Mindfulness and subjective knowledge. *Quest, 47*, 238-253.
- Baltes, P. B. (1998). Testing the limits of the ontogenetic sources of talent and excellence. *Behavioural and brain sciences, 21*, 407-408
- Bandura, A. (1986). *Social foundations of thought and actions: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Baron-Cohen, S. (1998). Superiority on the embedded figures test in autism and in normal males: Evidence of an "innate talent"? *Behavioural and brain sciences, 21*, 408-409.
- Bar-Or, O. (1975). Predicting athletic performance. *Physician and sports medicine, 3*. 81-85
- Bartmus, U., Neumann, E., & de Marées, H. (1987). The talent problem in sports. *International journal of sports medicine, 8*, 415-416

- Beamer, M., Côté, J., & Ericsson, K. A. (1999). A comparison between international and provincial level gymnasts in their pursuit of sport expertise. *Proceedings of the 10th European congress of sport psychology, Prague, Czech Republic*.
- Berger, A.S., & Berger J. (1991). *The encyclopaedia of parapsychology and psychical research*. New York: Paragon House.
- Bloom, B.S. (1985). *Developing talent in the young*. New York: Ballantine Books.
- Bloom, G. (2002). Role of the elite coach in the development of talent. In J. M. Silva & D. E. Stevens (Eds.), *Psychological foundations of sport*, (pp. 466-483). Allyn & Bacon.
- Bompa, T. O. (1985). Talent Identification. *Science periodical on research and technology in sport* (February). Ottawa: Coaching Association of Canada.
- Broughton, R. S. (1991). *Parapsychology: The controversial science*. New York: Ballantine Books.
- Brown, J. (2002). *Sports talent*. How to identify and develop outstanding athletes. Human Kinetics.
- Bulgakova, N. S., & Voroncov, A. R. (1978). How to predict talent in swimmers using longitudinal studies. *Teoriza y practika*, 7, 37-40.
- Burrell, B., & Morgan, G. (1979). *Sociological paradigms and organisational analysis*. Heinemann: United Kingdom.
- Carlson, R. C. (1988). The socialization of elite tennis players in Sweden. An analysis of the players' backgrounds and development. *Sociology of sport journal*, 5, 241 – 256.
- Carlson, R. C. (1997). In search of the expert sport performance. *Science in the Olympic sport*, 1, 1 – 13.
- Chambers (1993). *The Chambers dictionary*. Edinburgh: W & R Chambers.
- Chambliss, D. F. (1989). The mundanity of excellence: An ethnographic report on stratification and Olympic swimmers. *Sociological theory*, 7, 70-86.
- Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of qualitative research (2nd ed.)*, (pp. 509-536). Sage publications.
- Charness, N. (1998). Explaining exceptional performance: Constituent abilities and touchstone phenomena. *Behavioural and brain sciences*, 21, 410-411.
- Colangelo, N., & Davis, G. A. (Eds.), (2003). *Handbook of gifted education, 3rd ed.* (pp. 60-74). Boston: Allyn and Bacon.

- Cohn, S. J. (1977). *A model for a pluralistic view of giftedness and talent*. Unpublished paper prepared for the United States Office of Education.
- Cohn, S. J. (1981). What is giftedness? A multidimensional approach. In A.H. Kramer (Ed.), *Gifted children: Challenging their potential* (pp.33-45). New York: Trillium Press.
- Côté, J. (1999). The influence of the family in development of talent in sport. *The sport psychologist, 13*, 395-417.
- Côté, J. (2002). Coach and peer influence on children's development through sport. In J. M. Silva & D. E. Stevens (Eds.), *Psychological foundations of sport* (pp. 520-540). Allyn & Bacon.
- Côté, J., Baker, J., & Abernethy, B. (2003). From play to practice: A developmental framework for the acquisition of expertise in team sports. . In J. L. Starkes & K. A. Ericsson (Eds.), *Expert performance in sports* (pp. 89-115). Human Kinetics.
- Côté, J., & Hay, J. (2002). Children's involvement in sport: A developmental perspective. In J. M. Silva & D. E. Stevens (Eds.), *Psychological foundations of sport* (pp. 484-502). Allyn & Bacon.
- Côté, J., & Hay, J. (2002). Family influences on youth sport performance and participation. In J. M. Silva & D. E. Stevens (Eds.), *Psychological foundations of sport* (pp. 503-519). Allyn & Bacon.
- Côté, J., Salmela, J., Trudel, P., Baria, A., & Russell, S. (1995). The coaching model: a grounded assessment of expert gymnastics coaches' knowledge. *Journal of sport & exercise psychology, 16*, 1-17.
- Csikszentmihalyi, M., & Robinson, R. E., (1986). Culture, time and development of talent. In R. J. Stenberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 264-284). New York: Cambridge University Press.
- Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success and failure*. New York: Cambridge University Press.
- Dale, G. A., (1996). Existential phenomenology: emphasizing the experience of the athlete in sport psychology research. *The sport psychologist, 10*, 307-321
- Dale, G. A., (2000). Distractions and coping strategies of elite decathletes during their most memorable performances. *The sport psychologist, 14*, (1), 17-41.
- Denzin, N. K., & Lincoln, Y. S. (2000). *Handbook of qualitative research (2nd ed.)*. Sage publications.

- Detterman, D. K., Gabriel, L. T., & Ruthsatz, J. M. (1998). Absurd environmentalism. *Behavioural and brain sciences*, 21, 411-412.
- Donnelly, P., & Young, K. (1988). The construction and confirmation of identity in sports subcultures. *Sociology of sport journal*, 5, 223 – 240.
- Duncan, J. (1997). Focus group interviews with elite young athletes, coaches and parents. In J. Kremer, K. Trew, & S. Ogle. *Young people's involvement in sport*. Routledge: London & New York.
- Durand – Bush, N., & Salmela, J. H., (2001). The development of talent in sport. In R. N. Singer, H. A. Hausenblas & C. M. Janelle. *Handbook of sport psychology* (pp. 269-289). Wiley (New York).
- Eisenberger, R. (1998). Achievement: The importance of industriousness. *Behavioural and brain sciences*, 21, 412-413.
- Ericsson, K. A. (2003). Development of elite performance and deliberate practice: An update from the perspective of the expert performance approach. . In J. L. Starkes & K. A. Ericsson (Eds.), *Expert performance in sports* (pp. 49-85). Human Kinetics.
- Ericsson, K. A., & Charness, N. (1994). Expert performance: Its structure and acquisition. *American psychologist*, 49, 725-747.
- Ericsson, K. A., & Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological review*, 100, 363-406.
- Ericsson, K. A., & Lehmann, A. C. (1996). Expert & exceptional performance: Evidence of maximal adaptation to task constraints. *Annual review of psychology*, 47, 273-305.
- Feldman, D. H., & Katzir, T. (1998). Natural talents: An argument for the extremes. *Behavioural and brain sciences*, 21, 414.
- Freeman, J. (1998). Inborn talent exists. *Behavioural and brain sciences*, 21, 415.
- Foster, W. (1981). Leadership: A conceptual framework for recognising and educating. *Gifted child quarterly*, 25, 17-25.
- Gagné, F. (1985). Giftedness and Talent: Re-examining a Re-examination of the Definitions. *Gifted child quarterly*, 1985, 29, 103-112.
- Gagné, F. (1993). Constructs and models pertaining to exceptional human abilities. In K. A. Heller, F. J. Mönks, & A. H. Passow (Eds.), *International handbook of research and development of giftedness and talent* (pp. 63-85). Oxford: Pergamon press.
- Gagné, F. (1995). From giftedness to talent: a developmental model and its impact on the language of the field. *Roepers review*, 18, 2, 103-111.

- Gagné, F. (1999). The multigifts of multitalented individuals. In S. Cline & K. T. Hegeman (Eds.), *Gifted education in the twenty-first century: Issues and concerns* (pp. 17-45). Delray Beach, FL: Winslow Press.
- Gagné, F. (1996). *A thoughtful look at talent development*.
www.coeunt.edu/gifted/resources/Gagné.htm.
- Gagné, F. (2000). Understanding the complete choreography of talent development through DMGT – Based Analysis. In K. A. Heller (Ed.), *International handbook of giftedness and talent, 2nd ed.*, (pp. 67-79). Elsevier Science Ltd. Oxford U.K.
- Gagné, F. (2003). Transforming gifts into talents: The DMGT as a developmental theory. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education, 3rd ed.* (pp. 60-74). Boston: Allyn and Bacon.
- Gagné, F., Motard, D., & Bélanger, J. (1991). Popular conceptions of the differential characteristics and prevalence of gifted and talented persons. Paper presented at 9th *World conference on gifted and talented children*, held in August in the Hague, Netherlands.
- Gagné, F., Neveu, F., Simard, L., & St. Peré, F. (1996). How a search for multitalented individuals challenged the concept itself. *Gifted and talented international, 11*, 4-10.
- Gallagher, J. J. (1979). Issues in education for the gifted, In A.H. Passow (Ed.), *The gifted and the talented: Their education and development* (78th Yearbook of the National Society for the Study of Education, Part I) (pp. 28-44). Chicago: University of Chicago Press.
- Galton, F. (1979). *Heredity genius: an inquiry into its laws and consequences*. London: Julian Friedman Publishers. (Originally published in 1869).
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Geron, E. (1978). Psychological assessment of sport giftedness. In U. Simri (Ed.), *Proceedings of the international symposium on psychological assessment in sport* (pp 216-231). Netyana. Israel: Wingate Institute for Physical Education and Sport.
- Gill, D. L., Gross, J. B., & Huddleston, S. (1983). Participation motivation in youth sports. *International journal of sport psychology, 14*, 1-14.
- Gimbel, B. (1976). Possibilities and problems in sports talent detection research. *Leistungssport, 6*, 159-167.

- Giorgi, A. (1971). A phenomenological approach to the problem of meaning and serial learning. In A. Giorgi et al. (Eds.), *Duquesne studies in phenomenology* (pp. 88-100). Pittsburgh, PA: Duquesne University Press.
- Gould, D., Eklund, R., C., & Jackson, S., A. (1992). 1988 U.S. Olympic wrestling excellence: I. Mental preparation, precompetitive cognition, and affect. *The sport psychologist, 6*, 358-382.
- Gould, D., & Petlichkoff, L. (1988). Participation motivation and attrition in young athletes. In F. L. Smoll, R. A. Magill, & M. J. Ash (Eds.). *Children in sport* (3rd ed., pp. 161-178). Champaign IL: Human Kinetics.
- Greska, L. P. (1988). Effects of altitude on the stature, chest depth, and forced vital capacity of low to high altitude migrant children of European ancestry. *Human biology, 60*, 23-32.
- Gulbin, J. (2001). From novice to national champion: perspectives from the Milo talent search program. *Sports coach, 24*, 1, 24-25.
- Gustin, W.C. (1985). The development of exceptional research mathematicians. In B. Bloom, *Developing talent in young people*, (pp. 270-347). New York: Ballantine.
- Hanson, T., & Newburg, D. (1992). Naturalistic inquiry as a paradigm for doing applied performance enhancement research. *Contemporary thought on performance enhancement, 1*, (1), 26-48,
- Harre, D. (1982). *Trainingslebre*. Berlin, Germany: Sportverlag
- Havilcek, I., Komadel, I., Komarik, E., & Simkova, N., (1982, June). *Principles of the selection of youth talented in sport*. Paper presented at the International Conference on the Selection and Preparation of Sport Talent. Bratislava. Czechoslovakia.
- Hatano, G. (1998). Might we adopt the learning-related account instead of the talent account? *Behavioural and brain sciences, 21*, 416-417.
- Heilbrun, A. B. (1966). Testing for potentialities. In H.A. Otto (Ed.), *Explorations in potentialities* (pp 286-292). Springfield, IL: Thomas.
- Heller, K. A. (Ed.) (2000). *International handbook of giftedness and talent* (2nd ed.). Elsevier Science Ltd. Oxford U.K.
- Heller, K. A., & Ziegler, A. (1998). Experience is no improvement over talent. *Behavioural and brain sciences, 21*, 417-418.
- Hellstedt, J. C. (1987). The coach / parent / athlete relationship. *The sport psychologist, 1*, pp. 151-160.

- Hellstedt, J. C. (1995). The invisible players: A family system model. In S.M. Murphy, *Sport psychology interventions* (pp. 117-146). Champaign, IL: Human Kinetics.
- Hohmann, A., & Seidel, I. (2003). Scientific aspects of talent development. *International Journal of sport psychology*, 40, (1), 2003, 9-20.
- Holstein, J. A., & Gubrium, J. F. (1995). *The active interview*. Thousand Oaks, CA: Sage.
- Howald, H. (1982). Training-induced morphological and functional changes in skeletal muscle. *International journal of sports medicine*, 3, 1-12.
- Howe, M. J. A., Davidson, J. W., & Sloboda, J. A., (1998). Innate talents: Reality or myth? *Behavioural and brain sciences*, 21, 399-442.
- Hyllegard, R., Radlo, S. J. & Early, D. (2001). Attribution of athletic expertise by collegiate coaches. *Perceptual and motor skills*, 92, 192-207.
- Jackson, S. (1992). Athletes in flow: A qualitative investigation of flow states in elite figure skaters. *Journal of applied sport psychology*, 4 (2), 161-181.
- Jackson, S., & Csikszentmihalyi, M., (1999). *Flow in sports*. Human Kinetics.
- Jancarik, A., & Salmela, J. H. (1987). Longitudinal changes in physical, organic and perceptual factors in Canadian elite male gymnasts. In B. Petiot, J. H. Salmela, & T. B. Hoshizaki (Eds.), *World identification systems for gymnastic talent* (pp. 151-159), Montreal, Canada: Sport Psyche Editions.
- Janesick, V. J. (2000). The choreography of qualitative research design: minuets, improvisations, and crystallization. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research*. Sage publications, Inc.
- Jones, R. L., Armour, K. M., & Pontrac, P. (2003). Constructing expert knowledge: A case study of a top-level professional soccer coach. *Sport, education and society*, 8, 2, 213-229.
- Jones, M. B., & Watson, G. G. (1997). Psychological factors in the prediction of athletic performance. In I. Simri (Ed.), *Proceedings of the international symposium on psychological assessment in sport* (pp. 89-102). Netyana. Israel: Wingate Institute for Physical Education and Sport.
- Kalinowski, A.,G. (1985). The development of Olympic swimmers. In B. Bloom, *Developing talent in young people* (pp. 139-192). New York: Ballantine.
- Kerr, R., Dainty, D., Booth, M., Gaboriault, G., & McGavern, R. (1979). Talent identification for competitive diving. In P. Klavora & K. A. W. Wipper (Eds.), *Psychological and*

- sociological factors in sport* (pp. 270-276). Toronto: University of Toronto, School of Physical and Health Education.
- Kerry D. S., & Armour, K. M. (2000). Sport sciences and the promise of phenomenology: philosophy, method, and insight. *Quest*, 52, 1-17.
- Kozel, J. (1996). Talent identification and development in Germany. *Coaching focus*, 31, 5-6.
- Kuhl, J., & Beckmann, J. (1985). *Action control: from cognition to behaviour*. New York: Springer-Verlag.
- Lehmann, A. C. (1998). Historical increases in expert performance suggest large possibilities for improvement of performance without implicating innate capacities. *Behavioural and brain sciences*, 21, 419-420.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage Publishing.
- Lloyd, B. (1995). Blinded by Science. *Inside Sport*, March 1995.
- Lyle, J. (2002). *Sports coaching concepts. A framework for coaches' behaviour*. Routledge. London & New York.
- Malina, R. M. (1997). Talent identification and selection in sport. *Spotlight on youth sports*, 20 (1), 1-3.
- Marland, S. P. (1972). *Education of the gifted and talented: report to the congress of the United States by the U.S. commissioner of education*. Washington, DC: U.S. government printing office.
- Maykut, P., & Morehouse, R. (1994). *Beginning qualitative research: A philosophic and practical guide*. London: The Falmer Press.
- Merleau-Ponty, M. (1962). *The phenomenology of perception* (Colin Smith, Trans.). London: Routledge and Kegan Paul.
- McCracken, G. (1988). *The long interview*. Beverly Hills, CA: Sage.
- Miles, M., & Huberman, M. (1984). *Qualitative data analysis: A source book of new methods*. Beverly Hills, CA: Sage.
- Mocker, K. (1987). The talent problem in sports. *International journal of sports medicine*, 8, 415-416
- Monsaas, J.A. (1985). Learning to be a world class tennis player. In B. S. Bloom (Ed.). *Developing talent in young people* (pp. 211-269). New York: Ballantine Books.
- Montpetit, R., & Cazorla, G. (1982) La détection du talent en notation. *La revue de l'entraîneur*, 5, 26-37.

- OFSTED, (2001). *Providing for gifted and talented pupils: an evaluation of excellence in cities and other grant-funded programmes*. www.ofsted.gov.uk
- Orlick, T. D., Hansen, H., Reed, A., & O'Hara, T. (1979). Psychological attributes and on-ice indicators of high calibre hockey players. In J. Terauds & H. J. Gros (Eds.), *Science in skiing, skating and hockey: Proceedings of the international congress of sports sciences* (pp. 151-157). Del Mar, CA: Academic publishers.
- Parsons, J. E., Adler, T. F., & Kaczala, C. M. (1982). Socialization of achievement attitudes and beliefs: Parental influence. *Child Development*, 53, 310-321.
- Polkinghorne, D. (1989). Phenomenological research methods. In R. Valling & S. Halling (Eds.), *Existential phenomenological perspectives in psychology: Exploring the breadth of human experience* (pp. 41-60). New York and London: Penum Press.
- Plomin, R., & McClearn, G. E. (1993). *Nature, nurture, and psychology*. Washington, DC: American Psychological Association.
- Plomin, R. (1998). Genetic influence and cognitive abilities. *Behavioural and brain sciences*, 21, 420-421.
- Prescott, J. (1996). Talent identification and development in female gymnastics. *Coaching focus*, 31, 12-13.
- Régnier, G., & Salmela, J. H., Alain, C. (1982). Strategie für Bestimmung und Entdeckung von Talenten im Sport. *Leistungssport*, 12, 431-440.
- Régnier, G., & Salmela, J. H. (1983). Détection du talent au baseball. (Talent detection in baseball). *Revue de l'entraîneur*, 6, 13 – 20.
- Régnier, G., (1987). *A conceptual model of talent detection*. Unpublished doctoral dissertation. University of Montreal.
- Régnier, G., & Salmela, J. H. (1987). Predictors of success in Canadian male gymnasts. In B. Petiot, J. H. Salmela, & T. B. Hoshizki (Eds.), *World identification systems for gymnastic talent* (pp. 143-150). Montreal, Canada: Sport Psyche Editions.
- Régnier, G., & Salmela, J. H., & Russell, S. J. (1993). Talent detection and development in sport. In R. N. Singer, M. Murphey, & I. K. Tennant (Eds.), *Handbook of research in sport psychology* (pp. 290-313). New York: Macmillan.
- Renzulli, J. S. (1979). *What makes giftedness: A re-examination of the definition of the gifted and talented*. Ventura, CA: Ventura County Superintendent of Schools Office.
- Rost, R. (1987). *Athletics and the heart*. (T.J. Dekornfeld, Trans.). Chicago: Year Book Medical.

- Rowan, J. (1981). A dialectical paradigm for research. In P. Reason & J. Rowan (Eds.), *Human inquiry* (pp. 93-112). New York: Wiley.
- Rowe, D. C. (1994). *The limits of family influences: genes, experience, and behaviour*. New York: Guildford Press.
- Rowe, D. C. (1998). Talent scouts, not practice scouts: Talents are real. *Behavioural and brain sciences*, 21, 421-422.
- Richert, S. E., Alvino, J. J., & McDowell, R. C. (1982). *National report on identification*. Sewell, NJ: Educational Improvement Center-South.
- Richter, M. (1997). *The case study of a family of three elite swimmers*. Unpublished undergraduate thesis, Brook University, St. Catherine's, Ontario, Canada.
- Rubin, H. J., & Rubin, I. S. (1995). *Qualitative interviewing: The art of hearing data*. Thousand Oaks, CA: Sage.
- Salmela, J. H., & Moraes, L. C. (2003). Development of expertise: The role of coaching, families, and cultural contexts. In J. L. Starkes & K. A. Ericsson (Eds.), *Expert performance in sports*. (pp. 275-295). Human Kinetics.
- Salmela, J. H., Régnier, G., & Proteau, L. (1987). Behavioural analysis of the determinants of gymnastics performance. In B. Petiot, J. H. Salmela, & T. B. Hoshizki (Eds.), *World identification systems for gymnastic talent* (pp. 126-142). Montreal, Canada: Sport Psyche Editions.
- Salmela, J. H., & Régnier, G. (1983, October). A model for sport talent detection. *Science Periodicals on research and technology in sport*. Ottawa: Coaching Association of Canada.
- Salmons, S., & Henriksson, J. (1981). The adaptive response of skeletal muscle to increased use. *Muscle nerve*, 4, 2, 94-105.
- Scheinfeld, A. (1939). *You and heredity*. New York: Stokes.
- Schneider, W. (1998). Innate talent or deliberate practice as determinants of exceptional performance: Are we asking the right questions? *Behavioural and brain sciences*, 21, 423-424.
- Schutz, A. (1972). *The phenomenology of the social world*. London: Heinemann.
- Seale, C. (1999). *The quality of qualitative research*. Sage publications.
- Seidman, I. (1998). *Interviewing as qualitative research* 2nd ed. Teachers college press.
- Simon, H. A., & Chase, W.G. (1973). Skill in chess. *American scientist*, 61, 394-403.

- Simonton, D. K. (1998). Defining and finding talent: Data and a multiplicative model? *Behavioural and brain sciences*, 21, 424-425.
- Singer, R. N., & Janelle, C. M. (1999). Determining sport expertise: From genes to supremes. *International Journal of sport psychology*, 30, 117-150.
- Sloboda, J. A., & Howe, M. J. A. (1991). Biographical precursors of musical excellence: An interview study. *Psychology of music*, 19, 3-21.
- Sloan, L. A. (1985). Phases of learning. In B. S. Bloom (Ed.), *Developing talent in young people*. New York: Ballantine.
- Sosniak, L. A. (1985). Learning to be a concert pianist. In B.S. Bloom (Ed.), *Developing talent in young people* (pp. 19-67). New York: Ballantine Books.
- Sparkes, A. C. (1992). *Research in physical education and sport: Exploring alternative visions*. London: Falmer.
- Stake, R. E. (1995). *The art of case study research*. Sage publications.
- Stake, R. E. (2000). Case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research 2nd ed.* (pp. 435-454). Sage publications.
- Starkes, J. L. & Ericsson, K. A. (2003). *Expert performance in sports*. Human Kinetics.
- Starkes, J., & Helsen, W. (1998). Practice, practice, practice – is that all it takes? *Behavioural and brain sciences*, 21, 425.
- Sternberg, R. J., & Davidson, J. E. (1986). *Conceptions of giftedness*. Cambridge university press.
- Stevenson, G. L. (1990). The early careers of international athletes. *Sociology of sport journal*, 7, 238-253.
- Strean, W.B., (1998). Possibilities for qualitative research in sport psychology. *The sport psychologist*, 12, 333-345.
- Tannenbaum, A. J. (1983). *Gifted children: Psychological and educational perspectives*. New York: Macmillan.
- Tesch-Römer, C. (1998). Attributed talent is a powerful myth. *Behavioural and brain sciences*, 21, 427.
- Thibault, J. W., & Kelly, H. H. (1959). *The social psychology of groups*. New York: Wiley.
- Thomas, K. T., & Thomas, J. R. (1999). What squirrels in the trees predict about expert athletes. *International journal of sport psychology*, 30, 221 – 234.
- Trehub S. E., & Schellenberg, E. G. (1998). Cultural determinism is no better than biological determinism. *Behavioural and brain sciences*, 21, 427.

- Torrance, E.P. (1980). Extending the identification of giftedness: Other talents, minority and handicapped groups. In National/State Leadership Training Institute on the Gifted and Talented (Ed.), *Educating the preschool/primary gifted and talented* (pp. 43-58). Ventura, CA: Ventura County Superintendent of Schools Office.
- Ulmer, H. V., (1987). The talent problem in sports. *International journal of sports medicine*, 8, 415-416
- UK's Youth Sports Trust, (2003). *NTFFS gifted and talented pupils policy*.
www.youthsporttrust.org/talentradder/talentradder_2003/gifted_policy.html
- Vitouch, O. (1998). The rage to drink, or: Frontiers of expertise. *Behavioural and brain sciences*, 21, 428-429.
- Wallingford, R. (1975). Long distance running. In A.W. Taylor & F. Landry, *The scientific aspects of sport training*, (pp. 118-130). Springfield, IL: Charles C. Thomas.
- Walters, J., & Gardner, H. (1986). The crystallising experience: discovering an intellectual gift. In R. Sternberg & J. Davidson (Ed.), *Concepts of giftedness*, (pp. 306-331).
- Webster, D., (1970), *Webster's new world dictionary* (College ed.). Toronto: Nelson, Foster & Scott.
- Wessinger, N. P. (1994). "I hit a home run!" The lived meaning of scoring in games in physical education. *Quest*, 46, 425-439.
- Whitson, D. (1976). Method in sport sociology: The potential of a phenomenological contribution. *International review of sport sociology*, 11, 53-68.
- Williams, C. (1990). Metabolic aspects of exercise. In T. Reilly, N. Secher, P. Suell, & C. Williams (Eds.), *Physiology of sports* (pp. 3-40). London: E. & F.N. Spon.
- Williams, A. M., & Reilly, T. (2000). Talent identification and development in soccer. *Journal of sports sciences*, 18, 657-667.
- Wolcott, H. F. (1990). On seeking – and rejecting – validity in qualitative research. In E.W. Eisner & A. Peshkin (Eds.), *Qualitative inquiry in education: The continuing debate* (pp. 121-152). New York: Teachers College Press.
- Zohar, A. H. (1998). Individual differences in some special abilities are genetically influenced. *Behavioural and brain sciences*, 21, 431-432.

Articles under Review

Tranckle, P. A., & Cushion, C. (2004). Rethinking giftedness and talent.

Tranckle, P. A., & Cushion, C. (2005). What is talent anyway?

APPENDIX 1

Noah's case study. Noah is a 16 year old international level trampolinist. The participants involved in revealing how his gifts were discovered and developed included: Sandra, his current coach, his gymnastics coach Carl from his time with the Pegasus club and Noah. My prior knowledge of Noah was also informed by Aaron and Colette, two of my assistant coaches, who had trained with him at Pegasus and Eastlake respectively. The design of the case study was adapted by involving Carl to gain an earlier perspective of Noah's development. As it was not possible to interview Noah's parents, the inclusion of Carl made the perspectives of another adult all the more valuable.

Sandra had nominated Noah for an interview because of the powerful first impression his gifts had made upon her when they met. Noah identified Carl during his interview as his first 'proper' coach.

I had prior knowledge of all of the participants which helped me to gain access and establish a rapport within the interviews (Seidman, 1998; also see figure 4). My familiarity with Eastlake proved useful as I had known of Sandra's reputation ever since I was a 10 year old trampolinist. Throughout my sport science studies, Sandra had participated in or assisted with my projects. In his capacity as head teacher of a primary school, Carl had also assisted with one of my earlier projects. Although I had never met Noah before the interview, I coached in the same hall that he trained in; therefore, we knew each other by sight. I had heard of his reputation as a gifted individual from Aaron and Colette prior to my interview with Sandra. Aaron had trained with Noah at Pegasus, but had not rated his ability as particularly high within the squad. Colette, a trampoline coach and Olympic level trampolinist had seen a very different side to him. She had told me how Noah had demonstrated exceptional aptitude on a trampoline and had remarked on how far she thought he would go. Colette and Aaron had informed my knowledge of Noah long before the design of this study. These impressions of Noah proved valuable when interviewing Sandra and Carl, supporting and helping me understand their assessments of Noah.

Corey's case study. Corey is a 15 year old international level tumbler. There were a number of participants involved in revealing how his gifts were discovered and developed within the gymnastics disciplines of team gym, sports aerobics and tumbling. These included: Mary, who was his first coach at Bloomfield gymnastics club; Carl his coach at Pegasus gymnastics club; his current coach Alison; his mother Vanessa and Corey. The design of the

APPENDIX 1

case study was adapted to include three coaches because of the significant role they had each played and because they had all recognised his giftedness at an early stage. In addition, my prior knowledge of Corey had been informed by Aaron, who used to train with him at Pegasus and now coached with me.

Corey's case study was discovered by accident (see figure 4). Whilst interviewing Carl about Noah, his attention frequently turned to Corey, as the most gifted gymnast he had ever worked with. The case was not pursued at the time as Carl had lost contact with Pegasus and Corey. After a few weeks, Sandra asked how I was getting on with finding participants and suggested I approach Alison as the head coach of Pegasus. Alison had had a long and successful career coaching women's artistic gymnastics, but surprisingly when interviewed, the only gymnast she wanted to talk about was Corey. Alison introduced me to Corey and an interview was set up with him and then his mother. It was the interview with Corey that identified Mary as his first coach.

Aaron had told me about his years at Pegasus, his coach Carl and had sporadically pointed out some of the other boys he used to train with in gymnastics magazines and when we were at competitions. Among these boys were; Daniel, now part of the national championship team in team gym; Noah, who had become an international trampolinist; and Corey, who had gained national titles in three disciplines of gymnastics. In addition to these talented individuals, I personally considered Aaron to have extraordinary sensorimotor gifts and his story is told elsewhere (see pp.82). Given the collective giftedness and talent within the old Pegasus boy's squad I could understand how Carl was not as impressed with Noah as Sandra had been. In addition to interviewing Carl for his perspective of Noah, I was also interested to see if he had recognised the gifts of the boys he used to coach. Carl's assessment of their aptitudes justified his inclusion in the study for spotting giftedness as his disassociation with the sport meant that he was unaware of how far they had progressed.

My prior knowledge of Alison was gained through Aaron as well as casual encounters with her in her capacity as head coach of the local gymnastics club. Therefore, I knew of Alison, but she did not really know me. As for Corey, even though Carl had told me a great deal about him, I had never met him until Alison introduced us. Likewise, I had never met Vanessa before the interview. However, the biggest surprise was when Corey identified Mary as his first coach as I had been working for Mary for the last three years as a coach at Bloomfield. Mary's inclusion in the study was justified because she had recognised Corey's giftedness, realised that she could not take him any further and had referred him to Pegasus.

APPENDIX 1

Della's case study. Della is a 14 year old international level tumbler. The participants involved in revealing how her gifts were discovered and developed included: her current coach Pat; her mother Donna and Della. The design of the case study was not adapted, following the typical design of interviewing the coach, the gifted individual and a family member.

The talent spotting ability of Della's coach Pat was discovered by accident whilst pursuing Corey's case study. Whilst at the national training centre to meet Corey, I also encountered Pat, who had previously trained me as a gymnastics coach. After telling him what I was studying and that I was looking for Alison, he immediately suggested that I interview Corey. Although Pat was not involved in coaching him, he had noticed how gifted Corey was. As we talked I asked Pat how his gymnasts were progressing. Seven years earlier he had predicted that Della, then aged seven, would go far; she was now an international level tumbler aged 14. This justified Pat's inclusion in the study for his talent spotting abilities. After interviewing Pat, he suggested and arranged an interview with Della and her mother Donna.

I had very little prior knowledge of these participants (see figure 4) apart from knowing Pat as my course tutor from years ago. Della had changed so much in seven years that I did not recognise her but I did remember being very impressed with her skills at age seven, when Pat had used her as a demonstrator in the coach course.

Billy-Joe's case study. Billy-Joe is a 16 year old member of the national team gym championship team. The participants involved in revealing how his gifts were discovered and developed included: his coaches Ben and June from Barnstead gymnastics club; his mother Lucy who works as a teacher; and Billy-Joe. The design of the study included two coaches rather than one because both had recognised Billy-Joe's giftedness and June in particular had known him from age ten.

Ben had initially been approached for an interview because I knew of his involvement in regional squads and that he was currently coaching the national champions in team gym. It was Ben who suggested and arranged for me to interview June, Billy-Joe and Lucy.

Ben had been one of my mentors in gymnastics coaching, which helped to gain access and establish a rapport (see figure 1). Although I had not met June, Billy-Joe or Lucy before the interview, I did have some background knowledge about one of the other members of the

APPENDIX 1

team. Whilst flicking through a gymnastics magazine, Aaron had pointed out Daniel, one of the Barnstead team with Billy-Joe. I then found out that Daniel had been part of the same squad coached by Carl at Pegasus, along with Noah and Corey. Having some prior knowledge of where Daniel's strengths lay (through Aaron and Carl) helped me to appreciate how extraordinary Billy-Joe's abilities were when compared to Daniel.

Kira's case study. Kira is a 22 year old international level trampolinist. There were a number of participants involved in revealing Kira's story. These included; Sandra, Kira's mother and coach, who also trained Noah; Mike, Kira's father; and Kira. Although this case study followed the typical design, the social dynamics of this situation were far more dynamic. Not only was Sandra Kira's coach as well as her mother, but her sisters were also elite trampolinists. Furthermore, Kira's boy friend Jacen, also coached Colette, Kira's team mate and rival. Although Colette was approached for interview based on her own merits as a gifted individual, I felt it would have been imprudent to try and gain her perspective of Kira given the complexity of their relationship, particularly with the pressure of forthcoming international competitions. Even though Sandra had identified a number of gifted individuals during her interview, she never mentioned Kira's sisters. Although Sandra and Kira did not elaborate on the affects of having three international trampolinists in the same family, Mike did. Therefore, I decided not to seek interviews with Kira's sisters as it might have stirred some jealousy and ill feeling between them.

My familiarity with the Eastlake trampoline club meant that I was able to approach the participants and arrange interviews independently (see figure 4). Although I did not know Kira well, we had been on a coaching course together in 1999 and knew each other well enough to say hello. However, my interview with Mike was my first meeting with Kira's father. Kira and Sandra had suggested that Mike would not understand the point of the interview as he was not involved in trampolining. However, the interview proved that Mike did have a very valuable perspective to share.

James' case study. James is a 25 year old athlete, who was an international level archer during his mid to late teens. The participants involved in revealing how his gifts were discovered and developed included; his coach Arthur; his parents, Joy and Jim and James. This case study followed the typical design of interviews with a coach, a gifted individual and their family. However, his parents asked to be interviewed together.

APPENDIX 1

I approached this set of interviews carefully because of my involvement with the participants (see figure 5). Arthur had coached my niece to international level and had recently been recruited by my club to coach the juniors. James and I had been rivals as juniors and as such I knew his parents from competitions. Although my past helped me to make contact and establish a rapport with the participants, I had had no involvement in the discovery of James' giftedness or the development of his talent.

Daryl's case study. Daryl is a 27 year old artist and former international level archer. There were only two participants involved in revealing Daryl's story, namely his coach Albert and Daryl. Interviews with Daryl's family were not pursued as his parents were no longer together, lived a very long distance away and had very little interest in his involvement in sport. Consequently, Albert had become more than a coach to Daryl; he was his mentor as well. It was Albert who convinced Daryl to quit archery to pursue his career as an artist. Albert suggested Daryl for an interview and made the arrangements. Although Daryl had not shot for ten years, he had stayed in regular contact with Albert.

Even though I knew Albert and Daryl enough to say hello, the interviews were our first real meeting (see figure 5). However, due to our duties in archery, Albert and I were aware of each other's reputations within our respective aspects of the sport before our meeting. This set the foundation for mutual respect and the establishment of a rapport within the interviews. Likewise, although Daryl and I rarely competed against each other, we were competing during the same period so we remembered a lot of the same people. This helped us to establish a rapport quickly.

Case study of a talent identification meeting. This case study in trampolining was different from all of the other cases looking at the discovery of gifts. Subsequent to the interview with Sandra, she had invited me to observe a talent identification day at Pegasus gymnastics club. Sandra ran the event with the objective of identifying eight young, gifted individuals to join the "super squad" at Eastlake trampolining club. Sandra was assisted by her two protégé coaches Nigel and Jacen, who would be training the individuals, and Elise, the Pegasus trampolining coach. With their permission I not only observed the session but I also recorded and transcribed the subsequent discussion and decision making process between the coaches.

APPENDIX 2

Postgraduate research into the experiences related to the realisation of talent in sport.

The Research

This research is looking to explore the experiences that various people have had related to the realisation of talent in sport. Whether it is the realisation of their own or someone else's talent, their experience is valuable to explore in order to try and understand why people come to dedicate themselves to the development of their talents.

The Interviews

The interviews will involve recalling experiences in sport, almost like retelling a story. Participants will be given the freedom to reconstruct their experiences in their own time and in their own way. There is no right or wrong to this process, if a participant feels something is relevant then it will be treated as valuable. The researcher will help to get the dialogue started and take an interest in knowing more about some aspects of the experience. Interviews will be tape recorded and transcribed later. It is anticipated that the interviews may last as long as 1 ½ hours, but this largely depends on how comfortable the participant is with talking about their experiences.

The Interviewer

In cases where the participant does not already know the interviewer, it is important to offer as much information as possible so that the participants do not feel that they are talking to a complete stranger. Therefore, the interviewer's CV with referees is attached.

Arranging Interviews

Interviews will usually be arranged by telephone or email. The date, time and venue will be at the convenience of the participant as far as possible. However, the venue is particularly important. A quiet, but public venue is usually ideal, such as a leisure centre or place of business or study where the participants feel comfortable talking. It is important that the venue is somewhere where the participants will not be disturbed or distracted i.e. such as during a coaching session.

Chaperones

All participants are welcome to have a chaperone accompany them if they wish. For children under the age of 16, a chaperone is a requirement. The role of a chaperone will involve being at the interview location, usually for the purposes of following good practice when working with children, or just to accompany a participant at their request. However, in order for the interview to focus on the experiences of the participant, it will be important for the chaperones to distance themselves enough from the interview to allow the participants to talk freely and uninterrupted. For example, an interview may take place in a café with a chaperone sitting at another table (usually reading a book). For chaperones of children who are also their parents, it is appreciated that they will be curious about how their child interprets their sports experiences. However, it is particularly important for the parents to detach themselves from the interview with their children as the researcher will probably need to arrange a follow up interview with the parents at a later date to gain their views.

Agreement

Participants for this study have been selected because of their experiences or view about another person's talents. Sport Sciences can learn a great deal from the involvement of these people. However, it is important that participants realise and understand that their involvement is voluntary and that they may withdraw from the study or even the interview at anytime without having to justify their decision.

For those who agree to share their experiences and views, numerous precautions will be taken to protect their identify, such as using pseudonyms and removing details of specific people and places from the interview transcript. In addition, participants will have the right to review the transcripts and will be offered a copy of the case report for their approval at the end of the study. Sections of the edited transcript and case report may be included in published articles, books or presentations in the future.

Participants must give their written consent to the interviews and to allow the interviewer to use the transcripts in the study. Written permission to use the transcripts in the study will only be sought after the interview, when the participant has been offered the transcripts for their inspection. For children under the age of 16, written consent must be gained from the parents or legal guardians as well as the participant themselves.

Contacting the Researcher

- Peter Tranckle (Researcher/interviewer) on 0118 9733321 (home); 07789 733512 (mobile); ptranckle@aol.com (email); 87 Kiln Ride, Wokingham, Berkshire RG40 3PJ (home address).

Contacting the Researcher's Supervisors

- Department of Sport Sciences at Brunel University on 01895 816340 – ask for Professor Radford (peter.radford@brunel.ac.uk) or Doctor Cushion (christopher.cushion@brunel.ac.uk).

APPENDIX 3
Background Information & Written Consent

Name	
Contact Information e.g. Address, telephone numbers, email.	
Date of Birth	

Involvement in Sport (Dates would be useful if you can remember)

Written Consent to Interview

I have read and understood the purpose of the study as well as what is involved. I consent to participate in a tape-recorded interview with Peter Tranckle at mutually agreed date, time and place.

Signed: _____ Print Name: _____ Date: _____

Parental Consent if under 16 years of age.

I give my consent as parent or legal guardian for _____ to participate in a tape-recorded interview with Peter Tranckle. I also understand that my son / daughter is required to have a chaperone for the interview.

Signed: _____ Print Name: _____ Date: _____

Please return this form in the stamped addressed envelope

in time for it to be received prior to the date of the interview.