Exploring the Impact of Siblings on Talent Development in Sport

By

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Abstract

This thesis aimed to address and inform the gap in current literature around the role of family during talent development in sport, through an exploration of sibling impact. This was achieved through a series of studies with siblings across a range of sports and phases of talent pathways. Chapter 2 highlighted the disproportionate research focus on the role of parents in sport. It also identified Family Systems Theory as an appropriate theoretical lens through which to view future studies. A retrospective study was then conducted to explore the perceptions of athletes and their siblings who went on to achieve elite status across a range of sports, with a view to uncovering whether the sibling relationship had been perceived as beneficial (Chapter 3). Findings illuminated the potential nonlinear nature of the sibling relationship. Accordingly, Chapter 4 employed a longitudinal approach, to further explore the temporal nature of the relationship as it unfolds. This approach highlighted the change in use and importance of mechanisms both within and across sibling sets, as well as highlighting the biopsychosocial impact of the relationship on development. Furthermore, including parents' perceptions of the relationship provided some initial practical considerations for coaches seeking to utilise the sibling relationship for development. Chapter 5 adopted a practice-based investigation exploring twin relationships in talent development, employing observations across a 7-month period through the researcher's involvement as a coach. Thus, highlighting further practical considerations, alongside continued confirmation of the multifaceted, complex and individualised nature of the sibling relationship. Chapter 6 discussed the biopsychosocial developmental role siblings may have, and reinforced the detail provided through examining such a relationship from a Family Systems perspective, before identifying overarching implications for practice. Finally, Chapter 7 summarised the key messages around the impact of siblings on talent development and highlights the need to continue to explore the relationship.

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Peer Reviewed Publications Produced from this Thesis

Taylor, R.D., Carson, H.J., & Collins, D. (in review). Seeing double? A practice-based investigation into twins during sporting talent development. *The Sport Psychologist*.

Taylor, R.D., Carson, H.J., & Collins, D. (2018). The impact of siblings during talent development: A longitudinal examination in sport. *Journal of Applied Sport Psychology, 30*, 272–287.

Taylor, R.D., Collins, D., & Carson, H.J. (2017). Sibling interaction as a facilitator for talent development in sport. *International Journal of Sports Science & Coaching, 12,* 219–230.

Taylor, R.D., & Collins, D. (2015). Reviewing the family unit as a stakeholder in talent development: Is it undervalued? *Quest, 67*, 330–343.

Acknowledgements

Glossary and abbreviations

ERE   Elite Referenced Excellence

FST   Family Systems Theory

IPA   Interpretive Phenomenological Analysis

PCDEs   Psychological Characteristics of Developing Excellence

PJDM   Professional Judgement and Decision Making

NGBs   National Governing Bodies

TD   Talent Development

TI   Talent Identification

TID   Talent Identification and Development

Dizygotic Twin   Non-identical, or fraternal, twins which occur when two (di)

                                    eggs are fertilised (zygotes) and share 50% of each other's

                                    genes.

Monozygotic Twin   Identical twins which occur when one (mono) eggs is fertilised

                                    (zygote), therefore sharing 100% of each other's genes.

Performance Centre   Training centres based across the country providing frequent,

                                    high quality training with the best coaches for U15 and U17

                                    players.

Premiership Academy   The training environment operated by a professional football

                                    club for the development of youth players.

Chapter 1:   Introduction

1.1   The Talent Development Environment

For those athletes committed to achieving elite status in their sport, engagement within a talent development (TD) pathway is an almost unavoidable element of their progress (Button, 2011). Equally, so is their participation within a number of different settings that make up the TD environment. More specifically, these can be categorised as either formal (e.g., adult-led coaching and physical education) or informal (e.g., child-led in playgrounds, gardens, homes) environments (Ford, 2016). Arguably for coaches and support staff alike, the primary goal is to assist athletes along this pathway to achievement by exploiting characteristics of both settings (cf. Martindale & Mortimer, 2011).

Accounting for both the formal and informal contexts which influence this pathway, however, means that coaches' contact with participants only occurs for a fraction of the time. Understanding how best to exploit both, therefore, represents a significant challenge. In contrast to the wealth of literature on training and coaching activities within formal environments (e.g., Andersen, Houlihan, & Ronglan, 2015; Henriksen, Stambulova, & Roessler, 2010), the latter has received much less attention since the emergence of this applied discipline. As such, it is this informal, behind closed doors, setting that this thesis aims to explore as an interaction with the more commonly researched context of formal talent development environments. Consequently, consideration of significant others as a major influence within these environments could be utilised to support TD. One such significant other is the family, with recent exploration highlighting the role they, particularly parents, can play in supporting TD (cf. Knight, 2017).

Notably, TD has begun to be recognised as a complex and nonlinear process, impacted by the interaction of biological, psychological and sociological factors (Bailey et al., 2010). Indeed, this holistic view challenges most TD models that appear to focus on the biological,

and not the interactions between all three domains (e.g., the Long-Term Athlete Development model; Balyi, Way, & Higgs, 2013). Nevertheless, such complexity has been recognised through recent exploration, with practitioners and academics beginning to accept the nonlinear and multifactorial nature of TD through the need to consider the effective use of training and resources on a sport-by-sport, and athlete-by-athlete basis (cf. Ackerman, 2014; Gulbin, Croser, Morley, & Weissensteiner, 2013; Tucker & Collins, 2012).

In fact, such complex interactions necessitate a change in focus on what might be considered to be crucial for expert coaching practice. A change in emphasis from coach behaviour (Martindale & Collins, 2005) to their decision making has been highlighted through the growing use of the "it depends" philosophy (Cruickshank & Collins, 2016, p. 1200) which encourages coaches to consider why they do what they do through a series of reflections (e.g., age/stage of development/time available). Such decision making is necessary when considering the holistic TD environment, and more specifically, in this instance, how coaches can consider the biopsychosocial development of their athletes through the informal environment. Baker, Cobley, and Schorer (2013, p. 5) define TD as an opportunity to "nurture potential through attention to the provision of appropriate training and resources". It is plausible to suggest that examples of such 'resources' are the informal TD environment, which includes the family.

1.2 The Family Role in Talent Development

Knight (2017) recently highlighted the substantial media attention that the role of family within elite sport is currently receiving, with this publicity showcasing high profile examples of both parent–child (e.g., Judy and Andy Murray in tennis) and sibling (e.g., Harry and Hannah Martin in hockey) relationships. Similarly, empirical interest is beginning to grow in academia (e.g., Blazo & Smith, 2018; Côté, 1999; Knight, 2017; Lauer, Gould, Roman, & Pierce, 2010; Wuerth, Lee, & Alfermann, 2004); notably, however, with a

dominant emphasis on the role of parents. From a theoretical perspective, in fact, family, but more specifically parents, are formally identified within many models of TD as having an important role within the process (e.g., Bloom, 1985; Côté, Baker, & Abernethy, 2003; Gagné, 2000). Recent findings suggest that positive parent roles include; fostering motivation, supporting the development of confidence, developing positive attitudes towards sport and enhancing enjoyment, not forgetting the financial and logistical support they provide of course (Holt & Knight, 2014). Specifically, when considering the social environment, the significant influencers on an athlete's involvement in sport, who have direct relationships with the athlete, are the coach, peers and the family (Mills, Butt, Maynard, & Harwood, 2012). However, specifically, through this thesis I will highlight the potential impact of the sibling relationship on the development of athletes beyond the social environment, through considering the biopsychosocial (acknowledging the multifaceted nature of development) impact they can potentially have (Bailey et al., 2010).

From an important practical perspective, Côté (1999) concluded that the existing literature on families and TD offered few suggestions for how parents and siblings should create and sustain a supportive environment for the talented athlete. This indicates, therefore, that a more in-depth examination of the whole (potential) family environment is required. Since Côté's (1999) suggestion, there has been considerable investigation and guidance provided for the positive role that parents can play in this environment, but still there remains little focus on the sibling role. While acknowledging the wider investigations available around siblings in sport, this thesis recognises the relative lack of studies addressing the specific context of TD environments. Accordingly, here I extend this through uncovering how siblings might support TD, so that future work can consider, as Côté (1999) suggests, how we create and sustain appropriate environments for TD. However, it is advisable that such a topic is approached with caution, because, although we know the *right* family

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environment can help TD (Knight, 2017), we must also be aware that the role is complex due to the diversity of the family context (Côté, 1999). Therefore, viewing such complexity through the "it depends" lens introduced above is, again, advisable (Cruickshank & Collins, 2016, p. 1200). In order to explore such complexity, it is crucial that I outline an appropriate philosophical stance through which to do so.

1.3 Philosophical Perspective

In light of Côté's (1999) call for a more in-depth investigation, it is important that I carefully considered my philosophical stance. As an ontological position, relativism implies that there are many interpretations of reality, where truth is considered to be relative to an individual's own interpretation of experiences, and therefore, cannot be deemed true or false (e.g., Brownlee, 2004; Guba, 1990). Such a position requires a sophisticated epistemological standpoint, in order to develop knowledge over time as such beliefs consider truth to be relative, changing and actively constructed by the individual (Schommer, 1994).

Therefore, it was crucial that I identified a suitable epistemology through which to explore the role of siblings in TD. Due to the subject of sibling impact receiving little exploration within the context of TD, and my own values and beliefs, I decided to explore this subject through a constructivist epistemology. Mirroring relativist ontology, constructivism aims to understand and describe human nature, with the acceptance that individuals construct their own reality and, therefore, that there will be multiple interpretations of the subject (e.g., Chilisa & Kawulich, 2012; Cresswell, 2003). Such scope for multiple interpretations highlights the complex and nonlinear nature of evidence that can be illuminated through such a paradigm (cf. Fosnot & Perry, 2005), and compliments the growing evidence around the complexity of TD environments in sport (e.g., Martindale & Collins, 2005), as well as the complex family context (Côté, 1999).

Due to the subjective nature of constructivism, Chilisa and Kawulich (2012) recommend that, consistent with my understanding of the value-laden nature of this study, I should report my axiological stance that may interfere with neutrality. These values and biases appear in both personal and professional form. From a personal perspective, as a junior athlete I was heavily involved in TD pathways in hockey, which was supported by high levels of family involvement. On most weekends the family would be split by this; mum and I away at hockey; dad and my older brother at home. As siblings we were both very sporty, playing badminton and cricket together on and off throughout our childhood and into adulthood. I specialised in hockey and my brother played cricket, rugby and football recreationally. We did a lot of activities together in the garden as well as more structured activities away from the home. When we did play together we took up different roles; cricket, I was a batsman, he was a bowler; badminton; I was finesse, he was power. I definitely developed my ability to play games through playing with and against him and would come out on the losing side regularly when it came to physicality.

From a professional perspective my practice as a coach, and my academic role as a lecturer have exposed me to the complex and nonlinear nature of TD. My research and experience have taken me away from the 'one-size fits all' perspective of coaching and allowed me to begin my development as a 'pracademic' (the moulding together of a practitioner and an academic; Posner, 2009). My Master's thesis was constructed around a study on parents, which paved the way for my interest in family and realisation of the need to consider siblings in more depth. I hope that this brief account highlights the relevance of constructivism to me and my study. My experiences have developed an interest in the role of family, and I do feel my brother had an impact on my development as a hockey player. Alongside that, constructivism aligns with my values and beliefs around the approach to coaching teams, and individuals, in order to maximise development.

As a representation of my development as a 'pracademic', my philosophical standpoint evolved as the empirical elements of the study progressed. Due to the relative lack of research undertaken around siblings within the context of TD, Chapter 3 adopted a cross-sectional, phenomenological approach in order to inductively explore the 'phenomena' (i.e., sibling impact on TD), through the lived experience of siblings. As a theoretical perspective that underpins constructivism, phenomenology provides an opportunity for the basic concepts and ideals of the phenomena to be created, traced back to and epistemologically critiqued (Husserl, 2001). As such, this chapter illuminated novel concepts, as well as highlighting further opportunities for exploration.

In light of the emerging elements of Chapter 3, Chapter 4 reflected a constructivist approach in order to construct a deeper understanding of the relationship across multiple cases (four families), through multiple realities (parents and siblings) and over an extended period of time. Due to its longitudinal study design, such an approach allowed for the development of sophisticated beliefs (i.e., tentative and evolving, rather than certain and unchanging; Schommer, 1994) through prolonged engagement and exploration with multiple sources. Finally, in order to begin creating links between research and practice, Chapter 5 moved away from a relativist viewpoint and adopted a pragmatic approach due to the desire to explore the usefulness of the beliefs uncovered in previous chapters (Butt, 2000), and immerse myself in the environment to experience the practical implications of considering the role of siblings in TD. This allowed me to undertake a more active learning approach (Kivinen & Ristelä, 2003). Therefore, I was able to form appropriate viewpoints for inquiry and action, through operationalising what was found in earlier chapters (Kivinen & Ristelä, 2003). The methodological details of these approaches are highlighted, and explored, within each chapter.

Whilst at this point, the focus is on exemplifying the benefits of such approaches, it is important to acknowledge the inevitable limitations. Due to constructivism's focus on producing thick descriptions of individual experiences and perspectives, it is usually based on small case studies, and this thesis is no exception. Across the three empirical studies a total of 10 sets of siblings are involved, raising concerns about its generalisability (Gray, 2018). However, as Normand (2016, p. 1) suggests, often numbers of cases studied takes precedence over the extent to which each case is studied, leading to us "knowing very little about very many". Therefore, representative samples of an individual case are more important than having a representative sample of a population and aligns more closely to the current considerations in TD (i.e., one size doesn't fit all, and the nature of 'it depends').

As the main instrument of qualitative research across this process, through asking questions, making observations and interpreting responses, I was aware of my influence on the studies. Accordingly, it was important that I maintained a reflexive approach across the research process (Attia & Edge, 2017), and acknowledged my axiological viewpoint in order to understand any potential bias that could impact both the research process and the interpretation of the findings (Chilisa & Kawulich, 2012). In order to minimise this potential bias, I used member checking and critical friends when interpreting and writing up my results (Tracy, 2010). Specific methodological issues are discussed in the relevant chapters.

Finally, in consideration of the need for the research to be ethically sound, approval was granted from the Ethics Committee for Business, Arts, Humanities, and Social Sciences (BAHSS) on 5th March 2015 to carry out with the work intended for Chapters 3 and 4, before completing a second phase amendment for the study in Chapter 5 (see Appendix 1).

1.4   Objectives of the Thesis

In order to address the identified lack of exploration around the role of siblings during TD in sport, the objectives of this thesis were as follows:

1. Critically examine the role of the family in TD, and highlight the need for further exploration of the role of siblings.

2. Identify the characteristics associated with sibling relationships within TD through access to athletes who had successful senior careers.

3. Track characteristics of the sibling relationship within TD across an extended period of time, in order to consider their significance and use, in detail, across families.

4. Consider the practical approach to identifying sibling characteristics, in order to provide possible avenues for coaches when considering this relationship in their TD environment.

5. Provide practical implications when considering the role of siblings in TD and highlight the need to continue studying the relationship within this context.

1.5   How the Story Unfolds

This thesis will explore the potential role of siblings in TD through the progressive approach highlighted above, illuminating a concept within TD that has so far received little exposure; the sibling impact. In doing so, I will undertake a step-by-step deconstruction of the sibling relationship in accordance with the five objectives outlined previously.

In line with Objective 1, Chapter 2 is both a review of the literature in relation to the broader family role in TD, as well as a consideration of the application of Family Systems Theory (FST) in providing a framework for the thesis. The review highlights that up until now much of the exploration around family involvement in elite youth sport has focused on the role of the parent, providing a concise summary of the key messages in relation to this element of the family system. Furthermore, FST is explored, highlighting its worth when considering all elements of the family, and their interactions, with contextualised examples provided to encourage consideration of an elite youth athlete's impact on the family system.

The review concludes by acknowledging the lack of empirical research focused on the role of siblings in TD and encourages the exploration of this through the lens of FST.

Consequently, Chapter 3 begins the process of exploring the sibling impact on TD through FST, which underpins Objective 2. This is achieved through the inclusion of a qualitative study that investigates the role of siblings in TD. Importantly, the study is of a retrospective nature exploring the perceptions of athletes, and their siblings, who went on to achieve elite status across a range of sports. Crucial, at this stage is the need to uncover whether or not athletes *actually* believed their sibling relationships to have been influential (in some form) across their developmental years. Without such consideration, the impact of this thesis on practice would be limited. Chapter 3 illuminates the perceived importance of the sibling role and identifies a number of specific themes through which this impact was apparent. Furthermore, the chapter unveils the potential for such a relationship to be nonlinear in nature; a consistent feature as explained by FST in Chapter 2. From a practical point of view, the chapter introduces the opportunity for coaches to consider the facilitative role siblings may play in TD, alongside that of parents.

Chapter 3 exposed two further considerations. Firstly, that the sibling impact on TD required further study due to the new insights gained when compared to our existing understanding of the parental relationship, and that exposure to those currently involved in a TD pathway would be a rational next step. Secondly, due to the possible nonlinear nature of the relationship, that it would be beneficial to track the relationship longitudinally. Accordingly, Chapter 4 continues with a qualitative approach, with siblings who are both involved in a TD pathway. A longitudinal approach is adopted to track the impact of siblings on TD across a 1-year period, in order to further examine the nonlinear nature of the relationship, in line with Objective 3. The outcomes of this chapter further expose the potential impact of siblings on TD through confirmation of themes identified in the previous

chapter, alongside emerging new themes. It also highlights the personal and complex nature

of the relationship through identifying important differences across families, as well as across

time. In addition, the biopsychosocial nature of the sibling interactions is illuminated. By

including data on parental perceptions in this chapter, further practical considerations are

suggested, with parents accurately reflecting the siblings' perceptions of their relationship

and, therefore, presenting a plausible source to triangulate information.

Chapter 4 concludes by encouraging further exploration taking into consideration

levels of talent and family variables, alongside greater attention towards the practical

implications of including the relationship in the TD environment. With this in mind, Chapter

5, in accordance with Objective 4, presents a practice-based investigation into two sets of

twin relationships during TD, where both twins are in the same TD pathway. As Head Coach

of the performance centre that the twins attend, it was possible to carry out observations of

the twins during practice and competition days, as well as in classroom sessions. Such

observations informed semi-structured interviews with twins and parents to interpret what

was seen. The outcomes of this chapter provide further underpinning of the themes

uncovered through the thesis, as well as the consideration of additional themes. Additionally,

the chapter illuminates the possible impact of twin type on the prominence of several themes

and outlines some initial strategies in order to monitor the sibling relationship within practice.

To conclude, in view of Objective 5, Chapter 6 discusses the key findings from the

thesis, and outlines the possible implications to practice. Whilst Chapter 7 summarises the

thesis, and acknowledges the need to continue to add depth to this sparsely researched

component of the family as a support system for athletes navigating talent pathways.

Chapter 2:   Reviewing the Family Unit as a Stakeholder in Talent Development: Is it

Undervalued?

2.1   Introduction

As highlighted in Chapter 1, the importance of family support systems within the

context of elite performance has been well demonstrated, with family playing a crucial role in

an athlete's continued development to the top of their chosen sport (Pankhurst & Collins,

2013). Indeed, this support is equally just as important if an athlete does *not* make it to the

level they were striving for, as the family can be utilised as a mechanism to help deal with the

set back and encourage continued development at an appropriate level. Such support can also

be crucial to the maintenance of activity across the lifespan, making the family an important

factor in participation as well as performance-focused involvement (Horn & Horn, 2007).

Accordingly, this chapter aims to review how family may play such roles, through the

exploration of current literature around significant others (i.e., parents and siblings) in an

athlete's development.

Significant others are integral to an athlete's social environment and, particularly for

young athletes, family often provides the most important influence of all (Horn & Horn,

2007). Although family is now portrayed within a context of fluid and changeable

relationships, with the boundaries ever changing and expanding (Cowan, 1983), the most

pervasive of family relations predominantly comprises of parents (whether same-sex or

heterosexual) and siblings (Rittenour, Myers, & Brann, 2007). Indeed, Brackenridge (2006)

indicates that, without parental involvement, many young athletes would not be able to

continue their sports participation. In similar fashion, David (2005) comments that, "when

young athletes take sport very seriously and train over two hours a day, it is normal that

parents become closely involved" (p. 215). In short, whether this is through transportation,

financial assistance, relationships with coaches, changing family activities to fit around

competition/training, emotional support or attending these competitions, parents are a key component of their child's development (LeBlanc & Dickson, 2006). In contrast, through labelling a child as gifted (whether in sport or another domain), feelings such as rivalry, envy and discontent are likely to become heightened amongst siblings of lesser talent (Cornel, 1984).

Tied closely to these considerations is FST, which allows us to break down the family to the individual family members themselves, known as the basic elements. Utilising such a framework supports critical understanding of the environment created by the development of an elite athlete within any given unit. Furthermore, all family systems have subsystems, which are likely to become even more apparent with the introduction of an elite youth athlete, due to factors that will be explored later in this chapter. This could see one or both parents develop an alliance with the athlete, providing support in a way that other subsystems would not. When Côté (1999, p. 407) conducted a study on athletes in the specialisation phase (where athletes reduce involvement in several sports, and begin to focus on one or two: Côté, 1999) of their sport involvement he reported that, "one or both parents became more involved in their child-athlete's sport during the specialisation years". Furthermore, this commitment to the sport can often lead to the uneven distribution of family resources (Côté & Hay, 2002), potentially causing other elements within the system to become, or at least feel, marginalised. In short, it seems that the family has a considerable potential to help or hinder (or maybe even both) the progress of a young talented performer.

Research in talent identification and development (TID) has only recently started to consider the family as an important factor. In order to provide clarity, I surmise that talent identification (TI) and TD are inextricably linked as a two-part process and that TI precedes TD. TI can be described as the process of recognising athletes who have the potential to excel in a sport (Wiseman., Bracken, Horton, & Weir, 2014), before undertaking TD which I

defined in the introduction as the most appropriate environment to accelerate learning and performance (Abbott & Collins, 2004). In a recent review, for example, Pankhurst and Collins (2013) highlighted that TID is crucially underpinned by five constructs; sport specialisation and selection, practice, athlete development, junior and adult success and the stakeholders in the sport system. For the purposes of this chapter, and thesis, we will be focusing on the fifth construct; the stakeholders. In the present context, this clearly encompasses the impact which parents and, more widely, the family has on development and performance. For us as researchers in TID it raises the question; 'What can we do to help?'

Against this common acknowledgement of importance, however, there seems to be a lack of well-informed opinion. Roberts (2012, p. 24), commenting on motivation in sport and exercise, concluded that:

> The big gap in the literature that needs to be closed is the effect of the way that parents parent! We have almost no information on the influence of the criteria of success and failure that parents impose on their children within the sport experience.

With this in mind, I propose a need to conduct empirical research in order to contribute to current literature, but, as importantly, to more explicitly link theory to practice. Clearly, there is a prerequisite for National Governing Bodies (NGBs) and other sporting organisations to recognise the impact which family has on elite youth sport participation, and encourage, educate and support such involvement. As Lindstrom Bremer (2012, p. 236) explains "with all the pressure surrounding youth sport it is researchers' responsibility to provide guidance for those involved in youth sport".

Accordingly, this chapter has three objectives; to review the main issues raised when considering the family and elite sport, to underpin these issues with the identification of the key theoretical perspectives the family elicits, and to contextualise where we are in relation to knowledge within this complex area, and where we can go from here. This is specifically

tied into what I perceive to be the most relevant theory, FST. Conclusions are finally offered, based around the discussion of these key issues and concepts in order to inform future direction.

2.2 Family Issues

As suggested earlier, family issues in sport are an area that has been relatively neglected in the academic world, although growing, with many researchers calling for the need for growth within this field. With this in mind, I conducted a search for journals and book chapters, using the phrases 'family issues' and 'sport', covering the last 30 years. These topics provided the frame for the review and were seen as face valid constructs of direct relevance to the topic of interest.

2.2.1 What the Literature Tells Us

Babkes and Weiss (1999) suggest that more research is needed in order to better understand the impact parents have on their child's experience, while McHale, Updegraff, and Whiteman (2012) conducted an expansive search of psychological and sociological abstracts, using the idiom 'Sibling and relation or relationship' where only a mere 741 citations were reported. This reinforces the stipulation that family is an area of TID that has been somewhat neglected. This section draws our attention to what the current literature does reveal about familial relations and their impact upon the development of one or more elite youth athletes within the family dynamic.

2.2.1.1 The key issues explored. Kay (2000) highlighted that there is currently a fundamental shift in the concept of family life, with men and women developing new expectations about their adult roles, and more importantly the contributions male and female parents make to family life. The complexity of the family was highlighted in the introduction, and therefore, redrawing family boundaries is becoming common practice with the definitions of social relationships continually changing (Cheal, 2002). The concept that

family is a structure that fulfils a function is, therefore, becoming more accepted (Cheal, 2002). Such social relationships include that of the father's role within family. Work by Jeanes and Magee (2011), and Kay (2009) discuss the change in the role of the father within the family and, more specifically, within the sport domain. They conclude that, as the family landscape changes, fathers are seeing sport as an opportunity to bond with their child/children and recognise the potential pressures this may put on the relationship. Notably, however, this has coincided with a shift towards dual employment. The increase in 'career couples' is placing pressure on parental relationships through both males and females being well-qualified, and pursuing 'careers' rather than 'jobs' (Gatrell, 2005). Additionally, 'work-life balance' issues, the 'long-hours culture' and the different ways that parents manage their family and employment responsibilities have also assumed greater prominence (Utting & Pugh, 2004).

These factors have an exceptional relevance to the development of talented young athletes, as the family plays such a pivotal role in this process. Family life could be strongly influenced, and even completely driven, by the schedule and cost implications of having a gifted athlete within the family (cf. Kirk et al., 1997). The presence of such an athlete impacts on the role of the parents, as they are particularly important in the context of elite youth sport, through the provision of support enabling their children to participate and progress (Horn & Horn, 2007; Wuerth et al., 2004). Indeed, this has seen some parents opting to change their working day or even employment area in order to facilitate an elite athlete. Options to work shorter days, jobs that allow flexible working patterns and refusing promotion allows parents to keep themselves available in order to transport to and from, and attend their children's training sessions and competitions (Côté, 1999; Harwood & Knight, 2009; Lauer et al., 2010). Some families take this even further with one parent remaining in

full time employment, while the other can stay at home and provide the necessary support and transport, for the athlete, at all times (Côté, 1999; Wolfenden & Holt, 2005).

All of this can have financial implications on families, which has seen parents restrict their own social lives in order to provide the necessary financial support for their young athlete (Harwood & Knight, 2009; Wolfenden & Holt, 2005). These demands are likely to increase as the child reaches higher levels of performance and gets older. A study conducted by Rowley (1992) uncovered that the costs of supporting a 12-year-old swimmer more than doubled by the time they reached 14 years old, indicating how financial costs can rise disproportionately and even, perhaps, insidiously in the pursuit of higher levels of performance. Family routines may also become disrupted with the presence of an elite athlete; holidays may be re-organised and even cancelled to allow minimal interference with sporting schedules (Côté, 1999; Morgan & Giacobbi, 2006). Family meal times often become replaced with quick and easy meals sometimes being consumed on the way to, or at, practices (Wiersma & Fifer, 2008). These are not unproblematic changes and can lead to stress and conflict within the family unit (Barber & Sukhi, 1998).

The impact of an elite athlete within the family does not reside merely on the role of the parents (Côté, 1999). Siblings also see a considerable, and often challenging, shift in their day to day routines and relationships. This can cause differences to arise between siblings, often arising when one sibling finds a niche, excelling at sport, causing potential bitterness and jealousy (Côté & Hay, 2002). When the athlete did well, their siblings often felt they needed to also excel within an individual niche, which frequently lead to feelings of jealousy (cf. Fraser-Thomas, Côté, & Deakin, 2005). Moreover, behaviours from parents can commonly see siblings split between parents in order to accommodate their activities while making sure that the elite athlete is provided with the support required, and can attend training sessions and competitions (cf. Harwood & Knight, 2009; Wolfenden & Holt, 2005).

Resources provided by parents commonly fall under that of time and finances, and can see siblings repeatedly cast aside, often unintentionally, in order to provide the optimum environment for the gifted athlete to develop in. In addition, the expectations that significant others (parents, siblings) may have of the athlete, in relation to victory and/or replication of past success can have a negative effect on the performance of gifted athletes (cf. Durand-Bush & Salmela, 2002).

Furthermore, initial research into the role of siblings across the broader sporting landscape has started to explore the impact of siblings on sport involvement. Côté's (1999) investigation into the dynamics of families with talented athletes throughout their development highlighted that a talented sibling could positively (as a role model) and negatively (causing bitterness and jealousy) impact on other siblings, impacting on the wider family dynamic. More recently, Davis and Meyer (2008) examined experiences of athletes through exploration of the psychological factors associated with competition against a sibling. Unsurprisingly, they identified that competition with siblings was different from any other opponent, as well as broadening the range of positive (rivalry, closeness and respect) and negative (gloating) influences a sibling could have. Blazo, Czech, Carson, and Dees (2014) also highlighted the possible impact siblings might have on achievement in sport, suggesting that the relationship had a positive family and social influence, as well as helping to develop fondness of a sibling and an identity. As with previous studies, Blazo et al. also identified negative connotations such as abandonment and jealousy.

This draws us to direct consideration of the influential role that parents play in their gifted athlete's development. Knight and Holt (2013) revealed in their study that parents they worked with spent a considerable amount of time researching information in relation to their child's participation in elite sport. This suggests that parents understand the importance of their role in their child's development, but don't necessarily understand the levels at which

they should be committing and supporting in order to have a positive influence on their child. Progressively, parents may be able to play a more influential role in their child's sport participation if they could share more information, so that they could provide more opportunities to their child and coach, and become more aware of the various issues that arise along the parent-child relationship and its transitions (cf. Jowett & Timson-Katchis, 2005).

This is reinforced by the wide-ranging research that has been done across the field of parenting in youth sport, within a variety of contexts. For example, a perceived over involvement in a child's participation may cause the child to feel indebted to their parents, as a reaction to the level of sacrifice made, causing high levels of unreasonable pressure and expectation, leading to stress and a lack of enthusiasm (cf. Barber & Sukhi, 1998; Leff & Hoyle, 1995). However, athletes who become successful have acknowledged the dedication their parents have given, indicating that even higher parental involvement may be required (cf. Wuerth et al., 2004). This is consistent with Hoyle and Leff (1997), and McCarthy and Jones (2007) who summarise these perceptions of involvement by suggesting that a child enjoys their sporting involvement far more when they perceive their parents to be positively involved and satisfied with the level of participation shown by the child. White (2007) elaborated on this with the suggestion that a child's participation is strongly influenced by the motivational climate advocated by the parents, not only on the side-lines but also within the home/family environment. The aforementioned literature not only underpins the important role parents play in the development of a gifted athlete, but also the uncertainty of what constitutes the right level of involvement in order to positively assist in creating the optimum environment for their development. As one of the coaches interviewed in the study by Wolfenden and Holt (2005, p. 124) summarised:

The most important person is the player and everyone around them, be it coaches, parents, siblings, friends, fitness trainers, [they] have to work together to provide the optimal conditions to nurture the individual's talent.

2.2.1.2 The shoulds and should nots of family involvement. As Partridge, Brustad, and Babkes-Stellino (2008) clearly identified, parents have many opportunities during the development of their child to have both positive and negative influences. The literature provides many suggestions as to what parents *should* do in order to have a positive involvement. These include; helping children to understand and interpret sporting experiences, acting as role models of appropriate behaviours and attitudes, making a conscious effort to get to know teammates of their child and their parents in order to build a positive community environment, recognising when their role changes and when they resort to providing only social support, and providing immediate feedback during competitions through verbal and non-verbal actions displayed (cf. Fredericks & Eccles, 2004; Fry, 2010). These are all perceived as appropriate behaviours and, if conducted in the right way, can significantly contribute to an athlete's high intrinsic motivation and enjoyment of their sport, feeling competent in their ability encouraging continued participation (Ullrich-French & Smith, 2006).

There is also similar literature informing parents about what they *should not* do. These include instructions on behaviours to avoid; such as overemphasising winning and excessively criticising their child's performance which can put pressure on the athlete, reducing sporting competence, and enhancing the fear of failure and competitive anxiety. They are also discouraged from providing too much feedback, as this can easily cause avoidable stress for the athlete. Indeed, too much involvement at the wrong time can have a negative impact on the development of the athlete, as a conflict of interests begins to appear between the parent and child, which can lead to lack of enthusiasm and potential dropout (cf.

Dixon, Warner, & Bruening, 2008). These practical implications demonstrate a comprehensive spread of characteristics that underpin many of the theoretical perspectives linked to the family, and it is those theoretical perspectives that I now approach.

2.3   Theoretical Perspective on Family

As is evident from the concepts of family involvement in elite sport discussed so far, the family can be seen to play a key role in the development of athletes and their progression. My attention now turns towards the relevant theoretical underpinning that helps academics understand the role of the family, as well as aiding understanding around what the sport literature on parenting can draw from the wider theory.

2.3.1   Family Systems Theory

In a recent review of sibling literature in the broader physical activity setting, Blazo and Smith (2018) highlighted the need to use developmental theoretical perspectives to guide the development of theory, as such theory-driven inquiry could produce substantial advancements in knowledge. Undoubtedly, the most pertinent theory in understanding the role played by the family within TID is that of FST. Accordingly, I look specifically at the evaluation, development and direction of FST.

Firstly, it is important to recognise that FST facilitates an holistic approach (Walker, 2012), taking into consideration all the family elements. These elements are the individual family members, with each element having their own set of characteristics, and independent relationships (subsystems) with each of the remaining elements (family members). This creates a structure, with each element seen to make its own unique contribution to that system, subsystem or structure, with the family being seen as a living system with all the dynamics implied (Walker, 2012). These dynamics are constantly fluctuating and, therefore, there will be periods within the family structure when the whole system becomes pre-occupied with one or two family members, leaving the potential for others to become

marginalised (Walker, 2012). Having one or more members of the system, as an elite youth athlete is one such circumstance under which this preoccupation may take place. This permits the potential for the marginalisation of a number of different family members, whether it is a sibling or siblings, one of the parents, or a combination of those; without due care and attention the focus of the family structure can inexorably shift towards the elite athlete. This preoccupation may disrupt the family and require them, as a structure, to make alterations to their current routines, possibly causing an emotional process to take place as each member of the family will deal with this preoccupation differently depending on whether they feel marginalised or not (Walker, 2012).

The extent to which the family, as a structure, is affected by the construct of having an elite youth athlete within their system can often be dependent on the permeability of its boundaries. If these boundaries are impervious, members are likely to be insulated from the wider community; in this case the TID environment and all of its components, suggesting enmeshment when one examines the independent relationships between each family member (Minuchin, 1974). The opposite to this would see the boundaries of the family structure being permeable, allowing high levels of involvement with the community (TID environment) and a level of disengagement in relation to the independent relationships (Minuchin, 1974). This process is likely to begin with a close parent-child relationship where the parent nurtures the child, before the child begins to extend their range and choice of activities, increasing their independence, but always returning to the parent for protection and re-assurance. This means that the parent encourages the child, but also has a controlling influence on the child. These are directed by the parents' own actions and attitudes, whilst they also undertake roles as consultants and designers of the child's immediate environment (Burton-White, 1975). Therefore, as children grow and develop, it is advocated that parents can adapt their parenting style in order to meet the changing needs of the child, before,

eventually, acknowledging the point at which their care and protection are seldom required (Jenkins, 1981). In other words, they move along the continuum from enmeshment towards permeable.

The family is a rule governed system, with the expectations that its members will behave in an organised repetitive nature creating principles of family life (Broderick, 1993). Hierarchically arranged rules are inherent within the system with the aim of remaining that way, even with any input from the environment around the family (Broderick, 1993). These rules incorporate those such as the governance of balance within the system, in the hope of bonding members coherently, with other rules regulating traffic across the boundaries of the family, in order to preserve that margin between the family and its environment. Likewise, survival in this state depends on the regulation of relationships between members in order to preserve the system, alongside regulating movement across their boundaries so that relevant information can be retrieved from the external environment, without allowing such information to fracture the family structure (Broderick, 1993). An open and on-going system can be conceptualised as a set of patterned, interactive processes. These processes have emergent qualities and have regularities that permit rules to be inferred. These rules are commonly hierarchically structured, and contain a well-developed set of guidelines in order to maintain and regulate relationships, within, and externally of, the system (Broderick, 1993).

Deposit elite youth athlete(s) into the system, however, and there is the potential for these guidelines to become disrupted or re-drawn in order to create a family system that sits on a continuum somewhere between permeable or impervious, and enmeshed or disengaged. For example, hierarchically structured rules may become ineffective, as the elite athlete(s) and their TID environment begin to dictate what is required. This may cause strain on a variety of independent relationships within the family, as well as the possibility of

decentralising the balance of the family system with certain relationships becoming enmeshed and others disengaged. The TID environment may also begin to encroach on the family boundaries, marginalising certain elements.

2.4 Diversity within Elite Sport and FST – Evolving Old Theory to New Mores

At this stage it is valuable to acknowledge how factors such as gender, social class, sexuality and race articulate within the spaces of elite sport and family systems (cf. Erdem & Safi, 2018). Cowan and Cowan (1995) are clear with their interpretation that parental gender can affect expectations and role functioning within the family system. Reiterating earlier suggestions around the role of the father, there has been a shift in expectation in the father/athlete subsystem with the analogy of the father being a 'breadwinner', decision maker and instiller of discipline being replaced with the notions of supportiveness and approachability in order to build rapport and a relationship (Jeanes & Magee, 2011). In contrast, the mother's role was *traditionally* portrayed as one to maintain a strong subsystem between themselves and their partner, and the athlete, but also between the athlete and the father, by arranging logistics and preparing food and clothing. This has since been dismissed through the increasing evidence of the emotional, psychological, and social support they offer which is essential for the development of the athlete (Chafetz & Kotarba, 1999). As a direct consequence of such evolution, one must be careful to critically consider the literature against the social milieu and contexts in which it was framed: in short, old findings may well not hold relevance for current settings.

Such changes are also apparent within the social hierarchy. White and McTeer (2012) argue that social class can often restrict an athlete's access to elite sport potentially causing friction within the family due to the athlete's desire to progress. Finances, location, travel accessibility and time can all restrict opportunities to attend training/matches, purchase kit and provide emotional support (Bennet, Lutz, & Jayaram, 2012), therefore potentially

hindering TD. With youth sport becoming more professionalised, barriers for participation are becoming even more apparent when social class is concerned, leaving athletes restricted and parents frustrated. I argue that this stems into the family system as it is likely to impact upon the permeability of the boundaries within the family, conceivably triggering disengagement between specific subsystems. Furthermore, I would highlight that such implications may cause the system boundaries to become more permeable as the athlete begins to recognise the need to go outside of the family system in order to find the required support; whether this is from a coach, financial support from a local authority or transport access through another athlete and their family.

Opinion around sexuality, in particularly same-sex relationships, has also developed somewhat in recent times with Lewis (2011) stipulating that society is far more accepting and that, due to the growing rates of social contact within their independent social networks, there has been a positive impact upon attitudes. I propose that this has been mirrored within the elite sport context and that, as a result, a family with same-sex parents may have a far greater permeability within their boundaries than first thought, allowing significant others (coaches, athletes, officials) to enter their subsystems in order to gain the required development. However, we must recognise this may not always be the case, and that there is still some hesitancy within society about same-sex parents raising children which may influence societal interactions (Webb & Chonody, 2014). As far as FST is concerned, this may cause athletes to develop far more enmeshed boundaries either to shut out potential negativity from significant others or reduce the exposure of their family.

As children approach adolescence they begin to spend more time interacting with external environments. When considering the concept of race this may increase their risk of experiencing discrimination from those who see themselves as the majority (Cross, 2003). This potential context for discrimination may see parents within the family system adopt a

closed (enmeshed) system, with a reluctance to allow significant others access as a defence

mechanism. In contrast the athlete may wish to move out of the boundaries in order to

contact significant others who can help with their development, thus leading to a conflict

within the family system, through disregard of the rules governing the system, and potentially

the breakdown of a number of subsystems. As Martinez (2006) depicts such stresses specific

to minority status may negatively impact upon parenting quality, something that supports

Fuligni et al.'s (2013) argument that ethnic minority parent's ability to adopt a 'sensitive

parenting' approach is lower than majority parents. In TD this may negatively impact upon

the athlete's development as Knight, Neely, and Holt (2011) suggest that if a parent's

behaviour does not meet the preference of the athlete a lack of engagement may occur.

Through the application of insight, this section has provided thought around the role

factors such as gender, social class, sexuality, and race can play in elite youth sport. Relating

these directly to FST has allowed a more holistic viewpoint to be taken when applying the

theory to practice. Such consideration has relevance to the preceding chapters in this thesis,

as the sibling subsystems under exploration portray a range of these elements.

2.4.1 What Does the Theory Mean in Practice?

The theoretical considerations outlined here support the notion that family can have a

major impact on the development of an elite youth athlete, with FST being prominent in

understanding the roles undertaken by the family. I will now take into consideration how the

theory I have outlined may appear in practice.

Lindstrom Bremer (2012) discusses the need for FST to be utilised to help inform

research around families and their complex involvement in different stages of the athlete's

development. FST looks at the family as a team, and recognises the differing characteristics

of each member, the individual relationships (subsystems) that can be played out at any one

time, and the influence that all of these can have on the athlete. Prominent studies in the

academic field have helped to mitigate, alleviate and magnify the elements prominent in an elite athlete's development that are related to FST. Côté's (1999, p. 409) study, for example, magnifies the way that an elite athlete's development can pre-occupy particular members within the family unit, with one subject divulging that:

> There are four of us that are involved in rowing, my [other son] is not. Yeah we have to catch ourselves and make sure that he is included. Perhaps sometimes he was overlooked. By and large, if we are together, we [try to] spread the spectrum of the conversation around.

From a practical perspective, both Fry (2010) and Jowett and Timson-Katchis (2005) provide insights into how families can help to create a positive environment for the athlete, and encourages high levels of interaction with coaches and teammates. This alleviates the way in which the family unit can allow its boundaries to become more permeable, encouraging the external environment to become influential to their child's development.

The above studies are some of the key work concerning the dynamic of the family unit. Each study is specific to the fifth construct of TID identified by Pankhurst, Collins, and MacNamara (2013), and focuses on the stakeholders within the sports system, with this chapter identifying the prominence, and importance of the family within such a construct. With the current literature available to us it is possible to come to some conclusions around the importance of the family unit in elite youth sport, and how we can support and develop this. However, as ever, there is exploration still to be done, but, how and where?

2.5   Where Are We? And Where Do We Go From Here?

Family are critical to an athlete's development (Brackenridge, 2006). With greater political support and additional funding being invested into sport, it seems logical to suggest that family will look to invest more financially and emotionally (Brackenridge et al., 2004). Therefore, it is critical that this construct is given the attention it clearly requires.

All of the issues surrounding the family's involvement in elite sport discussed in this chapter provide an outline of actions and behaviours by parents that may produce positive or negative reactions from the athlete. However, there is very limited direction on *how* parents can achieve these levels of support and behaviour, and whether or not this is the same throughout the field of sport or even, in fact, whether different sports require different levels (Lauer et al., 2010). A result of such uncertainty could easily cause parents to unintentionally act in inappropriate ways (Wiersma & Fifer, 2008), as they are unsure about what is perceived as correct behaviour, and what types of behaviour their children wish to be displayed (Harwood & Knight, 2009). This is of great importance as athletes are highly accustomed to their parent's actions, especially before and after events, where the atmosphere remains emotionally charged (Lauer et al., 2010). On that note, Anderson, Funk, Elliott, and Smith (2003) discussed the need to gain an understanding of the preferences that young athletes place on types of parent behaviours displayed, due to their influence on development, with Knight et al. (2011) concurring that this is an area devoid of academic investigation. Alongside this need to discover athlete's preference, and the extent to the levels of parent actions, sits the third question; when should parents engage in certain types and levels of behaviours and actions (Knight et al., 2011).

Moving forwards, particular focus is needed on the sibling dynamic. There is limited literature available regarding the role of siblings, with initial studies either providing little emphasis on this dynamic (cf. Côté, 1999; Côté & Hay, 2002) or largely descriptive findings (cf. Hopwood, Farrow, MacMahon, & Baker, 2015). It is important to continue to further uncover the relationships between the social environment—where the family unit is a fundamental component—and the internal dynamics of the coach-athlete relationship, as this relationship is critical to the athlete's achievement or potential to achieve (Jowett & Timson-Katchis, 2005). This discovery cannot be restricted to one stage of development however,

and must take into consideration beliefs, attitudes, influences and expectations from parents and siblings, if the whole family environment is to be explored (cf. Côté, 1999; Fredericks & Eccles, 2004). Due to the disproportionate exploration afforded to siblings, in comparison to parents, the remainder of this thesis will provide more detailed exploration of the sibling role, whilst acknowledging parental use to maximise developmental opportunities.

2.5.1 Key Concepts Within Talent Development

In attempting to understand the sibling dynamic, there are several important considerations that should be acknowledged from the existing TD literature. Reflecting on the nature of development, recent models have placed an increasing emphasis on the multidimensional and interactive impact of many factors. As such, the biopsychosocial model of development (Bailey et al., 2010) may have the potential to shed light on the range of impact that siblings may have when supporting TD. The biopsychosocial model recognises the dynamic interaction between the biological (e.g., genetic, physiological and anatomical), psychological (e.g., emotional control, confidence and mental imagery ability) and social (e.g., communication, leadership and co-operation) elements of human development, and is therefore considered to be a holistic framework within the sporting context (Abbott, Button, Pepping, & Collins, 2005). Crucially, it is the interaction between these elements that is key to understanding and aiding development since focussing too narrowly on individual elements (e.g., on physiological processes; Balyi, 2002) fails to recognise the multifaceted nature of development (Abbott et al., 2005).

Interestingly, studies have demonstrated the importance of several psychosocial/behavioural characteristics as being consistent factors of success across a variety of performance domains (e.g., sport, music and business). Broadly these characteristics have been termed the psychological characteristics of developing excellence (PCDEs; MacNamara & Collins, 2015) which consist of focus and distraction control,

commitment and role clarity, realistic performance evaluation, quality practice, effective and controllable imagery, goal setting, planning and organisation, coping with pressure, self-regulation and self-control, and creating and using support networks (Hill, MacNamara, & Collins, 2018). As will become apparent throughout this thesis, these PCDEs are perceived by participants as being a central element of their sibling relationships and at times is influenced by the sibling position; as will be revealed in Chapter 4 when examining age-gapped siblings, and in Chapter 5 when examining twins. It is possible to suggest that the nature of the sibling relationship may expand on the psychosocial influences that parents can have on an athlete's development (cf. Horn & Horn, 2007), and therefore, this is worthy of further exploration.

Finally, in recognising this inherent complexity it is important to comment on the implications for coaching practice. Due to the multidimensional, and therefore complex, nature of the biopsychosocial model a coach cannot simply specialise in one area, but must develop knowledge across the '-ologies' and understand the context they are working in to have optimum impact (Carson & Collins, 2017). Such an approach requires the development and application of more structured higher-order thinking, something that Collins and Collins (2015) refer to as professional judgement and decision making (PJDM). At its simplest PJDM stresses the need for a coach to critically consider the 'why' as much as the 'what' and 'how' when considering appropriate structures to implement (Martindale & Collins, 2005). Consequently, this thesis will consistently look to bridge the practice-theory divide through informing PJDM.

This chapter has outlined the key issues and research associated with family involvement within the TID environment, alongside the introduction of FST as the framework through which the studies in this thesis will be viewed. Through these components, I have provided a critical overview of parenting and youth sport, and

highlighted that it is a complex area, but one that up until now has been broken down into components studied in isolation. In short, this is an area that needs attention from a holistic view point, with a future focus on this critical importance so that the parent-child relationship in elite youth sport is maximised to the full, with the family placed more centrally than at present. Furthermore, there is a distinct gap in research around the sibling role in TD, with further studies crucial to painting a more complete picture of the family role in TD.

Chapter 3:   Sibling Interaction as a Facilitator for Talent Development in Sport: A Retrospective Examination

3.1   Introduction

As Chapter 2 highlights, elite-level youth sport relies heavily on the family as a facilitating agent for children's involvement (Kay, 2000; Pankhurst et al., 2013). Therefore, it is surprising how little research attention has been directed towards sibling interactions in an effort to accelerate the development of sporting talent (cf. Abbott & Collins, 2004). This is in contrast with recent increasing efforts to examine parental influences (e.g., Holt, Tamminen, Black, Mandigo, & Fox, 2009; Lafferty & Triggs, 2014). Therefore, in an effort to stimulate further inquiry and address this imbalance, Chapter 2 highlighted the meaningful application of FST (Bowen, 1978) in the TD and elite-level sporting context by exploring a number of influential subsystems within the family unit (e.g., parent–child, brother–sister, etc.). Accordingly, identifying holistic family influences as key stakeholders affords the possibility for a greater understanding of the *entire* dynamic and its' influence. Increased research interest in this area should, therefore, be of interest to parents, practitioners and academics alike.

Before such understanding can be clearly interpreted, however, it is important that individual subsystems within the family unit receive sufficient exploration alongside the inherently nonlinear nature of TD. Central to this thesis is the sibling relationship, which is often portrayed as the most pervasive and longest-lasting relationship across the life course (Rittenour et al., 2007). According to FST, the boundaries of a subsystem can be placed on a dynamic continuum from permeable to enmeshed (cf. Minuchin, 1974), indicating the need for temporal consideration when evaluating interactions during the longitudinal TD process (See Chapter 4). Full permeability could see siblings frequently seeking other family members for support (or even outside of the family system), whereas enmeshment would see

siblings placing greater dependence on members of the subsystem to aid their development (Bowen, 1978). The extent to which these boundaries change at different times, and for what reasons, may prove significant factors to overcoming the inevitable 'rocky road' to reach the top (cf. Collins & MacNamara, 2012). In other words, sibling dynamics *within* a family support structure may facilitate the acquisition of pertinent psycho-behavioural skills (e.g., resilience and quality practice; MacNamara, 2011) essential for effective exploitation of learning environments.

Notably, and as expressed earlier, sibling relationships have been comparatively neglected by those who focus on family influences within sport (Blazo et al., 2014; Blazo & Smith, 2018; Partridge et al., 2008). As such, there is a distinct lack of exemplifying evidence for the impact of this dynamic relationship, let alone guidance on how this might inform effective coaching practice: almost *all* attention being directed towards parent–athlete relationships (e.g., Netball, 2015; Nottinghamshire, 2015). Indeed, this is emphasised by Harwood, Douglas, and Minniti (2012) when suggesting that "the role of the intact family remains limited by a lack of focus on sibling influences" (p. 483), whilst Côté and Hay (2002) provide further rationale for such study by suggesting that sibling relationships can impact upon the entire family when there is a talented athlete (or indeed multiple talented athletes; e.g., the Williams sisters/Murray brothers—tennis, Molinari brothers—golf, Brownlee brothers—triathlon, Klitschko brothers—boxing, Mowen sisters —volleyball, Youngs brothers—rugby and the Neville brothers—football and Neville sister—Netball) involved. More specifically, Blazo and Smith (2018) call for more focused investigation around how siblings affect experiences, and that such focus should look across physical activity settings, with TD being a notably setting. Furthermore, as Bloom (1985) suggests, talented individuals access the road to expertise early and usually within their own home.

Therefore, because the sibling subsystem is essential to FST, it has the potential to impact upon TD and is worthwhile of further investigation.

3.2   Sibling Interactions: Possible Mechanisms for a Facilitative Role

Furman and Buhrmester (1985) exemplify how siblings can be a consistent source of companionship, help and/or emotional support, allowing key psychosocial/behavioural skills to be developed. Older siblings fulfil this by serving as caretakers, teachers or role models. Indeed, these views are congruent with those of Dunn (1992), who identified that a common coping mechanism was to confide with a sibling rather than a friend, since siblings can provide a stronger and more trusted source of support during stressful times (McHale et al., 2012). Notably, however, Furman and Buhrmester acknowledge that this relationship is not *always* egalitarian and can also be asymmetrical, especially with power and status; potentially leading to rivalry. Pfouts (1976) discovered that such rivalry often stems from frustrated dependency needs, emotional struggles and competitive intrusion with respect to gaining acknowledgment and approval. These studies suggest that siblings often play a multifactorial role in their counterpart's lives, therefore reflecting the complex nature of TD environments.

Evidently, according to a limited number of empirical studies, these characteristics of a sibling relationship also remain active within elite sporting contexts. Greendorfer and Lewko (1978) identified siblings as one of the most important socialising agents with respect to sport involvement, while Richter (1997) highlighted that co-operation can often be a favourable characteristic of TD environments (cf. Côté & Hay, 2002). For example, by working as a cohesive unit and therefore removing the desire for siblings to seek individual recognition: one sibling spotting another on the bench press in the gym. From a negative perspective, Kay (2000) highlighted the worries of parents who were aware of the less-talented sibling being left out, with siblings sharing concerns around being overshadowed. However, siblings also shared pride in their talented counterparts; thus, acting as a potential

source of motivation through encouragement. As such, these findings offer possible mechanisms that could promote positive or negative TD environments.

Supporting the notion of co-operation, Trussell (2014) aimed to understand how organised recreational sport influences sibling relationships and interactions. She identified that sibling subsystems may breed a sense of unity, as well as affording mentor-type relationships to be developed, allowing new skills to be taught. Indeed, the practice of dyadic learning is not new to the field of sport pedagogy (e.g., verbal interaction, giving and receiving feedback and encouraging each other, possibly before, during or after training; Darnis & Lafont, 2015). These findings may, however, inform better pairings during sport participation, at least during certain times and with specifically desired outcomes (e.g., a first judo class for a shy younger brother; Collins, Burke, Martindale, & Cruickshank, 2015; Martindale & Collins, 2005).

Davis and Meyer (2008) explored the psychological factors associated with on-field competition against siblings, leading to suggestions that sibling competition served as motivation to increase effort during training and competition. Referring to birth position within the subsystem (FST), the authors proposed that this competition was often due to the younger sibling's feelings of inferiority in relation to their older, talented, sibling. This appears consistent with the wider literature that suggests rivalry often stems from the younger sibling attempting to overtake the older (Haggan, 2002). Davis and Meyer provide further insight towards the positive role characteristics. In brief, high level interactions elevate emotional and instructional support, leading siblings to describe a continued closeness. As such, the combination of support and rivalry within a sporting context may be a positive mechanism for TD.

Most recent research has focused on sibling sport achievement (Blazo et al., 2014) and sport expertise (Hopwood et al., 2015), showing the reliability of emergent constructs

from previous research across different sports (cf. Bloom, 1985). For example, Hopwood et al.'s (2015) investigation shows support for the provision of emotional and instructional support to their younger sibling. Likewise, Blazo et al. (2014) suggested that younger siblings admire their older sibling for their achievements, which can foster a close and intensive relationship. As a cautionary note, however, Blazo et al. propose that this can cause the younger sibling to feel pressure in their pursuit of surpassing such achievement, often leading to jealousy and rivalry (MacNamara & Collins, 2015). Therefore, effective provision of TD environments must be prepared and equipped with appropriate monitoring procedures.

It is clear from the reviewed literature that, when taking a holistic view of TD, the sibling subsystem has potential for significant impact, as it is likely to be a constant and dynamic element of the environment (Whiteman, McHale, & Crouter, 2007). Despite providing some insight into the sibling subsystem within TD, there is little focus on its impact in sport specifically. That is, *how* these mechanisms may have been operationalised within practice to develop the requisite skills (MacNamara, 2011) for elite-level careers. To reveal how this might work, it is important to look beyond youth sport at present and instead look back from the perspective of a successful athlete: a notably missing approach from current studies. As such, this chapter explores the direct impact that siblings can have on TD through their interactions. Specifically, this is explored within the elite sport context where at least one sibling was, or had recently been, involved in elite sport, focusing on their, and their siblings', perceptions towards the developmental years leading up to the achievement of elite status (i.e., their interpretation towards the sibling relationship that they believe was important to their success).

3.3 Method

By adopting a phenomenological approach, it was possible to gain a rich understanding of the family culture within TD environments. Phenomenology has a tradition

within qualitative research (e.g., Bernet, Kern, & Marbach, 1993) and focuses on understanding the perceived meaning of experiences as interpreted by the participant; in this case, retired elite-level athletes and their siblings. Phenomenology, therefore, lends itself well to situations that are complex, process-driven and novel (Smith & Osborn, 2003), as representative of TD (Collins & MacNamara, 2012).

3.3.1 Participants

Participants (M_{age} = 44 years, SD = 5.01) were four purposively and conveniently sampled retired elite-level athletes and their siblings (three dyads and one triad emerged as a result of availability). All athletes were multiple Olympians or professional athletes during their careers, from a variety of team and individual sports (see Table 3.1) and grew up in a two-parent household. The siblings in Family 1 had to half siblings not involved in the study, and the siblings in Family 4 had an additional three siblings unable to take part in the study. By conducting a retrospective study, it was important that participants would be able to reflect on their lived experiences. This was a deliberate criteria applied to provide a breadth of study across a range of sports.

Table 3.1. *Participant Profiles*

Family	Sex	Age	Sports played	Skill level
Family 1 (F1)				
Older sibling (OS)	Male	37	Tennis, Shinty, Rugby, Skiing	Semi-elite[a]
Younger sibling (YS)	Male	36	Tennis, Shinty, Skiing, Football	Elite[b]
Family 2 (F2)				
Older sibling	Male	43	Motor-cross, Football, Skeleton,	Elite[b]
Younger sibling	Male	39	Basketball	Non-elite[c]
			Motor-cross, Football, Basketball	
Family 3 (F3)				
Older sibling	Female	51	Hockey, Netball, Curling	Elite[b]
Middle sibling (MS)	Male	49	Squash, Curling, Badminton,	Elite[b]
Younger sibling	Female	47	Rugby, Football	Elite[b]
			Hockey, Netball, Curling	
Family 4 (F4)				
Older sibling	Male	46	Football, Cricket	Non-elite[c]
Younger sibling	Male	45	Football, Cricket, Running	Elite[b]

[a]Semi-elite played to a national level.

[b]Elite participants played to an international or professional level.

[c]Non-elite played at a recreational level.

Ethical approval was obtained through the university's ethics committee (see Appendix A) and signed informed consent (see Appendix B) provided prior to data collection.

3.3.2 Procedure

Individual retrospective phenomenological interviews, lasting between 40–60 minutes, were conducted to encourage participants to share their experiences, the essential context and underpinned meaning (King & Horrocks, 2010). While discussions were wide ranging, the interviews broadly addressed three topics; behaviours and experiences during the TD period, feelings towards their/the athlete's development/success and the resultant impact. This approach sits within phenomenology since it allows the interview to take a relatively unstructured and open-ended course, with the questions designed to encourage participants to respond within context (Englander, 2012). It was felt that the nature of phenomenological interviews reduces potential bias in interpretation, since participants are encouraged to explain their understanding of the context/actions contained within their response; in other words, the interviewer was not leading.

3.3.3 Interview Design

An initial interview matrix was designed for the purpose of the present study, and contained three broad areas of focus; background/demographics, experience/behaviour and opinions, values and feelings, with each area consisting of key questions and probes. A pilot study was then conducted to enhance trustworthiness (Maxwell, 2012) using a set of three brothers, where two were twins (one of which was the elite athlete), and an older brother four years their senior. All participated in the same sport. Having engaged in guided discussion with my supervisory team, it was agreed that the method adopted did not produce enough depth in the responses made by the participants. There was a need to probe considerably more into the answers given and be more aware of the range of ways in which the participant can portray their feelings around the question posed to them. With this in mind I went away and developed a new matrix (See Appendix C) addressing six, more defined, areas of focus,

and incorporated a much more in depth set of probes, along with stimuli and purpose. These allow for a much greater set of interrogative questions to use when conducting the interviews.

3.3.4 Data Analysis

Data were transcribed verbatim, before conducting an Interpretive Phenomenological Analysis (IPA). Smith (2011) highlighted that meaning is central to IPA and that the aim is to try to understand the content and complexity of those meanings. Therefore, it was crucial to engage in an interpretative relationship with the transcripts through sustained engagement. I began by reading each set of transcripts to develop an in-depth and clear account while making informal notes to record their initial impression, before moving on to examine further sets of siblings on a case by case basis. Data were then coded inductively as individual meaning units and grouped together to form lower- and higher-order themes; beginning with specific examples within the transcripts before developing more general themes. This was done by reading each transcript a number of times and annotating any interesting and significant statements in the left-hand margin. Significance was assessed based on importance rather than frequency (Krane, Andersen, & Strean, 1997), therefore not all themes apply across all participants.

Once this process was completed with all sets of transcripts, emerging themes were then noted in the right margin. These allowed connections to be made across cases, before clustering into higher-order theoretical concepts (Smith & Eatough, 2006). To address the issue of trustworthiness and prevent the potential for misrepresenting data codes, peer debriefing took place with a supervisor. In the case of a dispute (which occurred in less than 5% of cases), alternative interpretations were presented until a plausible explanation was agreed upon (Sparkes, 1998) .

3.4 Results

The following section details the key themes underpinning sibling interactions during the TD process. Raw data quotations are used from exemplar participants to support and add clarity to discussion (see Table 3.2).

Table 3.2. *Potential Mechanisms that Support TD – Initial Findings*

Raw Data Codes (*n*)	Lower-order Themes	Umbrella Themes
Played for school team and town team together (1)	Competition	Regularity of interaction in sport
Competing with them at same level (4)		
Play exactly the same competitions (3)		
Every weekend we raced (1)		
Played once or twice a week (1)	Training	
Practiced quite a lot with them (4)		
Train in the same places (1)		
Practice outside of competition (5)		
Take all three of us along to play (2)	Recreation	
Involved with my [siblings] at different sports (2)		
Played together in a set area (2)		
Played board games (1)		

Always in close contact (2)   Closeness   Emotional interpersonal

Became closer (2)   skills

Was this unbreakable bond (3)

Strength of trust and bond as brothers (1)

Have such a lot in common (1)

They all supported me (5)   Support

A sounding board (3)

Very sort of supporting (4)

Was there 100% for me (2)

You would encourage each other (2)

I've never asked for any advice (1)

Wasn't a great deal of support (1)

We have all been there (1)   Empathy

Knew what each of us was going through

(2)

Ultra-competitive (1)   Competition   Rivalry

Always competitive (3)

Obviously we were competitive (2)

Made it more competitive (2)

Don't class being competitive as a negative

(1)

Without it we wouldn't have achieved (1)

Made me even more determined (1)   Success

Pissed off if they won and I didn't (1)

Do our best to win (1)

Was all about success (1)

Accused me of cheating (1)

Had a brother who was good at everything

(1)

Level I was striving to get to (2)   Motivation

Frustration now and again (2)

Wanted to do the same as him (1)

Play to win (1)

Toughened me up (1)   Mental process   Resilience

Gave me a determination (2)

Develop a bit more resilience (2)

Inner strength (1)

Taking the mickey out of each other (1)   Behaviour

Learnt to either take it or pack it in (1)

We would talk through it (3)   Verbal   Co-operation

Come and help you (1)

Get some feedback (1)

Share our experiences (1)

I would learn and then teach (1)	Physical	
Build bikes together (2)		
He'd teach me to do things (1)		
We did stuff together (2)		
We didn't hang out (1)	Time	Separation
Wouldn't spend much time with him (1)		
Less time together (2)		
Did a lot of it apart (3)		
Was not able to attend (1)		
He was away living in digs (1)	Distance	
Involve a bit more travelling (1)		
Quite often I would be away (1)		
I was boarding (1)		

3.4.1 Regularity of Interaction in Sport

While it would be unexpected if siblings were not in regular interaction during their youth years, the following theme represents the extent of this interaction (i.e., its *regularity*) and domains in which it was reported. From this theme the following lower-order themes emerged; *competition*, *training* and *recreation.* Interaction through competition was reported by all four sibling subsystems. F4-OS highlighted that they "played for the school team

together and played for the town team." Within individual sports, one sibling also explained that they would compete in the same competitions, this time outside the school setting, "Throughout the summer I would have gone to all of them [competitions] because obviously it was the school holidays, so we would play exactly the same competitions then, you know, and my family was there throughout our involvement" (F1-OS). Even when not competing, one participant explained that their siblings would be present watching them:

> We would go and watch his games when he was playing and we weren't and he'd come and watch our games when he wasn't, so there was always contact there. You would see each other every day at the centre. (F3-YS)

The theme of *training* was again reported by all four sibling subsystems. As explained, sibling interaction during training led to extra or additional practice time:

> I probably played once or twice a week with my brother, he probably drove me on a bit, but also made certain things so much easier, so much dead time you know. Even if me and him were hitting balls for an hour, well then you'd hit for an hour and one side you have forty minutes getting changed getting to the place, getting out of school, and the other side getting back to it. (F1-YS)

> When we were at home we'd be in the same place at the same time. So we used to train together, and we would go down to the centre together. Just as practice outside of competition. We did just as extra sessions. (F3-MS)

F3-YS highlighted the high degree of continuity in the interaction with her siblings across both season and off-season periods:

> When we were training you were probably on the ice every other day, whether that be games or practice. Plus, we'd do off ice training as well two or three times a week, we were running, doing circuit training and that would be in the off-season.

These quotations were supported by further raw data codes such as "other weeks you'd see them the whole week and practice quite a lot with them" (F1-YS) and "I mean we did practice [together] and I think there was a respect there that we wouldn't play dirty tricks on each other" (F2-OS).

Recreation emerged as further opportunity for regular sporting interaction and was identified by two of the four sibling subsystems as an important part of their development. F4-OS explained how this recreation consistently took place within their local community:

We all played together in a set area, we used to call it 'the pen'. We used to play football there and we had a grassed area as well. Just a proper good game of football, jumpers for goalposts football.

This echoes the idea of 'deliberate play', which we turn to later. However, relating to more externally driven activity F3-MS explained how recreation with their parents and siblings lead to their initial interest in the sport:

When we first started, my mother used to take all three of us along to play and my sisters used to love it and I didn't … I could see they liked it and maybe that was part of why I started to like it, because I could see they liked it.

F3-MS summarised the importance of regular interaction with their family through recreation:

In terms of my own development in the sport, being involved with my sisters and my parents at a range of different sports and even just growing up in that environment was invaluable to me in terms of development.

The following themes are inherently related to these examples of regular interaction, due to the fact that they are derived from the same family system.

3.4.2 Emotional Interpersonal Skills

All participants referred to a range of interactions that encouraged an emotional connection to be made between siblings, through *closeness*, *support* and *empathy*. One sibling identified how, although they were very different people, their sport participation facilitated *closeness*:

> I think we have quite different personalities, but both sporty, like into sport and obviously that gives an instant attachment when we grew up together. So we were always in close contact, regular contact, you know I'd chat to him about stuff. (F1-YS)

F2-OS revealed that he felt sport had brought them closer together:

> I think in some ways we became closer, because we went to race meetings together, and the underlying affection that sits there anyway exists between both brothers and that never changed, that was always there. I certainly think we became closer socially, we started to socialise together because of the sport.

F3-OS reflected on this relationship and explained the similarities that sport can bring out in siblings:

> I actually think maybe it made us closer, because we have such a lot in common and so as a family I think we were close. I saw my sister quite a lot and we did spend a lot of time together and we were actually lucky that we do get on very well.

As well as having close relationships, all the sibling subsystems identified the levels of interactional *support*. F3-YS identified how they would encourage each other to train hard:

> You would speak to each other and say 'what have you done today', and you would encourage each other saying 'I've only done this, or I've done this', or just encouraging each other to keep going and train probably a bit harder.

F1-YS provided insight into the continuous support they felt they received from their sibling:

Overall, my brother on me would've been a hugely hugely positive influence; like

massively because he would've been interested in how I was getting along, keen to

see me do well, almost at all stages, even up until now. So yes he's very sort of

supportive, keen to help, has helped, a good listener to what I've been involved in.

Paradoxically, however, one sibling subsystem (F4) acknowledged a lack of support between

siblings, "I've never asked for any advice from any of the family and they have never offered

any advice at all … I bet they didn't know who I was playing from week to week" (F4-YS).

However, this was not recognised as negative, suggesting that it "doesn't have to be all

embracing to realise your family love and support you." His brother (F4-OS) concurred with

this, stating that "drive to succeed and develop came from within and not from family."

Emotional interpersonal skills also included those related to *empathy*, with one of the

sibling subsystems emphasising its importance:

[We] probably got closer to be honest because you were there to encourage each other

and also you knew what each other was going through if you came off and lost a

game. You could understand each other, so I would say we probably got closer as we

grew up and we were all competing. (F3-YS)

The older sibling also identified empathy and the benefit of having all siblings competing at

the same level:

I think we are all very proud of each other in a way, that, I think it's nice because we

all know what it was like, we all know how hard it was to get there. It's a tough road

through training and competition to actually get there, so I think we know what was

behind it. (F3-OS)

3.4.3 Rivalry

The theme of rivalry generated three lower-order themes; *competition*, *success* and

motivation. This theme was discussed regularly throughout the interviews by all sibling

subsystems. Competitiveness spanned both sporting and non-sporting contexts, even within family games, as F4-YS describes:

> When we played football as kids we were ultra-competitive, massively so, and when we played cricket, Connect4 or whatever it was we were really competitive and were desperate to win. But because we were really really close, we would mickey take a lot, but yes it was competitive, but we knew how far to go and it would never spiral into anything nasty. We gloat when we win, but it has never changed, even if I hadn't played football.

When competing for the same place in an elite team, F3-OS recalled:

> I think it would've made it more competitive, erm, I don't know what it would have been like if one of us was in and one of us wasn't. I think that's the thing after that, that might have been difficult.

The will to *succeed* spurred rivalry within three of the sibling subsystems. For example, F3-MS suggested that their sibling's success gave them greater determination to succeed themselves:

> We all wanted to do better than the next one and I always wanted to do better. In terms of success and measuring success I think they [siblings] probably achieved more success earlier on than I did and that made me even more determined. It used to make me pissed off sometimes. If we were in the same venue and they would win and I wouldn't win, you know. From an early early age, we were competitive.

However, one sibling explained the negative impact it had on their behaviour, highlighting how they struggled with their sibling being talented:

> I was just angry within myself. I think a lot of it came down to that, you had a brother who was good at everything and it was hard to deal with in terms of people, family.

> Oh [brothers' name] this, [brothers' name] that, he's brilliant and you know what it was like there are other people here you know. (F2-YS)

Another sibling recalled a particular moment where rivalry lead to a fallout after beating his talented sibling during competition:

> We might have had to, but not really, it was never really that close in terms of the type of stuff we were playing. It never really would've been that, you know. I can remember an instance, maybe one, where he accused me of cheating when I played him once. I might have cheated, I might not. (F1-OS)

The final lower-order theme, *motivation*, was highlighted by two of the four sibling subsystems, although data codes were predominantly reported by the less-talented sibling. Both siblings indicated a desire to compete at the same level:

> I think he was at a level where I was striving to get to so. You're at a level I want to get to, erm, there was all positive feelings there, frustration now and again you know, that he was [competing] at a level above you, but nothing bad. (F2-YS)

> I remember feeling pissed off when I actually wanted to do the same as him, when I was at university and he was better than me at it and I remember thinking then if I had done what he's done then I would be better at the time. (F1-OS)

The more talented sibling in F1 (-YS) tried to summarise one of the key differences within their development and where their ambition was evident, when he suggested "I think I used to play to win and often I felt my brother played not to lose."

3.4.4 Resilience

Two sibling subsystems identified the umbrella theme of *resilience*, comprising of two lower-order themes; *mental process* and *behaviour*. An exemplar *mental process* was 'determination', as explained by F4-YS:

So it toughened me up definitely and it gave me a determination. It sharpened you up a little bit as well, because you were smaller, you had to do that sort of thing to survive even though it was just lads playing football.

Giving him an "inner strength" that F4-OS regularly highlighted as a particular strength of his brother's and one that enabled his pursuit of excellence. Indeed, this was reiterated by F1-YS, who suggested that his desire to beat his sibling was influential in their approach to competition:

And then I would hit against him and then also we'd play competitively and I'd try and beat him, and probably it was all fine, and I didn't want to lose, and you develop a bit more resilience because you don't want to lose and then when you actually come to a proper match you're a bit more resilient maybe than your opponent.

Several *behaviours* were identified that were perceived to develop such resilience. F4-YS identified rough behaviour as being impactful:

For me it toughened me up, because they were very rough and older than me. They were up to five or six years older than me and when you are nine, it's quite old, or even seven or eight. They used to rough you around but you learnt to either take it or pack it in.

We would mickey take a lot, but yes it was competitive, but we knew how far to go and it would never spiral into anything nasty. We gloat when we win, but it has never changed, even if I hadn't played football.

3.4.5 Co-operation

The theme of co-operation produced two lower-order themes; *verbal* and *physical*. Verbal co-operation was identified by three of the sibling subsystems and was exemplified in both training and home environments:

I might ask my big sister's opinion and she would stand up at the other end, and I would say I had a particular problem with a shot, and by throwing it differently, and I'd get some feedback from her, and vice-versa, and the same with my little sister, and we would continue to do that as a family. (F3-MS)

We get the salt and pepper; we were playing this shot at the weekend. And we had one shot here, and we would talk through it. And we did that as a family. We'd sit down, and there was nothing really, kind of hidden about it. (F3-MS)

You know we were such a small school who overachieved, you know getting to national school finals, 'where the hell is that', and the same with the club. So we [the siblings] would've talked through how we were tactically going to play our team, you know, who was going to play who. (F1-YS)

Physical co-operation was also discussed by two of the sibling subsystems. F2-YS talked about co-operative behaviours in the build up to competition:

We'd discuss it, build your bikes together and yes, because we'd go training together, practicing, he'd teach me to do things, or you only had to watch to learn, so yes it was great support, it was all good. I think he was at a level where I was striving to get to.

F2-OS agreed, suggesting that this aided his development as a talented athlete:

It was about the preparation for me, so the beginning of the week would be about preparing and we always generally did that together. We would learn together, or I would learn and then I'd teach him just because I was four years older, you know I was at a different stage of my education. That to me was where we spent a lot of time together, we did it together.

This physical co-operation was reflected by F3-YS when discussing their training routine:

We would train in the same places. At that stage [sister] and I were playing on the

same team, so we used to often do a lot of our training, gym stuff and out running

together and, when it came to on ice stuff we always did it together.

3.4.6 Separation

Finally, separation was identified by all sibling subsystems and was split into two

lower-order themes; *time* and *distance*. Separation was in fact counter to the idea of regular

interaction, emphasising a temporal aspect of the sibling mechanism within the TD process.

The lower-order theme of *time* represented a reduction of the time spent training together as

they developed as athletes:

> There was a period of time when I wouldn't spend much time with my sisters, maybe
>
> only see them at weekends at competitions, as opposed to living in the same house, so
>
> there was less interaction as development took place. (F3-MS)

> We did some off-ice type of training together, but we also did a lot of it apart, she had
>
> moved away at the time so often did her training at lunchtimes around work. So there
>
> was some separation there. (F3-YS)

F2-OS specifically described how training would lead to separation:

> It [training] put a lot of pressure on. Very much to the point where I was not able to
>
> attend a lot of family functions because I was training and if I did attend and turn up I
>
> would be tired and grumpy.

The second lower-order theme of *distance* was highlighted through F1-YS's comment that

development lead to increased travelling distances for training and competitions:

> I then started to miss significantly more school than I ever had done. When I was in
>
> primary school I literally don't remember missing any school, and then I started
>
> getting selected for a bit more and then that involved a bit more travelling, as I was

going to tournaments, selections or training camps and so I was missing like Friday

after Friday.

F4-OS reflected on this separation when recalling that his brother "moved out of the home, he

was away living in digs for four or five days, say four days a week. A little bit later on"- as

they developed.

3.5   Discussion

This chapter has retrospectively explored the impact of sibling interaction on the TD

process in order to identify the impact successful athletes felt their sibling had on their

development. Due to the nature of the sibling relationship, its longevity and its impact on

individual subsystems, defining a specific timeframe for TD would prove complex. Several

themes identified support previous research addressing sibling subsystems; namely, regularity

of interaction in sport, emotional interpersonal skills, rivalry and co-operation (Blazo et al.,

2014; Côté, 1999; Davis & Meyer, 2008; Hopwood et al., 2015; Trussell, 2014). Indeed,

current sibling literature highlights the benefits of emotional and instructional support

between siblings (Davis & Meyer, 2008; Hopwood et al., 2015) which were heightened

through regular interaction of the sibling subsystem in this chapter, often within the family

system. This indicates, therefore, growing support within the field and rationale for focusing

on such a pervasive relationship. Most interestingly, however, I identified additional

influential facilitators; resilience and separation. All of these add important depth to the

biopsychosocial perspective of TD, once again highlighting the crucially multifaceted

considerations toward understanding the complex, dynamic and non-linear process (Abbott et

al., 2005). As such, it appears that, in contrast to Ericsson, Krampe and Tesch-Römer's

(1993) linear deliberate practice framework, Collins and MacNamara's (2012) 'rocky road'

idea, and Abbott and Collins' (2004) regard for nonlinearity during TD, provides a more

parsimonious explanation to these data. Interestingly, the levels of competitiveness,

achievement orientation and adult involvement suggests that these activities were less related to deliberate play, than to self-organised deliberate practice.

Rather than TD systems attempting to reduce the exposure and impact of stressors/challenges to the athlete, data suggests that experiencing positive challenge (or trauma) along the TD pathway can in fact benefit those seeking expertise. Indeed, Collins, MacNamara, and McCarthy (2016) identified that 'super champions' (i.e., a minimum of 50 international caps/5 international medals) progressed from these challenges more so than 'almosts' (i.e., those who nearly made it but only achieved international *junior* success), through key psychological characteristics they brought to, and developed as a result of, the challenges (e.g., resilience, competitiveness and social skills; MacNamara, 2011). As such, rivalry between siblings can provide adaptive and developmental purposes (Edward, 2013), leading to outcomes that can facilitate TD. Indeed, this finding supports Davis and Meyer's (2008) discovery that this rivalry can lead to increased motivation to train harder, therefore allowing the potential for improved performance.

Alongside this, the importance of resilience during TD is highlighted by Sarkar and Fletcher (2014) who suggest that positive responses to challenging and/or pressurised environments can lead to the realisation of optimal sport performance. Accordingly, I suggest that the sibling subsystems explored in this study *facilitated* the development of resilience, encouraged competitiveness and independence through rivalry and fostered regular interaction with others (i.e., sporting peers, but non-family members) involved in sport. In addition to this increasing independence, these data also highlight the role siblings can offer as a coping mechanism for potential trauma in sport. Specifically, co-operation was reported when athletes were looking to alter or address performance underachievement and, emotional interpersonal skills were discussed as critical following de-selection or poor performance.

Supporting a holistic perspective as explained through FST in Chapter 2, these findings add veracity to the need for sibling consideration within TD environments. Indeed, data from this chapter highlight the facilitative potential of siblings to foster important characteristics (co-operation, emotional interpersonal skills and rivalry) that may not otherwise be developed through, for example, parents. Of particular interest is the noted change in the subsystem boundary as the athletes progressed closer towards expertise (i.e., separation). As such, becoming more permeable—reflecting the physical *distance* between siblings and *time* spent together—inevitably meant that athletes would seek support from outside of this specific subsystem (e.g., coaches, parents, sports organisations, fellow athletes). Accordingly, FST needs to be applied across the development pathway *if* we are to better understand this important dynamic (see Chapter's 4 & 5). The application of FST allows for a greater insight into the temporal nature of the TD process, reflected by the changing requirements of the athlete in relation to sibling and the wider family involvement.

From a practical perspective, there are important benefits to be gained from weighing up the pros and cons of *how* and *when* sibling intervention might be encouraged within a coaching environment. Crucially, I suggest the need to consider the coach's and/or the TD environment's aims alongside the athlete's needs (both generic and specific) before making a decision as to the benefit of sibling intervention (Martindale & Collins, 2005). For example, pairing siblings up who are particularly co-operative during technical development, or putting particularly competitive siblings on opposing sides in small games *might* be an appropriate course of action. Siblings are still just one part of the holistic and complex coaching environment, and clearly not all siblings will have such a positive influence. Therefore, it would be wrong to propose that the sibling *will* be key to TD, as such intervention may have a negative impact. Fortunately, talent pathways are beginning to move away from the

concept of "if X then Y", and therefore professional judgement and decision making is key when considering the utilisation of siblings (Martindale & Collins, 2005).

Despite these extended insights, however, it must be acknowledged that this chapter has limitations. Retrospective interviews rely on the memories of participants and can therefore be criticised for their subjectivity, highlighting their requirement for reliable and engaged informants for data to be rich and informative (Singer & Willett, 2003). Arguably from a phenomenological approach, however, issues of memory failure are marginalised due to the assumption that participants are providing their account of the most important elements of their own experience. Forgotten elements may, therefore, be assumed to be unimportant, or unmemorable, towards the experience (Moran, 2000). Furthermore, the omission of additional siblings, due to availability in Family 1 (two siblings) and 4 (three siblings) distorts the picture of the broader sibling relationship across the family, as it is unclear, and unlikely, that the relationships interpreted in this chapter reflect all sibling relationships Nevertheless, Chapter 4 will longitudinally track junior elite athletes to explore the prominence of relationships at various points (e.g., pre-, mid- and post-season).

3.6   Conclusion and Next Steps

This chapter has outlined, and shown support towards, several mechanisms for how siblings can facilitate positive progression during the TD process. Namely, through regularity of interaction in sport, emotional interpersonal skills (closeness, support and empathy) and co-operation. These mechanisms have been extended by highlighting that rivalry between siblings can positively impact upon TD and that siblings can contribute to the development of resilience; a fundamental psychological characteristic that can assist athletes to cope with high-level challenge (MacNamara, Button, & Collins, 2010). It is important to also note the nonlinear role of the sibling subsystem, as reflected by the theme of separation

as expertise developed, therefore reducing the facilitative role siblings can play in TD (further examples of the nonlinear nature of the relationship are explored in Chapter 4).

Accordingly, coaching practice should consider this relationship alongside the more coveted role of parents, as instrumental during the TD process. Finally, I suggest the need for careful planning both within and outside of the sporting environment and across different timescales to ensure an optimum developmental effect (cf. Abraham & Collins, 2011) as well as greater utilisation of FST principles in future TD research. Something that will be picked up again in Chapter's 4 and 5.

Chapter 4: The Impact of Siblings During Talent Development: A Longitudinal Examination in Sport

4.1 Introduction

Having highlighted the possible impact that siblings can have on TD in Chapter 3, and with the sibling relationship being portrayed as the most pervasive and longest lasting across the lifespan (Conger & Kramer, 2010), recognition of the prominent role that siblings can provide during an individual's development is unsurprising (Furman & Buhrmester, 1985). As Howe and Recchia (2014, p. 4) outline, "the sibling relationship is a natural laboratory for young children to learn about their world" and, therefore, must be seen as an important context for individualised growth (Volling, 2003). Indeed, studies have shown that siblings can directly influence development by acting as social partners, role models and foils (McHale et al., 2012). Notably, however, the previous chapter's examination of the sibling relationship within the TD environment was limited by its retrospective nature and concluded by outlining the need to track the relationship longitudinally. Accordingly, this chapter focuses on tracking the long-term relationships of siblings in sport across a 12-month period. Specifically, families were all intact, therefore living in the same household, and from either ethnic minority or mixed-ethnicity backgrounds. This longitudinal approach should provide a more sensitive measure of the relationship as it unfolds.

The previous chapter highlighted the possible nonlinear state of the sibling subsystem through uncovering the addition of separation at certain stages of the sibling's development in sport. Such nonlinearity is consistent with contemporary models of TD (e.g., Bailey et al., 2010), thus indicating a crucial requirement for long-term consideration to better understand this variation. Collins and MacNamara's (2012, p. 907) 'rocky road' is an example of this nonlinear journey, which portrays the ups and downs experienced on the way to achieving elite status. Indeed, offering challenge is seen as essential, and calls into question traditional

TD pathways that seek to create a smooth route to elite sporting success. Notably, previous studies, alongside Chapter 3, suggest that siblings can have a multifactorial impact on this nonlinear pathway, specifically, through biological, psychological, and sociological interactions (cf. Blazo et al., 2014; Côté, 1999; Davis & Meyer, 2008; Hopwood et al., 2015; Trussell, 2014). The integration of these three interactive domains reflect the biopsychosocial nature of development. Since the biopsychosocial model is relatively new to the sporting context (Bailey et al., 2010) it would be meaningful to further explore how such a pervasive relationship, presented against a backdrop of FST, impacts the development of talented athletes.

Recently, there have been numerous calls to understand TD pathways through modification of the methodology employed. Buekers, Borry, and Rowe (2015) stress the importance of longitudinal design to explore the dynamic and interactive nature of the broad TD environment. They further suggest that this contradicts the simple linearity of talent prediction methods such as a prediction curve; which can be unhelpful due to the multifaceted nature of performance development. Likewise, Till, Cobley, O' Hara, Cooke, and Chapman (2014)'s suggestion to measure longitudinal progression can serve to enhance the coaching environment *and* realise the need for an *expertise* approach to coach decision making (Collins et al., 2015). In contrast, many previous cross-sectional studies have directly compared experts with novices (e.g., Beilock & Carr, 2001). As such, an understanding of the pathway(s) required to achieve expertise are less exposed within data (notwithstanding criticisms over whether such experimental studies actually represent a true depiction of performance; e.g., Christensen, Sutton, & McIlwain, 2016). Within the context of siblings in sport, there has been very little longitudinal study (seven in total: Blazo & Smith, 2018), with most of these considering it as part of the broader family. From an applied perspective, this information would be essential for coaches and practitioners working within development

sport. Of course, a major consideration of longitudinal research is the time required. With many studies having sought understanding using short-term group comparisons, such testing detracts from the importance of an individual's perspective of the TD experience.

Interestingly, of the limited studies that have addressed the sibling dynamic in elite sport (cf. Blazo et al., 2014; Côté, 1999; Davis & Meyer, 2008; Hopwood et al., 2015) none focused on families with two athletes striving for elite status, instead examining a mix of sibling dyads (i.e., elite, semi-elite, non-elite). While this research provides valuable insight into sibling relationships within sport, study is limited in providing a full understanding of how different sibling dyads may act to support and/or disrupt progress along the pathway. Importantly, the literature distinguishes between participants on an Elite Referenced Excellence (ERE) pathway (i.e., where achievement is measured against others with the goal to win at the highest level) versus a Personal Referenced Excellence pathway (i.e., where achievement is personally referenced, for example, completing an ironman event or lowering your handicap in golf; Collins et al., 2012). As Blazo and Smith (2018, p. 12) outline, "there is a lack of consistent connection to developmental outcomes such as talent development", and that if we are to be able to better educate coaches, parents, and athletes we need to further understand the positive and negative influences siblings may have on sports development (Davis & Meyer, 2008). Accordingly, it was appropriate at this stage to investigate 'semi-elites' (cf. Swann, Moran, & Piggott, 2015) interaction with their siblings while on an ERE pathway. Therefore, a 1-year longitudinal study was conducted to examine the impact of siblings on TD where both are prevalent within the talent pathway. Interviews were conducted with siblings and parents with the aim of further enhancing our knowledge of the impact of this subsystem on the development process.

4.2   Method

Due to the study's subjective nature (i.e., focusing on experiences as reported by the participants; May, 2011), a constructivist approach was adopted with the intention of developing an understanding of the lived experience; therefore, allowing the identification of themes within each family system. As Jonassen (1991, p. 5) highlights, there is not one knowable truth and "knowledge is a process of actively interpreting and constructing individual knowledge representations." Specifically, TD was examined by collecting data from a variety of family members—the siblings themselves and their parent(s)—to ensure a multifaceted understanding (Yin, 2014). Of course, talent pathways are many and varied, with each sport having a system that, ideally, caters for the individual circumstances of the participants; in short, creating a very complex and dynamic environment for coaches to navigate. Accordingly, for the present investigation, a single case study (i.e., data were collected from one football academy within the UK) with embedded units (i.e., the families) was chosen as the most appropriate method for longitudinal tracking. This approach is useful because it allows analysis within and across individual units (cf. Baxter & Jack, 2008). Football was chosen for this investigation as the most common, early starting and well-resourced pathway currently in existence in the UK. Finally, I deliberately chose a high-status academy programme, as identified by the Premier League's own system of evaluation.

4.2.1   Participants

Four families, each consisting of a sibling dyad and at least one parent depending on availability (all families involved were two-parent families), were purposefully sampled to facilitate comparisons across the embedded units within the case study. Siblings all played in the same Premier League football academy and represented the club at a range of age groups from U8's to U14's (see Table 4.1). Family 3 welcomed the addition of a new sibling during the study. For this initial investigation, reflecting the challenges surrounding participant

recruitment identified by Blazo and Smith (2018) and as stated above, football was chosen because of its high prevalence as a sport within TD research and due to the advantages associated with high participation rates. Ethical approval was obtained through the university's ethics committee and information sheets and booklets (see Appendix D) provided. On receipt, and consideration, of these, signed informed consent was provided by parents and verbal assent by youths prior to data collection.

Table 4.1 *Participant Characteristics*

	Family Members	Gender	Starting Age
Family 1	Mother		
	Father		
	Sibling 1	Male	11
	Sibling 2	Female	9
Family 2	Mother		
	Sibling 1	Male	14
	Sibling 2	Male	12
Family 3	Mother		
	Sibling 1	Male	12
	Sibling 2	Female	9
Family 4	Mother		
	Father		
	Sibling 1	Male	13
	Sibling 2	Male	10

4.2.1 Procedure

Bi-monthly prolonged case study semi-structured interviews (every 2 months; cf. Baxter & Jack, 2008) over a period of 1-year were held with players to explore experiences, emotions, and behaviours during the TD process, alongside the parents perceptions of these. This enabled the triangulation of sources contributing towards the generation of a rich, robust, and comprehensive account of the relationship (Baxter & Jack, 2008). The study length was chosen to examine possible mechanisms for TD during preseason, in-season, and postseason; paying attention to the types of change that might occur within the sibling relationship (Saldaña, 2003) during a full cycle of an age group.

Joint interviews took place (siblings together/parents together, where both were involved) permitting for the development of a comprehensive data set. The motivation behind joint interviews was to establish rapport with the interviewees, build confidence and, especially concerning the siblings (considering their young age), to elicit greater discussion of events. Such an approach also enables the researcher to obtain two versions of events which may or may not provide a coherent account (Arksey & Knight, 1999). Data from each sitting were then used to inform the pairs' subsequent interview (Yin, 2014). Guarding against the limitations of joint interviews, particularly the potential dominance of one interviewee over another, I asked questions directly to both participants to encourage two accounts of the phenomenon (Arksey & Knight, 1999). In total, 21 interviews took place with parents ($M_{duration}$ = 28 minutes) and 23 interviews with siblings ($M_{duration}$ = 17 minutes). This approach directly focused on the sibling impact, as well as providing a holistic perspective toward the perceptions, attitudes and meanings of the lived experience (Yin, 2014). Discussions were wide ranging, questions were based around two levels in order to allow the stream of questions to appear fluid rather than rigid (Rubin & Rubin, 2012). Level 1 questions were "friendly" and "nonthreatening" that engaged with the interviewee in a

more relaxed manner (e.g., So who is your favorite player?; Yin, 2014), whilst Level 2 questions were focused on the needs of the line of inquiry for this study (e.g., Do you talk about what you are going to do?).

4.2.2 Interview Design

An interview matrix was designed for both players and parents (see Appendix E) through a deductive consideration of the themes uncovered in the previous chapter. Questions were designed to probe these themes further, and consider the use and importance across a longer period of time. Due to the nature of the bi-monthly process identified above, opportunities to re-visit and refine particular themes and/or questions were considered on a family-by-family basis in order to tailor interviews to their specific context. Therefore, follow up interviews would focus in on specific questions, probes and stimuli that reflected the data presented in the preceding interview, to allow more detailed interpretations to be formed.

4.2.3 Data Analysis

Interviews were transcribed verbatim prior to conducting a thematic analysis (Braun & Clarke, 2006). Transcripts for parents and siblings within each family were converged for improved understanding (Baxter & Jack, 2008). Analysis consisted of six stages using a qualitative software package (QSR NVIVO 10). Familiarisation took place through immersing myself in, and becoming familiar with, the content through reading and re-reading the data. Descriptive coding then took place to assign initial raw data codes, before searching for subthemes through examination of these codes based on patterns of meaning. Next, subthemes were reviewed to determine an accurate picture of these data, and one that illuminates the impact of siblings on TD. Subthemes were then grouped into distinct overarching themes with informative names that represent the impact of the sibling relationship, before contextualising the analysis in relation to existing TD literature (King &

Horrocks, 2010). To address data trustworthiness and the possibility of misrepresenting data codes, peer debriefing took place with a supervisor. In the case of a dispute (< 5% of cases), alternative interpretations were presented until a plausible explanation was agreed upon (Sparkes, 1998).

4.3   Results

Data analysis revealed a combination of novel and replicated findings from previous empirical studies. Novel findings comprise of skill development (subthemes; mentoring, co-operation, and challenge) and communication (instruction and discussion). Replicated findings (see Table 4.2) from Chapter 3 and other empirical studies are; interactional context (play and practice), emotional interpersonal skills (closeness and support), rivalry (performance and affective response), resilience (development and test), and types of separation (academy, school and self-initiated). As such, I present below the former as important characteristics through use of the emergent themes across the longitudinal period. First, a detailed account of newly emergent themes is presented (i.e., skill development and communication). Second, the temporal nature of the sibling subsystem highlights the changes within themes across the 1-year study; thus, providing insight into the varying nature of the relationship. Third, a presentation of the differences across the sibling subsystems reveal the variability of the interactions across the dyads.

In support of the data in the previous chapter, and research conducted by Blazo et al. (2014), Côté (1999), Davis and Meyer (2008), Hopwood et al. (2015), and Trussell (2014), Table 4.2 provides additional evidence for the mechanisms (overarching themes) that siblings displayed as facilitators of TD; specifically, *interactional context, emotional interpersonal skills*, *rivalry, resilience, and type of separation*.

Table 4.2   *Potential Mechanisms that Support TD – Support for Previous Findings*

Overarching theme	Sub-theme	Exemplar raw data (F = Family)
Interactional context	Play	"When it's the summer we always went outside and played football" (F3)
		"We play football in the house as well" (F2)
		"We usually play together; we go out to play football" (F3)
		"They spend more time just playing football, but they might also in the summer play other things" (F1)
		"If the weather is good they go outside and play football" (F4)
	Practice	"We both got goals, so we trained on tackling and tricks" (F3)
		"Practicing on our weaker foot and stuff like that" (F2)
		"Sometimes we go and do skills … or practice shooting, one of us goes in goal" (F1)

Emotional interpersonal skills	Closeness	"They are good friends, which means they like to spend time together" (F2)
		"They have the same interests and emotionally they are connected" (F3)
		"They are proud of each other" (F1)
	Support	"Watch all her games" (F1)
		"Sometimes I am tense and excited, I want to see him do well" (F2)
		"We encourage each other to do better because we are brothers." (F4)
Rivalry	Performance	"They are both very competitive you know, and it's all about winning" (F2)
		"We want to do better than the other in training" (F4)
		"He always says I cheat with the score" (F2)
	Affective response	"Now and again they will lose their temper, if he loses he's not happy" (F2)
		"Definitely benefits from the competitive aspect, drives him, he looks up to him" (F4)

Resilience	Development	"If we don't practice physicality she could probably get knocked off the ball easier" (F1)
		"You have to be harder with him, that's how he will improve. So he is more into pushing him, he wants to push [younger brother]" (F4)
		"I want her to learn how to lose as well, because you can't always win" (F3)
	Test	"I will be more match realistic … mistimed challenges, see how she copes" (F1)
		"Never seen him[older] give him[younger] any benefit" (F2)
		"If she failed then she is trying again and again" (F3)
Type of separation	Academy	"It is always when one is at home, the other is away. One has a tournament on a Saturday, one on a Sunday" (F2)
		"Half term, [older brother] is going to England camp" (F4)
		"It's a lot different without him, I really don't know what to say" (F4)
		"He is ready for his independence and wants to experience this, but that's going to be a big thing for [younger brother] with his brother moving out" (F2)

School	"After school they don't have as much time, they get back ... it is dark" (F1)
	"We go to different parts of the school" (F1)
	"When we are inside we will be doing school stuff" (F3)
Self-initiated	"Sometimes I will go out and train and she will just play on her own" (F3)
	"Sometimes when I get tired and he wants to talk to me about it, and I will not want to, so I will say to him you can tell me tomorrow or later" (F3)
	"I still go outside a lot with my mate … he will stay inside and play" (F4)

4.3.1 Extended Relationship Dynamics

Chapter 3's initial exploration of the sibling subsystem uncovered the theme of co-operation that was further represented by two subthemes; physical and verbal co-operation. The current chapter's findings, however, suggests a need for a more refined consideration. With this in mind, I present the theme skill development as an expansion of the subtheme physical co-operation, and the theme communication as an expansion of the subtheme verbal co-operation (see Table 4.3).

Table 4.3 *Potential Mechanisms that Support TD – Newly Emergent Themes*

Overarching theme	Sub-theme	Exemplar raw data (F = Family)
Skill development	Mentoring	"Put your foot there and role the ball this way, and do this skill at this time" (F1)
		"He wants to help her improve and become the best she can do" (F3)
		"He asked me how to do this skill and I showed him, and he could do it after" (F2)
	Co-operation	"Like to bounce ideas off each other, and show each other different stuff" (F2)
		"They try to find games inside, so they play football inside. Not as much as the summer time, but they are always kicking the ball, playing tricks or skills. Even if it is only a balloon" (F3)
		"Otherwise I wouldn't be able to learn from what she does" (F1)
	Challenge	"Let's do it on the left leg so they need to work on the weaker foot" (F1)
		"They do influence each other's style as they are showing each other skills they could potentially do" (F2)

"Skill challenges against each other" (F2)

"Because of the goals we set each other when we practice them we get better at them. Maybe it is something we wouldn't normally do that we set each other, so we are out of our comfort zone" (F4)

Communication	Instruction	"Give them tips" (F2)

"Sometimes it's good comments, sometimes it's ok, sometimes it's a bit bad" (F1)

"He tells me how to improve and I would try that, and then I got it" (F3)

Discussion   "There is definitely football talk … They'll always discuss their matches" (F2)

"Talk about what we are doing, what we need to think of, what we need to do" (F4)

"We just discuss it and things like that. For example, in the middle of the game if I call it at a point, she will say oh this this …we will chat about it afterwards as well, but sometimes we talk, sometimes it doesn't need to take talking" (F1)

"We have a little break and we talk about things and we do reflections" (F3)

4.3.1.1 Skill development. Skill development was divided into three sub-themes; *mentoring*, *co-operation*, and *challenge*. Three families highlighted occasions where they felt mentoring took place within the football context, usually with the older sibling as mentor and the younger as mentee. For example, in Family 3 the older sibling described: "Sometimes I teach her some techniques, like how to score a goal, and she practices how to score a goal." The younger sibling confirmed that she would learn from observing the older sibling: "I see him doing some tricks and goals", and "he shows me new skills." In addition, the mother observed that the older sibling would often encourage practice:

> She came to him and said 'can you show me this trick,' and she said it looked so difficult, so he started to show her the steps, but she said it was boring. He said 'yes it is, but you have to do this before you can complete the skill.'

Similarly, the older sibling within Family 4 described: "Usually he'll do some practice and then once I can do it I'll try to coach him how to do it." The younger sibling then reiterated this: "Recently we went out together to the park and he taught me some skills that he's learnt and we did serious training instead of kicking it."

All families discussed co-operation, with the older sibling in Family 2 highlighting an example of how this supports skill development:

> We have one ball and one guy tries to do the skill, and if he does it the other guy tries to copy him. The one that can do it gives them tips you see. So if he needs to lean forward and stuff like that. That way it makes it easier for the other.

This was reinforced by the mother's assertion that "they have definitely learnt from each other." In Family 1 the younger sibling provided some examples of how their co-operation works: "We take it in turns and do it together." These sibling's co-operation also extended beyond the physical act of playing football, they often used external sources together, such as the internet to "find clips of people doing skills and then we show each other." The older

sibling in Family 3 provided an example of how co-operation was reciprocally beneficial:

> With her, I can practice my skills and it helps me as well. When I go over it with her, it helps me shape what I have to do in a game situation. When I ask her to do it faster, I have to do it faster.

The younger sibling elaborated on this by highlighting that "sometimes he wants me to pick any skills I want to do, and sometimes he picks."

The final sub-theme, challenge, also acknowledged by all families, reflected a move towards competitive preparation through planning and goal setting. This was summarised by the mother in Family 3 who identified that it was part of the sibling relationship:

> It is more fun if there is actually a target and it is more competitive. For example, with the trampoline, they start with the ball, and then one changes it if it touches the ground five times, and then it starts getting competitive and more interesting.

The younger sibling added to this, highlighting a competitive element: "We sometimes set goals and then we just score each other, and then we try and challenge each other." They also liked to try new things together, with the older sibling remembering "someone scored a bicycle kick [on TV], and we went outside and tried to do a bicycle kick." Likewise, both siblings in Family 4 talked about how they set each other targets to achieve with the older sibling saying, "we set targets before we go to the park … we'll say three targets."

4.3.1.2 Communication. All families referred to the communication that occurred between siblings. This was subdivided into *instruction* and *discussion*. Instruction included a range of data codes that included both positive and negative comments. For example, in Family 4 the mother commented on the negativity of the older sibling:

> Sometimes he is hard on him; 'you can't shoot,' instead of him saying to him 'shoot like that,' I say that to him. So I say to him don't say the negative things to him, tell him how to do it.

There was also mention of how to improve, with the older sibling providing an example:

I will suggest things to him, like 'maybe you could do this or this' … sometimes it's a bit hard to get instructions through to him. Once you've told him then he'll do it, but he wouldn't admit that he doesn't do it.

In Family 1, the older sibling added to this variation: "It depends if she can do it or not. If she can't do it then I'll tell her, but she might get annoyed." Further observations from the mother in Family 3 highlighted the positive aspects of this instruction:

I think it is more from him [older sibling] to her [younger sibling]. He said, 'when I was your age I faced the same situation and you could do it like this or that or try this way.' From her to him it is more 'let's do this, you will be fine,' more than advice.

The older sibling talked about the feedback they would often give the younger sibling: "I praise her and tell her how she has improved and how well she has done in the game." Finally, the mother of Family 4 identified the general trend in the sibling relationship suggesting they would "point out something that went wrong."

Discussion between the siblings was most commonly associated with football. For example, the mother in Family 2 observed:

There is definitely football talk … They'll always discuss their matches. They love to hear how they went, you know, who did they play, how did it go. They'll re-enact their goals for each other … I did this skill and things, and that sort of discussion goes on.

This was supported by the older sibling who highlighted that discussion helps them revisit aspects of their performance, as they "talk about matches we played at the weekend, and we'll see what we did and skills we did." When elaborating on specific scenarios the mother in Family 1 suggested that "they started doing some videos and they talk about it … mostly about football or things that they watch." The older sibling identified "what stands out in the

training session that happened," and the younger sibling acknowledged "what was fun about training" as key topics for discussion. Family 3 identified that much of this discussion would take place during activity with the older sibling suggesting that there is "lots of chatting when we play football." The mother provided further clarification of this communication by sharing that they felt it would sometimes be time restricted: "Even if it is only 5 or 10 minutes they are talking so they are up-to-date." The father in Family 4 reflected on the scope of the sibling's discussion: "They talk about the game; they replay on everything."

4.3.2 Temporal Nature of the Sibling Subsystem

As a result of the longitudinal approach taken, this chapter shows the temporal characteristic of the themes (Tables 4.2 and 4.3) identified, with examples now provided.

When considering the *interactional context,* the younger sibling in Family 1 mentioned the seasonal element when trying to play, suggesting "when it is the summer we always went outside and played football, so now it's more dark we can't play as much." This was also evident when practice was discussed with the mother suggesting that over the Christmas break "they trained most of the time in the garden together", and that the weather can be a factor: "If the weather is ok then they play outside, practising most of the time, shooting skills and things like that." Family 4 also provided evidence of the variation that occurred across the year. The mother reported that they were now training more together: "They recently bought some training stuff, and [older sibling] said they are going to train together and stuff, and they train more together." The father added to this through acknowledgment of how this changed their interactions:

> Yes, they work on specific stuff as well; they bought training aids like cones and stuff like that. [Older sibling] fancies himself as a bit of a coach, so they train on specific things now. Before it was just kick, but now they work on specific stuff.

Evidence of variation within the theme *emotional interpersonal skills* was also apparent across the year. For instance, the mother in Family 1 highlighted that their closeness was not always consistent: "Sometimes they cannot live without each other and with each other. They get annoyed with each other, fight for 5 minutes and then they want to play." Similarly, Family 2 recognised that the sibling closeness would sometimes falter, and arguments would occur. This was summed up by the older sibling's comment that "it's petty things … just had a bit too much time together." In contrast, the mother talked about a period in the year when the younger sibling was in hospital and their closeness became magnified:

> [Older sibling] was there with us when we were going through this. The hospital really commented on how [he] was with [him], and what a good brother he was. They could see how close they were … So [he] would sit by [his] side, and when he would come around a little bit he would show him videos of football matches.

The siblings in Family 1 also acknowledged this temporal variation, with the older sibling describing a change that would affect the opportunity to support the younger sibling's *skill development*:

> I won't have as much time to help and train with her as I will have summer camp, and that's 5 hours for 3 weeks on Tuesday, Wednesday, and Thursday. So, I will have Friday, Saturday, Sunday, and Monday to train with her over the summer.

Variability of co-operation was also described by Family 4, with the younger sibling outlining a potential response if they could not agree: "We would try something we can both try to do, but if that doesn't work we might take out two balls."

When discussing the sibling's *communication*, the mother in Family 1 suggested that it could depend on what happens for discussion to occur: "If it went good for them they are ready to talk about it. If it didn't then they don't." The mother also acknowledged a change in what they discussed, revealing that "they started doing some videos and they talk about it."

When asked if they listened to instruction from the older sibling the younger sibling responded with "sometimes," with the older sibling adding, "sometimes she listens, sometimes she ignores me." Family 2 revealed that instruction was not always well received as the older sibling commented on the younger sibling taking advice: "Yes he does, but he can get frustrated sometimes." Discussion within the family altered when the older sibling moved away from the family home towards the end of the year. When asked about phone conversations, the younger sibling shared that they "talk about loads of different things … like the latest football news, and training and stuff." The older sibling also confirmed that during this period they "talk about how we are getting on," and that this would occur "every few days."

When considering the affective response *rivalry* had on the siblings in Family 2, frustration and anger would occasionally surface. The mother suggested that "now and again they will lose their temper, if he [younger brother] loses he's not happy," and the older sibling also highlighted the impact it had on the younger sibling: "It can be the other way around, he gets frustrated." However, he did also justify that it was frustrating for him too: "Sometimes when you can't do it, and you get frustrated. You just want to focus on your own things." Family 1 also discussed the variation of the affective response with the mother suggesting "he will sometimes get jealous of her getting things that he might not." When talking about their coaching the mother outlined that the younger sibling sometimes got jealous: "She spoke to me and said that he is getting more challenge and harder things to do, and she was getting easier things." The mother also identified that if the younger sibling achieves something ahead of the older sibling "then he makes excuses why he can't do it because he's got the wrong boots on or something."

The variation in *resilience* was also discussed. The mother in Family 3 commented on the changes that occurred:

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I think the last month he's taking it seriously so when he can score then he scores, and then this is when she probably tries to push him and try to score as well. I think that has changed, it's more serious now.

The younger sibling reinforced this by sharing that "he tries to go against me and I can push him into the sofa to stop him scoring." When considering how the siblings in Family 1 test resilience, the father suggested this sometimes went too far: "Sometimes he pushes her too strongly or she pushes him too strongly." However, the mother remarked that perhaps such interaction benefitted the younger sibling: "By playing, she is really good, she is really strong when playing so she is not afraid to play with them." With this in mind, the older sibling provided insight into how this may look: "So sometimes I will be more match realistic in tackles and stuff like that, and maybe mistimed challenges, and see how she copes."

The *type of separation* experienced by Family 4 changed towards the end of the year when the older sibling got released by the club, with the father describing the impact this has had: "So [older sibling] has been going up and down in many different places [looking for a new club], so it is quite different for us." This lead to the older sibling moving to a club away from home: "I've moved up here … a month, so moved up in February." This resulted in the younger sibling practicing "outside a lot less." When considering the impact of school on separation the finishing times of their respective schools appeared as a barrier to interaction in Family 3. The older sibling acknowledged this through the following: "I finished school before her, so I did two weeks [of training] alone."

4.3.3 Contrasts Across Families

These longitudinal data highlight the subtle, but demonstrable, differences in dynamics between sibling dyads. I am aware that Krane, Andersen, and Strean (1997) explicitly emphasised that quantity of raw data codes (as reflecting a positivist perspective) does not necessarily indicate the importance placed on them by the family, and therefore,

such suggestions deviate from the qualitative nature of this study. However, through

presenting exemplar quotations from the participants themselves, alongside Figure 4.1, I

emphasise how nonpositivistic interventions must be. In other words, the presentation of data

code frequency is, in fact, intended to criticise the positivist perspective. Therefore, I present

evidence of an important practical implication for the need to avoid generalised packages for

treatment of families within TD. In order to provide concise accounts of the differences I

have chosen to only present examples from those themes, that data suggests, characterise

each family through the high number of raw data codes per theme.
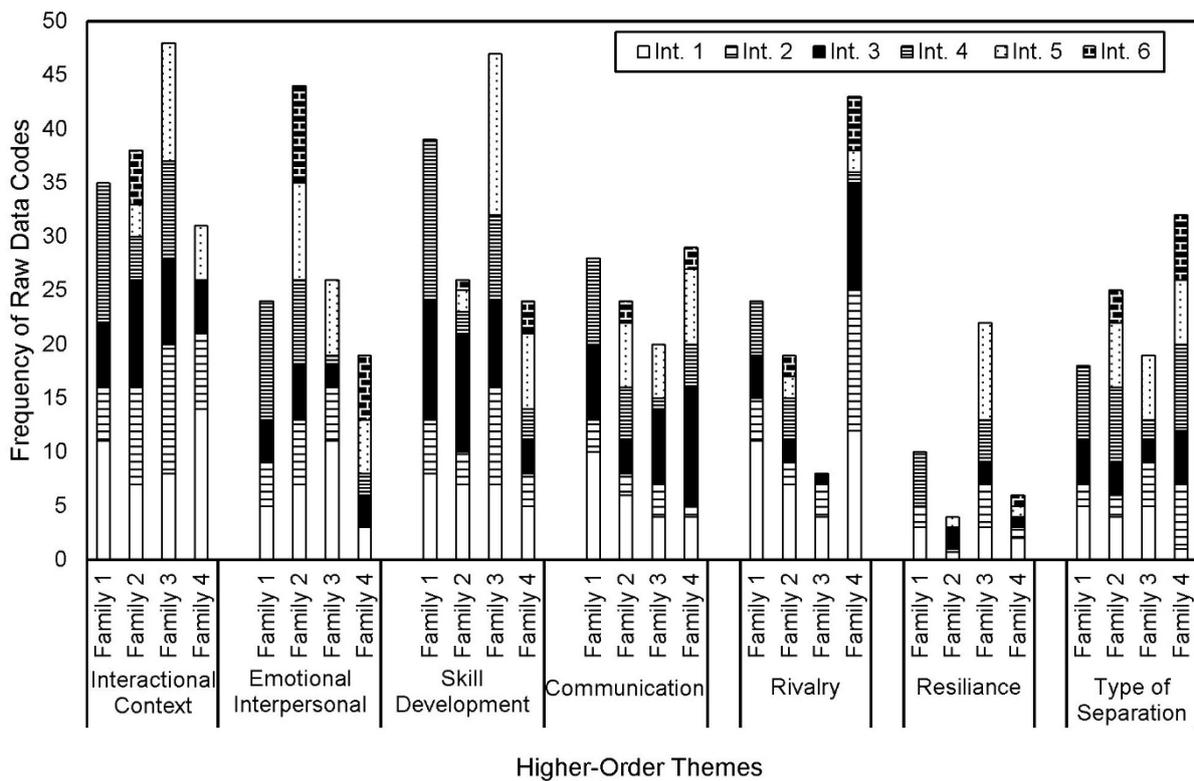
Figure 4.1. The use and importance of potential mechanisms – comparisons between

families and across time.

When asked to summarise how participants believed siblings impacted on *their* football development, there was a clear link between the themes they identified, and the frequency of raw data codes depicted in Figure 1. Family 1 reported a high frequency of codes with regards to skill development and this was summarised by the older sibling's response to the question: "I wouldn't have anyone to train with and wouldn't be able to learn from what she does and her learn from me." In contrast, Family 2 referred to emotional interpersonal skills throughout the study, with the parent providing the following summary: "What they have created with each other is safe and secure, friendly, happy, positive, and excludes that more negative stuff. For me that is how they help each other in football. Probably more than the practical stuff." Further evidence of these subtle differences was summarised by the older sibling in Family 3, who identified the importance of their sibling supporting their skill development: "With her I can practice my skills and it helps me as well. When I go over it with her it helps me shape what I have to do in a game situation." Finally, support for these contrasts was underpinned within Family 4 by the older sibling's overview of their relationship strongly emphasising rivalry: "Because we are brothers, so we are competitive. It's like Messi and Ronaldo, it's that competition, we push each other to do better." Figure 4.1 also provides further evidence of the variation of theme use across the year.

4.4 Discussion

This chapter aimed to explore the potential mechanisms through which siblings' impact on TD in sport. Identified themes support evidence for the sibling relationship's impact on TD (see Table 4.2), namely, through the interactional context, emotional interpersonal skills, rivalry, resilience and separation (see Chapter 3; Blazo et al., 2014; Côté, 1999; Davis & Meyer, 2008; Hopwood et al., 2015; Trussell, 2014).

Furthermore, this chapter has provided greater insight around the theme of co-operation (see Table 4.3), previously identified in Chapter 3, through expanding the initial sub-themes of physical and verbal co-operation through the exploration of two new overarching themes; skill development and communication. Indeed, co-operation was used to impact on skill development outcomes and the communication that occurs between siblings through a variety of formats. However, of most interest is the further, and more detailed, exposure of the subsystem's changeable nature. When considering the theme of separation, alongside the variation within the remaining themes, it is apparent that the permeability of the sibling subsystem boundaries further supports the dynamism of this relationship. It is evident through this chapter that each subsystem constantly moves along the continuum of enmeshment to permeability (FST) in a bidirectional manner dependent on the time of year and the environment. For example, the boundaries of the sibling subsystem in Family 2 became highly permeable when the older sibling moved out of the family home as the younger sibling utilised the parent–child subsystem, as well as peer relations outside of the family system to combat this. However, during the summer the mother commented on how the boundaries became highly enmeshed as they were back together and had little interest for people outside of the subsystem. As such, any approach to using this relationship would require an understanding of the prominence and relevance of the themes identified through this chapter, Chapter 3 and other studies (Blazo et al., 2014; Côté, 1999; Davis & Meyer, 2008; Trussell, 2014).

Through a longitudinal approach, this chapter has illuminated the ongoing variation across the potential mechanisms identified within the relationship, such as time of year (e.g., summer allowed more outdoor activity) and football progression (e.g., siblings moving away from the family home for sustained periods). The iterative nature of longitudinal qualitative research supported the nonlinear nature of the sibling subsystem as it allowed for the

identification of progressive change within each family system; some acute (e.g., rivalry –

Family 4) and others chronic (e.g., regularity of interaction – Family 3). Furthermore, such a

period allowed for an enhanced understanding of phenomena, such as the sibling subsystem

and TD environment, that evolves over time. In other words, data were better able to be

contextualised along the pathway. Therefore, such an approach has been critical in

understanding what happens, when it happens and how it happens (Carduff, Murray, &

Kendall, 2015). With this in mind, this chapter underpins the need for research across the

entire TD domain to consider the application of a longitudinal approach in order to maximise

opportunity for the exploration of such a complex and multi-faceted domain and to best

interpret intervention effects (Stenling, Ivarsson, & Lindwall, 2017).

Collins et al. (2012) identified the importance of a biopsychosocial perspective on

TD, with the view that unidisciplinary models are insufficient in the face of such a complex

domain (cf. Burwitz, Moore, & Wilkinson, 1994). In fact, Abbott et al. (2005) concluded that

those who fail to recognise the multifaceted, and highly individualised, nature of TD by not

focusing on all three domains, in particular their interactions, are in danger of providing a less

than optimal approach. Accordingly, I suggest that the sibling relationship needs to be

recognised not only for its obvious social contribution to the TD pathway, but can, if

optimised, provide an additive biopsychosocial impact for talented athletes, with emerging

themes reflecting such diversity. For example, reflective discussion between siblings around

what happened, why and how it could be improved (psychological), re-enacting the skill as it

would be intended to in the future (biological), followed by reinforcement and support from

the sibling to ensure that it takes place (social). Moreover, I feel the nonlinear interactions

between such factors during TD are further evidenced through these findings, with changes in

regularity and emphasis of potential mechanisms apparent across the year (e.g., identification

of self-initiated separation between siblings). As such, sibling relationships in this chapter

reflect the nonlinear nature of the 'rocky road' pathway as advocated by Collins and

MacNamara (2012). Siblings had to negotiate a pathway around challenges (e.g., reacting to

their sibling self-initiated separation, not having the freedom of outdoor space or increased

physicality) as a means to facilitate their participation.

Ultimately, this provides insight into the complexity for coaches, parents and

organisations involved in TD. As many have stated across a range of human performance

and developmental processes, as well as in this thesis, 'one size does not fit all' (e.g., Scott &

Einstein, 2001), illuminating the individualised and complex relationships that can occur

within the family during TD. Therefore, when utilising the potential contribution the sibling

subsystem can make to TD, I recommend favouring an expertise approach, rather than a

competence approach, in order to maximise possible impact (Collins et al., 2015).

Consequently, the significance of a coach's professional judgement and decision making

(PJDM) within the practical domain cannot be understated, as it would be illogical to always

provide an 'if X then Y' support system as a solution for a potentially influential aspect of the

complex TD environment (Martindale & Collins, 2005). Such suggestions are supported by

the variation of themes within, and across, sibling dyads within this chapter, therefore

highlighting the need to get to know individual dyads. Therefore, coaches are advised to

make a series of decisions in relation to finding or designing, and evaluating suitable courses

of action (Simon, 1986).

One course of action might centre around conversations with parents, since this

chapter has highlighted the usefulness of parent observations when reviewing the sibling

subsystem across the year from within the family system. Practical considerations *might*

include coaches setting or encouraging specific practices to do at home (*practice*),

encouraging informal performance evaluation between siblings (*discussion*), encourage

siblings to develop skills at home through *challenge* if competitive, or *mentoring* if they are

close, and encourage siblings to seek/provide *support* from a sibling. However, it is crucial that coaches underpin these decision with appropriate judgement and decision making.

Despite the insights that have been gained from this chapter, it is important to recognise that it was not without its limitations. Firstly, the unavailability of one parent from Family 2 and 3, across the research process, could reduce the richness of the data due to the individualised nature of responses. Furthermore, conducting such a longitudinal study over 1-year allowed me to examine different phases of the football season across a recognised time frame within TD. However, because TD takes place over a much longer period of time, examining the complexity and changing nature of the sibling subsystem over a longer period (e.g., specialization and investment stages; Côté, 1999) would further illuminate the role of the relationship. Additionally, tracking of this nature should extend until a meaningful age of participation (e.g., attainment of premiership/elite status) or until drop-out from a performance focused pathway. In other words, longitudinal research should be able to distinguish those who have made it and those who have not. Purposefully exploring a range of sports, including team and individual disciplines would also help build a more comprehensive understanding of the subsystems role in TD.

4.5 Conclusion and Next Steps

This chapter has further extended the limited sibling literature within the TD domain, through the exploration of sibling dyads where both are talented athletes. The themes of interactional context, emotional interpersonal skills, rivalry, resilience and separation all support Chapter 3 and previous research (Blazo et al., 2014; Côté, 1999; Davis & Meyer, 2008; Hopwood et al., 2015; Trussell, 2014). This chapter expands on Chapter 3 through the replacement of the theme co-operation, with the more specific themes of skill development and communication as potential mechanisms that facilitate TD. The longitudinal approach has advanced our understanding around the nonlinear and complex nature of the subsystem

by exposing the variation of particular themes throughout the year, alongside the variation across the sibling dyads. Thus, providing the greater sensitivity that was predicted.

Overall, this chapter has illuminated the biopsychosocial impact the subsystem can have on TD, provided examples of FST in action (through shifting subsystem boundaries), and provided contextual evidence surrounding the highly complex and differentiated appearance of the subsystem across families. However, it is important that we continue to explore the role of the sibling subsystem taking into consideration a range of contexts, including talented and non-talented siblings and sociocultural family variables, alongside greater consideration of the practical implications of including the sibling relationship in the TD environment. Resulting from this study, and in order to aid in the application of theory to practice, a professional report was constructed to reflect the findings, and presented to the Premier League football academy (see Appendix F).

Chapter 5: Seeing Double? A Practice-Based Investigation into Twins During Sporting Talent Development

5.1 Introduction

As discussed in Chapter 4, it is important to further consider the sibling role through exploring a range of dyads influenced by elements such as level of sport (e.g., talented and non-talented) and sociocultural family variables (e.g., twins). Additionally, Chapter 4 has encouraged such explorations to take place within closer proximity of the practical environment; therefore, allowing us to begin to consider its use in practice. With this in mind, this chapter will explore talented twin athletes through a practice-based study design in order to add additional depth to this growing area of research and begin to bridge the gap between academia and practice.

Twin studies have long been recognised as valuable in examining the coactive influences of genes and the environment on specific characteristics (Galton, 1875). Most common within study designs is the recording of differences between monozygotic (MZ) and dizygotic (DZ) twin sets (e.g., Huguet, Carlier, Dolan, de Geus, & Boomsma, 2017). Indeed, these differences are perhaps of most significant interest to social scientists during or following important developmental processes or events. Certainly, within the psychology domain, twin research is a well utilised paradigm for this purpose (e.g., Haworth, Davis, & Plomin, 2013). For example, contemporary accounts of twin-ship consider the active role that children make in shaping their social environments and how they negotiate the process of being a twin through their interactions with each other (Bacon, 2010). However, there is a dearth of twin research within the process of sporting TD (Baker & Horton, 2004), despite recognition and increasing interest towards sibling influences during this period (e.g., Blazo et al., 2014). As such, this chapter focusses on the specific twin relationship during the TD process.

Occurring approximately once in every 65 births (ONS, 2016), twins are often assumed to have a 'special' relationship which is generally close, co-operative and harmonious (Segal, 2000). Indeed, Noble, Bradley, Parr, and Duemer (2017, p. 345) suggested that "one of the most unique and transformative developmental sibling relationships an individual can experience is being raised as a twin". Compared to age-gapped siblings, this is perhaps unsurprising when considering the regularity of interaction and, therefore, opportunities available to foster a positive relationship at times when social support is of great importance. For instance, experiencing a first day at school, birthday parties and, pertinently to this paper, sport club attendance. The accompanying presence of a twin in these situations can be a welcomed comfort in navigating barriers to positive engagement and development. However, with much exploration of twins in sport being focussed within the biological domain (de Vilhena e Santos, Katzmarzyk, Seabra, & Maia, 2012), Baker and Horton (2004) outline the need to adopt a multidisciplinary approach; one that considers biological, psychological, and sociological aspects of the relationship, a common theme within this thesis. Using this perspective, a more complete understanding of the relationship could perhaps be gained.

Complementing the need to address these additional elements, I identified FST (Bowen, 1978) as a theoretical lens through which to view the family during TD in sport. In doing so I have provided the opportunity for theory-driven enquiry into the role of siblings (Blazo & Smith, 2018). While earlier chapters (Chapters 3 & 4) conducted studies through the FST lens with age-gapped siblings, investigations have yet to explore the relationship of twins where both are engaged within sporting TD pathways.

In light of this retrospective research, it is clear that siblings are perceived to be important for achieving elite success (cf. D. Collins et al., 2016). Furthermore, Chapter 4's longitudinal study in TD has added insight into the dynamic nature of the *sibling* subsystem.

Consequently, as evidence in sport begins to grow (e.g., Blazo et al., 2014; Davis & Meyer, 2008; Nelson & Strachan, 2017; Osai & Whiteman, 2017; Trussell, 2014), an understanding of the potentially positive influence that siblings might have across developmental progression is emerging. Potential mechanisms to support development include interactional context, emotional interpersonal skills, skill development, communication, rivalry and resilience (Davis & Meyer, 2008; Hopwood et al., 2015; Trussell, 2014). Increasingly, however, on the basis that the twin relationship is dynamic, Chapter 4 recommended that future treatment of data in this context be considered intra-individually. In other words, examining specific cases of family subsystems rather than across families. Such an approach is not novel in the applied sport psychology setting (cf. Kinugasa, 2013; Palmateer & Tamminen, 2017), but does raise concerns about the generalisation of results, and therefore the broader impact on TD. However, such design is consistent with the nonlinear and individualised nature of TD (Abbott et al., 2005; Carson & Collins, 2015), where variability between individuals can often reveal important complexities needing careful consideration within the applied context (Collins et al., 2015). Furthermore, within the social sciences, more discoveries have arisen from intense observation than from statistics applied to large groups (Flyvbjerg, 2006; Normand, 2016).

To advance previous study designs, Winter and Collins (2015) highlight that practice-derived knowledge can support and direct both researchers and practitioners in a contextually fitting manner. So far, studies of siblings and TD have yet to incorporate such an approach; instead solely focusing on interviews for data collection. Holder and Winter's (2017) review of observations—a commonly utilised method within practice-based inquiry—concluded that they were appropriate for obtaining information to enhance practice; with such an approach consisting of recording and evaluation of behaviours (McKenzie & van der Mars, 2015). Crucially, observation permits the assessment of athletes across authentic scenarios, thus

providing practitioners with more accurate and representative data when compared to retrospective studies alone. In this chapter, my active role as a coach highlights the subjective influence on the study, and therefore the influence of my axiological stance (highlighted in Chapter 1) is magnified (Chilisa & Kawulich, 2012). To alleviate such potential biases that can impact on the representation of events and the subsequent interpretations, triangulation of sources (seven participants per case; two siblings, two parents, three coaches [consistent across each case]) was used to increase the reliability and validity of the study (Jonsen & Jehn, 2009). In support of this consideration, Holder and Winter found that observations were adjunct to other assessment tools, such as interviews (i.e., for triangulation purposes), with Whyte (1984) suggesting observations can inform interviews, increase relevance, and allow personal interpretation of events. Adopting this practice-based approach would enable further exploration. Therefore, the purpose of this chapter was to explore the role twins play in TD, through two in-depth case studies, by observing them within identical TD environments across an extended duration, before conducting interviews with athletes and parents.

5.2 Method

Pragmatism recognises that life is dynamic and changing, with May (2011) emphasising that we must become part of the social environment in order to understand how it functions. In fact, even highly quantitative and positivistic studies within the domain of motor control have recognised the (more) beneficial use of intra-individual treatment of data to gain a more meaningful understanding (cf. Dicks, Button, Davids, Chow, & van der Kamp, 2017). Accordingly, detailed examinations of twin sets took place through an in-depth case-study approach. Case-study designs afford a nuanced view of reality due to their closeness to representative situations (Flyvbjerg, 2006). As Flyvbjerg (2006, p. 226) suggests, "the choice of method should clearly depend on the problem under study and its circumstances" (i.e., so

that we don't obscure variability through generalisations; Normand, 2016). In order to

achieve this, multiple sources of evidence (seven participants; two siblings, two parents, three

coaches) per case, were collected through a range of data collection methods, allowing

triangulation to take place (Polit & Beck, 2015). Finally, given the rather special

circumstances of the participants, details are deliberately kept short to protect identity.

5.2.1 Participants

Two sets of twins (DZ and MZ) and their parents were conveniently sampled due to

their involvement at my performance centre (as Head Coach), as part of the National

Governing Body (NGB) player pathway. Both sets were part of the U15 age group at the

centre and trained regularly together (once every 2 weeks). Parents were fulltime guardians

with both sets of twins and all immediate family members lived together; both sets of twins

had an additional older sibling not involved in the study due to its focus. Ethical approval

was obtained through the university's ethics committee (see Appendix A) and signed

informed (see Appendix G) consent was provided by parents and signed assent by the athletes

prior to data collection. Procedure approval was also obtained from the NGB.

5.2.2 Procedure

Participant observations took place over 7 months, totalling 54 hr of observation

across training, classroom sessions, lunch periods, and competition days. Observations were

collated from three sources; the Head Coach, Lead Coach, and Coach. The use of two or

more observers to independently observe the behaviour of participants helps to address the

reliability of human observation, due to its fallible nature, and maintain integrity of the

measurement process (Barker, McCarthy, Jones, & Moran, 2011). Furthermore, coaches

were separated by distance (i.e., different areas of the pitch with different groups) to avoid

alteration of behaviour, and therefore, reduce observer reactivity (knowledge that researchers

are evaluating the data; Cooper, Heron, & Heward, 2007). Observations took place across

the four environments highlighted previously, with all three coaches encouraged to observe the relationship whenever they encountered (proximity or visual contact over distance) one or both twins at any point. Coaches then made notes of any observations in a diary whenever they had an opportunity to do so (e.g., during a break or at the end of a session). The lead researcher then verbally checked that all observations had been noted down at the end of the session.

Lofland and Lofland (1984, p. 12) define participant observation as "the process in which an investigator establishes a many-sided and relatively long-term relationship with a human association in its natural setting, for the purposes of developing a scientific understanding of that association". This required me to participate within the context and record my experiences of such transformations, their effects on people and my interpretations as a field note diary (May, 2011). This is important when considering the practical implications of research, with May suggesting that practitioners prefer a posteriori reasoning; that is, knowing how things are by reference to how things have been. Since fieldwork requires reflection and altering the focus of observations in response to analytical development, questions adapted from Lofland and Lofland (1984) were applied to provide a focus for subsequent observations (See Table 5.1).

Table 5.1. *Observation Questions Adapted from Lofland and Lofland (1984)*

Question number	Question
1	Why did that happen and to whom?
2	What do people ordinarily do in this setting and why?
3	What happens if people did X?
4	What do they think about Y?
5	What are the usual rules of the social scene?
6	How are the rules negotiated?
7	What are the verbal and non-verbal gestures employed?
8	Who said what to whom and why?
9	What do they mean and how do they relate to particular relationships and actions?
10	Why is X not done?
11	What would happen if something different happened?
12	How does physical space relate to the setting and the interactions which take place within it?

Next, individual semi-structured interviews took place with each athlete ($M_{duration} = 37$ min) and parent ($M_{duration} = 41$ min); recorded using a Dictaphone and stored electronically. Individual interviews provide depth of questioning and personal information pertaining to the lived and observed experiences (Kaplowitz & Hoehn, 2001). Observation-stimulated recall, provided through descriptions of what was seen relating to each relationship across the sessions, enabled greater richness and depth in the data (Lyle, 2003) and reduced observer bias through triangulation (May, 2011).

5.2.3 Interview Design

Due to the range, and individualised, nature of the observed experiences across participants, the interview matrix (see Appendix H) was designed to provide flexibility of discussion dependent on the interpretations provided and discussed. With this in mind, interviews were split into three parts. Part one tested the context of the observed experiences, through exploring the twin relationship away from the TD context, with the aim of comparing and contrasting the relationship across interactional contexts. Part two focused on the observed experiences, encouraging the participants to interpret and explore them in more detail. Finally, part three allowed for further exploration of key themes identified in previous chapters, if required.

5.2.4 Data Analysis

When observing, data collection and analysis are inseparably interwoven, involving the construction and testing of themes in the field (Gerson & Horowitz, 2002). Potential themes were initially derived from previous chapters exploring the sibling impact on TD (e.g., emotional interpersonal skills, separation, and skill development), as well as inductively creating new categories in light of novel observations. During this process, connections between categories were explored, alongside application of a "revise, retest, revise" approach (Glaser & Strauss, 2017). Such analysis helped inform the subsequent semi-structured interview questions. Interviews were split into three sections; testing the context, interpreting observations and considerations of previous findings. Interviews were transcribed verbatim prior to conducting a thematic analysis (Braun & Clarke, 2006). Transcripts for parents and siblings within each family were converged for a more complete understanding (Baxter & Jack, 2008). Thematic analysis consisted of six stages using a qualitative software package (QSR NVIVO 10). Familiarisation took place by the researcher immersing themselves in the content through reading and re-reading the data. Descriptive

coding assigned initial raw data codes, before searching for subthemes through examination
of these codes based on similar patterns of meaning. Next, subthemes were reviewed to
determine an accurate picture of these data, illuminating the impact of siblings on TD.
Subthemes were grouped into distinct overarching themes that represent the impact of the
sibling relationship on TD (Braun & Clarke, 2006).

To assess the trustworthiness of the analysis, member reflection took place with each
family to validate the credibility of the data (Smith & McGannon, 2017). This consisted of
returning the results (i.e., themes and interpretations) of the interviews to the participants,
asking how accurate these were in terms of the interpretation presented (Smith & McGannon,
2017), and requesting and noting any additional thoughts on the perceptions reported. Such
an approach allows for the controlling, and correcting, of subjective bias from the researcher,
ensuring an accurate interpretation of knowledge (Birt, Scott, Cavers, Campbell, & Walter,
2016).

5.3 Results

Analysis revealed a replication of themes from previous chapters in this thesis;
namely, interactional context, emotional interpersonal skills, rivalry, skill development,
communication and type of separation. Additionally, however, conflict and identity emerged
as novel higher-order themes (see Table 5.2). I now present these data by theme.

Table 5.2. *Case-Based Representation of Potential Mechanisms that Support TD.*

Monozygotic twins (M) – Exemplar raw data codes M = Mother/F = Father/T = Twin	Overarching themes *Subthemes*	Dizygotic twins (D) – Exemplar raw data codes M = Mother/F = Father/T = Twin
	Interactional context	
"We play a lot of sport outside" (MT2) "Then mostly we just play sport with each other" (MT2) "We enjoy playing sports together" (MT1)	*Sport*	"We go swimming together, because there is no one else" (DT2) "We do tennis and badminton as well" (DT1) "Hockey is about the only thing they go and do together" (DM)
"We do a lot of things together just in general" (MT2) "They tended to share a number of those friends" (MF)	*Other activities*	"We do a lot of things together like more school work" (DT2) "We go on the PlayStation, do that kind of stuff" (DT1)

	Emotional interpersonal skills	
"We both react to something the same" (MT2)	*Closeness*	"We get on well when we're not with other people" (DT1)
"Day to day they are incredibly close" (MF)		"Yeah we get on all right" (DT2)
"I prefer feeling like a twin" (MT2)	*Comfort*	"I think there is a comfort in the fact that they are both always around" (DF)
"Probably first go to him, and that would probably settle me" (MT1)		
"They'll come back together quite quickly" (MM)		"That was comfortable so you both sort of flow, no concerns, and you just got out and worked together" (DT1)
"I would still feel for him" (MT2)	*Empathy*	
"They don't try and rub the others one's nose in it" (MF)		
"He would still have a bit of maybe regret and just try and help me get up to his standard" (MT2)		

"When we're on good terms we'll help each other" (MT2)	*Support*	"I would like him to succeed but it doesn't bother me that much" (DT1)
"They're very supportive" (MF)		"In school work very supportive" (DT2)
"I would always want him to perform well and be the best" (MT1)		"It's just about me really. Shouldn't really be worrying about him" (DT2)
	Rivalry	
"I want to do as well as he is doing" (MT2)	*Competition*	"There seems to be a little bit of sibling rivalry in the social sense" (DF)
"They're just very competitive about everything" (MF)		"We would be competitive" (DT1)
"Might look at it from a competitive point of view" (MM)		"I think he'd be more competitive than me to do better than me" (DT1)
"Just pushing each other" (MT2)	*Motivation*	"A higher standard and that probably motivates him" (DM)
"Wanting to learn is driven by each other" (MF)		

"Not from a negative point of view, from a spurring each other on view" (MM)		"I think it definitely pushes them. At school it is the two of them being at the same stage" (DM)
	Skill development	
"Feel like he mentors me a bit more" (MT2) "He would just help me with some points" (MT1)	*Mentoring*	
"We go on the astro and try and resolve it" (MT2) "There's competition going on, yet they are doing it together" (MF) "It is helpful to just have someone there you can do stuff with" (MT1)	*Co-operation*	"I think he did once do that, and [T1] sort of went out, and I think they were trying to do some tackling" (DF) "We've been to our primary school; they've got an AstroTurf. We've been doing hockey a bit, but not that often" (DT1)
	Observation	"Say he's doing some ball work or some dribbling I might try that or follow what he is doing" (DT1)

		"I wouldn't really look at what he is doing; I wouldn't be that bothered. Might take ideas from him" (DT1)
	Communication	
"I would ask him and he'd tell me how to get better (MT2) "In the game it's quite instructive, he will definitely tell me what to do" (MT2)	*Instruction*	"Yeah I would listen to him and listen to anyone that is better than me, so I'd just follow them" (DT1) "I'll give him some advice and he just won't really take it into account" (DT2)
"Definitely after a game we talk about that" (MT2) "We talk a lot more" (MT1) "Discuss how they played, what the selectors were perhaps looking for" (MM)	*Discussion*	"If there is any discussion it doesn't take very long" (DF) "Maybe talk about the game with [T1]" (DT2) "I don't think we talked much about like how we played and improvement. We talked about this in general like the team did well or the team did badly. That kind of thing" (DT1)

"Go up to him and give him the praise he deserves" (MT2)	*Feedback*	"I'd say you did this well you might have done this badly, you might have played OK, and he said yeah. I don't think he talks about me at all" (DT2)
"More likely to talk about what the other one did" (MF)		
"I would say, you were doing this quite well" (MT1)		
		"Occasionally he might say oh [T2] scored a good goal, but that would be rare" (DF)
	Conflict	
"But then it might just cause an argument" (MT2)	*Arguments*	"I'll just say you're not that great at sport, and he'll just say I don't really care to be honest" (DT2)
"If I say something he disagrees with then that will cause an argument" (MT2)		
"Sometimes it's the fact it's their favourite person to argue with" (MF)		"Quite a bit, but we just tend to deal with it" (DT2)
"Maybe I was playing well and it brought me down" (MT1)	*Frustration*	"He should just be trying his hardest" (DT2)
"He gets frustrated with me if I said I don't want to" (MT2)		"It's annoying, but I don't mind because I accept that we're different" (DT1)

"Frustration and anger towards him. Just annoyance that he is not seeing what I see" (MT2)		"I was just annoyed really, because I was just trying to help him" (DT2)
	Criticism	"[T2] would then suggest something [T1] hadn't done well" (DF)
		"I don't really have that much faith in him" (DT2)
	Separation	
"Just be like, I don't need you, I just go and do it myself (MT2)	*Sport specific*	"I'd rather not play with him" (DT2)
"I would always try and separate myself if we are doing the same drills (MT1)		"He wouldn't be bothered; he wouldn't go" (DM)
		"We wouldn't enjoy just hitting with each other, or playing together" (DT1)
"Then we just split up and do our own thing" (MT2)	*General*	"Very different groups of people that they will do things with" (DM)

"Been spending too much time together and just need to split up" (MM)		"But I like being separate as well" (DT1)
	Identity	
	Acceptance	"He knows I am a lot more competitive and he's not" (DT2)
		"We used to be more competitive, but then I realised he's better" (DT1)
	Characteristics	"They have very individual personalities" (DM)
		"We are quite contrasting characters" (DT2)
		"I don't do that, and that just shows how different we are" (DT1)

2

5.3.1 Interactional Context

Participants acknowledged interactions within two main contexts; *sport* and *other activities*. Notably, the extent to which the twins interacted varied across the two cases, with the MZ twins revealing a greater desire to interact than the DZ twins. Exemplifying this typical interaction, monozygotic twin 2 (MT2; second born) said:

We do do a lot of things together, just in general really. So we normally play a lot of sport outside together, many different sports, and we do some other activities together to, but we will always do them together.

In the sport context, monozygotic twin 1 (MT1; first born) explained that they "enjoy playing sports together", with the monozygotic father (MF) supporting this statement, adding: "The first one says 'will you come with me onto the astro at school', and they'll do something together." MT2's rationale for interacting in this way was underpinned by providing further opportunity, explaining that: "It's useful to have him there because you can do certain things that someone on their own can't do." MF said that their interaction would not just be one-to-one: "As they grow into the group [training squad] they tend to move away from each other, then move back together." Coach observations appeared to support this tendency to move back together; for instance, during small group tactical discussions they would sit next to each other. MT2 reinforced this: "Yes we try and go together."

This interaction was less prominent in the DZ twins, as the dizygotic mother (DM) supported by stating: "Hockey is about the only thing they go and do together. They have an AstroTurf at their old primary school and they did go down there and play together in that sport." Dizygotic twin 2 (DT2; second born) provided a little more breadth of sporting interaction, however it was not portrayed as being a particularly sought after choice when compared to the MZ twins: "We go swimming together, because there's no one else. So we're alright together when we do things on holiday."

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When considering interaction through other activities, the monozygotic mother (MM) said that they "generally spend a lot of time together, they do school work together", with MF describing how their wider social spheres are also well connected by having "a lot of friends outside of sport, and they tended to share a number of those friends."

For the DZ twins, however, DM highlighted that interactions were more frequent during periods of 'family time', such as "on holiday, when they don't have much choice, they will play together, and do things together." Furthermore, DT2 supported how organised family interactions brought them together: "We do things a lot with the family together."

5.3.2 Emotional Interpersonal Skills

This theme comprised of four subthemes; *closeness*, *comfort*, *empathy*, and *support*. Again, the expression of this varied across the two cases, with the MZ twins presenting a much more emotionally connected relationship than the DZ twins. MZ participants emphasised the closeness of the twin relationship, for example through the following statements: "They decide to be very close, in all that they do", and that "there's a very strong link there and that as individuals that relationship informs them, more than a non-twin" (both MF). MM reiterated that the twins have "quite a special relationship." Reflecting this connection through sport, MT2 revealed their shared reactions to game results: "We normally feel the same things after a game or something, we both react to something the same, our emotions would probably be the same." Behaviourally, it was observed that the twins warmed up together, MT1 interpreted this: "I would first go to [MT2] and that would settle me, and then I would build relationships with others." MM reinforced this behaviour: "You just grab your brother next to you, so yes I'd say that was a regular thing."

In the DZ twins, this closeness was far less evident; as summarised by dizygotic twin 1 (DT1; first born): "We're not that close, no, but of course we're brothers so we like each other, but then we can get sick of each other." DM corroborated this: "They get on well and

enjoy each other's company when they spend time together." DT2 provided quite a strong and explicit insight into where the relationship sat within the family: "I've not got like a special connection with him just because we're twins. I don't think it's more important or don't value it as much as anyone else in the family."

These opinions notwithstanding, evidence of the subtheme comfort came from all four MZ participants. MT1 explained how this factor influenced his decision to select a warm-up partner, when saying: "I would probably go with him because I know him. I am most comfortable with him." MT2 expanded on this notion: "I prefer feeling like a twin because it is always there. Someone there to help you, and someone there you can talk to. You just have that security." MM supported this by emphasising the established nature of this bond: "They'll come back together quite quickly, back to being comfortable together."

Comfort was less prominent in the DZ twins, with DM interpreting a coach observation around the twins alternating between being on the same team and playing against each other at training: "I think if they were on the same team then they would be more comfortable because they can trust each other." When talking about how they designed a session together in the classroom, DT1 suggested it worked because it was "something that was comfortable so you both sort of flow."

Empathy was revealed by MF and MT2 in the MZ case. MF explained how "they want to do better than each other, but they don't want to see the other one sink, and they feel better when they're both doing well." MF gave an example of this:

If the focus is too much on one of them, the other one will notice. If we say 'OK what do you do' and [MT2] was like 'oh I scored two goals', there will then be a pause, and then, 'but [MT1] did this really great pass or [MT1] did this other thing' and that will happen the other way round. It's a conscious sort of thing.

MT2 described how he would feel if his twin did not do as well: "I would still feel for [MT1] and I wouldn't just go off and take that glory. I would try and help him." Empathy was not identified in the DZ twins.

Interpretations of the observations highlighted several examples of support within the MZ twins. During a small-sided game, one of the twins became frustrated with their own performance and this appeared to impact on the other twin. MT1 provided the following interpretation: "I always would want him to perform well and be the best he can be, and always doing the best he can." Further observations included the appreciation of good passes to each other through clapping, verbal communication, and eye contact, MT1 suggested: "You are always trying to pick each other up." When asked about the perceived desire to look for each other with the ball, MT1 suggested: "I have a responsibility to always offer that option for him." Finally, MT2 explained how they would support each other: "If he is better at something he wouldn't just keep on going himself, he would probably help me, and I would do the same thing." However, seeking support was not exclusive between the twins, as MT2 also highlighted how they might go outside of their relationship for support:

> We would probably start talking to each other and then our dad would come in to the conversation and say 'yes that is true', but if sometimes we were a bit worried he would come in and say, 'don't be … just play your best' or he would talk to us about that, how we can do the best we can in that game.

In contrast, both DZ twins mentioned only occasional aspects of support. It was evident that this was more common in the school context: "We just want the best for each other in school work" (DT2). In the sporting context however, DT1 suggested that they did support their twin in some ways but not to the extent of the MZ twins: "I would like him to succeed, but it doesn't bother me that much how he would do. It would be nice if he won a tournament, but it wouldn't be the end of the world for me." DT2 also described how this

support might appear: "Just maybe help him evaluate himself a bit better because a lot of people find it difficult to find the positives and negatives in themselves." DT1 highlighted that support was more frequently found outside of the twin relationship: "I'd say the coaches are probably the main people, and friends."

5.3.3 Rivalry

This theme was divided into two subthemes; *competition* and *motivation*. Across the two cases it appeared that rivalry played a different role. Within the MZ twins, competition was frequently discussed. MT1 emphasised this:

> The aim is to have a better game than the other one, as it gives you bragging rights. Normally other people will go [MT1], [MT2] has got one up on you here, and it would be more like that, but I suppose we set ourselves a task, like trying to score more goals or get more assists.

MT2 agreed, explaining that: "I want to be better than him." During sessions, the twins would often look over to each other when they were at different ends of the pitch. MT2 said: "If it's different ends of the pitch and we are doing the same drill I would try and beat what he is doing." MF provided an overview statement in support of the strong competitive relationship between the twins: "That's probably the defining thing of their relationship, that competitive edge, in everything they do."

For the DZ twins this competition appeared one-sided in the sporting context. DT1 said of a coach observation working together to design an aspect of the training session:

> He is probably trying to think of something better than it. Yeah course he is, and I think he'll be more competitive than me to do better than me. So I think he was trying to think of something better.

However, outside of sport it was felt this competition was more consistent. DM believed that "being a twin adds that sense of competition at school." DT2 highlighted that this has always been the case: "Even in primary school we tried to get better grades than each other."

In the MZ twins MT1 provided an example of how their rivalry often motivated them to raise their standard:

> If I see [MT2] having a good session or something and I am maybe not having as good session. Like last night he had a very good first half of the session, so then I focused on the second half of really trying to put it in so I could get to like what he was like in the first half.

MM thought rivalry was positive: "Not from a negative point of view, from a spurring each other on view." MT2 highlighted how various environments influenced this motivation:

> If we are at school and stuff and we are just with our mates and stuff it is not as serious, so we won't push each other as much, we won't like bounce. But, if we are at a tournament and he is doing well, scored a good goal, I will definitely go out of my way to try and do something just as good.

The role of motivation in the DZ twins emerged differently. DT2 summarised this in sport: "I don't know why but I just want to be a bit better than him, even though I already am. I just want to be even better than him." However, when considering school work, DT2 suggested that this motivation appeared equally: "If I start doing some revision he'll immediately go to his room and start doing some revision and vice-versa."

5.3.4 Skill Development

Data analysis revealed that this appeared in the MZ twins as; *mentoring* and *co-operation*, but as *co-operation* and *observation* in the DZ twins. When considering the role of mentoring in the MZ relationship, MT1 gave the following account:

If I have done something wrong and I think he has done it quite well that session then I go, and I would ask him how did you do that or something. If they have performed a particular skill, how do you do that? So, like I would probably be able to do it, but I wouldn't be able to do it at the level that he would, so I would say how do you get that? And he would just help me with some points or something.

Although this was reciprocal, MT2 did not express an even balance of mentoring between the twins: "I feel like sometimes he mentors me a bit more, and I probably don't as much with him." Mentoring was not reported in the DZ case.

When considering co-operation, MT2 provided specific examples of how they would use their school pitch outside of training: "If he feels like he is not posting up very well then I will just hit balls at him or if I am not deflecting very well or hitting very well he will try and help me with that." They further emphasised how their co-operation tended to be positive:

Most of the time probably together and like working together. I think we work well together and we see that a couple of times in a few games we have played, that we work well together, but then another time if we are not in the best of moods, or we have disagreed with each other, then sometimes I prefer to play against him. Or if I am feeling better than he is, or I think I am doing better than he is, then I might want to go in a different group to see if I can translate that against him.

Limited links to co-operation appeared in the DZ twins. The dizygotic father (DF) gave an example of how purchasing a training aid to use at home developed some co-operation: "He did once do that and [DT1] sort of went out. I think they were trying to do some tackling or something like that." According to DM co-operation appeared more in the school context: "They are co-operative when it comes to revision and school work. They'll help each other by sharing resources and things like that."

Within the DZ twins, DT1 suggested that they did get ideas from observing their twin performing during training sessions: "Say he's doing some ball work or some dribbling I might try that or follow what he's doing." This observation did not require conversations: "I might just try it. I wouldn't talk to him about it." Observation was not apparent in the MZ twins.

5.3.5 Communication

This consisted of three subthemes; *instruction*, *discussion* and *feedback*. The role of these varied across to the two cases, with the MZ twins reporting this communication in a more positive manner than the DZ twins.

Within the MZ twins, MT2 was the only participant to highlight the role instruction played during practice: "If he sees I am doing something wrong he will say." Acknowledgement of this aspect of their relationship came when talking about whether his twin was the first person he would go to for help with his game:

> Yes, just because he is playing in the same game, he is playing the same environment as me, and if he was doing better in that environment then I definitely would ask him... he would tell me how to get better and that.

Within the DZ twins, this instruction was a one-way process, from DT2 to DT1. This was highlighted through a coach observation where the twins were defending together in a training session and DT2 was very vocal: "I just put him in a position where he could do the best he could, make the challenge." DT1 suggested he was ok with this: "I feel better because I don't have to make the decision on my own, and I've got someone there telling me what to do." DF explained why this might happen: "He [DT1] is less confident ... and in that situation [DT2]'s confidence trumps [DT1]'s lack of confidence, and therefore he responds."

All participants in the MZ case acknowledged discussion with MF highlighting why: "They want to discuss something, they want to talk about something, they want to see what

the other one feels about that." MT2 provided a general view of how this might appear across a range of contexts: "It is more like both sides, going from both sides and helping each other instead of the other one telling the other one what to do." MT1 gave an example of how this discussion could take place during car journeys after competition: "If they had gone well, we would just be talking about the games." MM reinforced this: "The journey home was an analysis of how they played." MT1 gave insight into the variation of discussion: "We wouldn't normally talk if it had gone well … but if it had gone negatively then we talk to each other."

In the DZ twins, there was evidence of discussion around how they played the game. DT2 commented on observations made by the coach that the twins did not seem too concerned with how the other was doing when on the pitch: "I'd ask him [afterwards] how did you get on with that, he'll respond, and we'll have a chat about it." On the way home from competition DT1 also suggested such discussion would rarely be in detail: "We were talking about the game. I don't think we talked much about how we played and improvement. We talked about this in general, the team did well or did badly."

Both MZ twins and MF identified feedback as an element of the relationship. MF talked about how the twins validated each other: "Part of that validation is internally I think as they learn it's not just we won the game. They validate each other. Now that's something you know I think as twins that helps them to develop." During the classroom session on a training day, the players were given a self-evaluation and goal setting task, with the twins doing this together:

> That would probably be more a common question between myself and [MT2] and I would say do you think I am a 7, what do you think of that? And you're probably a 7 and say oh yes no that is what I was thinking along those lines but normally we are quite in the same mind-set. If I go I am not sure I put myself at 8, but I am not sure

and then he would go yes, I was actually thinking the same. It is like that would just help us with getting an accurate interpretation of how well we play. (MT1)

MT1 also acknowledged that feedback also came from outside of the twin relationship during and after training and competition: "If anyone wants to say something it would probably be mum or dad, or a coach or another player."

In the DZ twins, feedback had limited use when considering their development. During a classroom session the coach observed them sat together doing some performance evaluation. When asked about this DT2 shared: "We just like check, just say what are you writing, and criticise it or say how I could get better maybe." DF also suggested this might be negative: "[DT1] would normally have a sting in the tail, like 'oh there was a deflection there, that is why it went in'."

5.3.6 Conflict

The theme appeared to be more prevalent in the DZ twins than the MZ twins. This was represented by the subthemes of *arguments*, and *frustration* in the MZ twins, and *arguments*, *frustration* and *criticism* in the DZ twins.

MT2 and MF highlighted how arguments might occur, across contexts, between the MZ twins. MT2 declared: "We obviously do fight sometimes." MF gave an example of how this might appear in the wider context of their interaction: "The school work they do together. They fallout about the nature of how they are going to do it." MT2 outlined their feelings around this: "I would never want to have an argument, but then if we do have one that would happen".

There was also some evidence of arguments between the DZ twins. When asked if arguments do occur, DT2 answered: "Yes, quite a bit, but we just deal with it really." DF provided some further insight into why such arguments might occur:

I think the way that it is delivered tends to mean that it is not very well received, so [DT1] might say 'you are a bit bossy on the field, can you stop shouting out orders' and [DT2] says 'oh you are always out of position you need to …' and you know, because they are being told it rather than discussing it.

Both MZ twins identified the frustration that may appear. MT1 gave an example of how this might happen in the sporting context:

I was like I will give you the ball, and he is thinking he was running in to the space for me to throw it down the line but I wasn't and sometimes we expect more … and not that he doesn't deliver it but we just are expecting different things in a similar situation and then it becomes negative like why did you do this? And why didn't you do that?

MT2 emphasised the impact this frustration can have on their interactions: "One of us becomes annoyed by that, and then we just split up and do our own things."

Both DZ twins mentioned frustration. DT2 was frustrated with the way DT1 approached sport: "I just don't think it's the right way. I just don't see the point in training to not compete. That's just something I don't think is worth it." When summarising their relationship DT1 suggested that because they do quite a lot together across different contexts that they can get frustrated: "That can mean like we get a bit fed up with each other."

Criticism was a subtheme that emerged only with the DZ twins. DT2 was honest with the assessment of DT1's sporting ability: "He knows I don't think he's that good. I put him down a bit sometimes." When asked how this might appear, DT2 suggested: "Just through my actions, I sometimes say it at home." DF gave further detail about how this might happen in the car on the way home from competition:

Afterwards he wouldn't shout it in front of everyone else. Perhaps in the car going back and I said how that game was, did you enjoy it? And [DT1] might say, 'oh

[DT2] was shocking in defending situations, he let the ball go through', and then [DT2] would counter that.

5.3.7 Separation

The theme of separation was explored across both cases through the subthemes of *sport specific* and *general*. It was evident that separation was far more central to the DZ twins than the MZ twins.

Sport specific separation was mentioned by both MZ twins, with MT2 suggesting that their training environment impacted on this: "If it is different ends of the pitch and we are doing different drills I probably wouldn't think about him, I would focus on my own play." This supported MT2's interpretation of a coach observation where they focussed on their own skill execution during a coach-led activity: "I probably focus a bit more on my own game." MT2 also suggested that they were starting to deliberately separate, when discussing their approach to fitness training at the start of a session: "Last night we didn't run together because I just thought that might help a bit more to try and run with someone else, that might give a different perspective on that."

When practising at home DT2 provided the following example in relation to sport specific separation:

I get [DT1] to try and help me, but he's very reluctant to do it. So, I'd say because I want to practise my passing really close a few metres apart. I just want to practise maybe on game day, and he's a bit reluctant to do it. He wants to go and do something else. Not hockey related.

During sessions it was observed that they would not always warm up together. DM provided the following possible explanation: "They are more individuals; they don't see each other as a unit together. It would be perfectly normal for them to do their own thing and particularly as

they get to know the others." DT1 supported this: "In training we would go with people that are around our level."

In relation to general separation, in the MZ case, MT2 emphasised at times their interactions, when it came to homework, "would start off well and it would sometimes just break up, and we would stop working together." MF provided some thought around the longevity of such separation:

There's a catharsis and there's a resistance to separating completely and going off and doing it on their own. We can say separate and work on your own. They'll do that for a short period of time before suddenly they're back together and we say come on you were arguing why don't you stay separated. No we're alright now we've figured it out.

In the DZ case, the emphasis on general separation was similar to that of sport specific separation. DF summarised this: "They have their own little spaces of influence; friendship groups, they get invited to different parties or people's houses ... They seem to be happy enough with that." When discussing this DT1 said: "We don't see each other at school, and then when we come back home we're doing our own stuff with work."

5.3.8 Identity

The theme identity was only apparent with the DZ twins; producing the subthemes of *acceptance* and *characteristics*. Acceptance was identified by DT1 who perceived their twin to be better at sport: "I used to think I was a similar standard at hockey to him or maybe a bit better because we picked that up late. He did badminton before I did, so I knew he was better from the beginning." Further evidence of this came from DM who interpreted the coach observation of DT2 instructing DT1 through an activity: "That's not unusual, that's a normal role for them. I think [DT1] is accepting that he bows to [DT2]." Further acceptance of identity was linked to their rivalry: "He's more competitive, so his hockey is going to a higher level, and in badminton he's getting to a higher level" (DT1).

All alluded to the twins having different characteristics, with DF summarising this:

They are definitely not inseparable, and they are different people ... They are not

identical in any way. [DT2] would be much more openly driven and happy to talk

about that fact … [DT1] is more reserved, he is more relaxed as well.

DT2 provided insight into these differences in a school context: "At school we wanted to be

separated. We want to be different people and have different groups of friends, and not be

like the same person, just because we're twins, and we like to have different birthdays."

5.4 Discussion

This chapter aimed to explore the role twins play in TD, by observing a set of MZ and

DZ twins within the same TD environment across an extended duration. Identified themes

support evidence for the wider sibling relationship's impact on TD (as identified in Chapters

3 & 4), through interactional context, emotional interpersonal skills, rivalry, skill

development, communication, and type of separation (Blazo et al., 2014; Davis & Meyer,

2008; Hopwood et al., 2015; Nelson & Strachan, 2017; Trussell, 2014). In addition, conflict

was apparent in both twin sets, and identity in the DZ twins, highlighting the difference

between sibling types more broadly, and twin types more specifically. These findings add

support to the validity of themes in the sibling literature and, therefore, continue to reaffirm

our understanding of the possible role that siblings may play in TD.

Of course, as research into the sibling relationship within TD environments increase,

it is unsurprising that data will emerge to support a complex and highly individualised

perspective (see Chapter 4). Consider identity, a theme only evident for the DZ twins. A

twins' identity development is shaped by the knowledge and presence of their twin, and

therefore, can influence the behaviour (similar or different) of an individual twin (Noble et

al., 2017). An example of this in this study is the dizygotic twins highlighting that they have

different characters (e.g., more/less competitive). Further consideration of the literature

suggests, DZ twins may feel their co-twins' actions reflect on them, creating a strong desire to differentiate themselves so that they can excel in areas without needing to compete with their co-twin (e.g., different positions/roles within a team: Pogrebin, 2010). In contrast, Ainslie's (1997) proposal that twins often feel that they share core features of their identity, may underpin the MZ twins closeness (e.g., working together in training, instead of competing against each other). Findings from this chapter could also be interpreted through Smith's (2008) suggestion that MZ twins may have larger amounts of empathy and companionship than DZ twins. Such empathy in the TD environment can produce positive outcomes for individuals or groups (e.g., long-term engagement: Sevdalis & Raab, 2014). Finally, conflict may be caused due to the attainment of developmental markers at similar times, and the sustained competition this may create (Ainslie, 1997), particularly if both twins are competing together. It is plausible to suggest that these differences may be influenced by the twin type, with studies suggesting that MZ twins were more likely to be co-twin dependent than DZ twins (Neyer, 2002), with DZ twins more dependent on their contact (i.e., nurture), whereas MZ twin dynamics are more endogenous (i.e., nature: Neyer, 2002). Although the study in this chapter was unable to determine the exact origins. Importantly from a practical perspective, such differences reflect the multifaceted nature of previous sibling research in TD.

Interestingly, of the themes uncovered in previous studies, resilience did not appear to be a characteristic of these relationships. Noble et al. (2017) explain that, to develop resilience, children must master challenges alone. As such, twins are less likely to experience such challenge in comparison to an only child. Or, perhaps according to our data here, MZs are less likely to confront challenge alone when compared to DZ twins. Consequently, these findings *may* present possible difficulties for MZ twins when navigating the talent pathway. Established literature suggests that athletes are likely to be faced by a pathway resembling a

"'rocky road', beset with challenges that need to be negotiated. Accordingly, the development of resilience would beneficially form one part of the strategy alongside other proactively acquired psycho-behavioural characteristics (e.g., PCDEs: MacNamara & Collins, 2015), in order to facilitate progression (Collins & MacNamara, 2012). In fact, higher levels of adult achievement have been linked to the development of these skills in order to negotiate such challenges (D. Collins et al., 2016). In other words, at this stage I would suggest that too much dependence on the twin relationship *may* prove problematic for an individual's development through this type of a "smoother" pathway.

Such consideration of the twin subsystem's interaction, again, highlights the application of FST, with the boundary permeability also varying. Due to the level of interaction and emotional connection of the MZ twins, it is possible to suggest that their boundary was far more enmeshed when compared to the DZ twins (Minuchin, 1974), relying far more on one-another than those outside of the subsystem. Therefore, supporting a trans-active memory system where each member may have unique knowledge, that combine together for optimal effect; thus helping to transfer prior learning to different tasks (cf. Wegner, 1986). Indeed, Lewin (2006) believes that twins who are enmeshed are highly responsive to each other (e.g., themes of skill development and communication) which creates the perception of a shared identity, with the relationship being the most important to them. However, as suggested earlier this *may* be problematic moving forwards with the possibility of major events, such as one twin dropping out or being de-selected, disrupting the subsystem. In contrast, the DZ twins appear to have a far more permeable boundary, which was symbolised by their more limited interaction and greater desire to have separate identities. This may foster useful opportunities for the twins to be taken out of their comfort zone, alongside seeking appropriate support from additional sources (e.g., parents, coaches or teammates).

In seeking to optimise the application and flow from research into practice, I called for greater consideration towards coaching practice when it comes to siblings in TD environments (see Chapter 4). As highlighted earlier in this chapter, Holder and Winter (2017) advocated the use of practice-based inquiry as a tool for practitioners to aid TD. I suggest such an approach is effective *when* combined with interviews and utilising a range of sources (e.g., parents, siblings and coaches), which allows for a better understanding of the relationship dynamic. Notably, the use of interviews to interpret observations and explore additional considerations reduces the limitations the coaching environment places on the use of observations (e.g., time with individual players at the expense of the whole team). Utilising additional coach observation and exploring these further through interviews can increase our conceptualisation of issues. Furthermore, this chapter continues to highlight the accuracy of the parents' interpretation of the twin relationship; therefore, embracing the existence of multiple realities. Taking such a pragmatic approach encourages a constant and considered use of the "it depends" philosophy over a more simplistic "do it this way" approach (Cruickshank & Collins, 2017, p. 71). Moving forwards, further testing and tracking of possible interventions informed by such a pragmatic approach would continue to advance knowledge of the role of siblings in TD.

At this stage, it is also important to recognise the limitations of the approach adopted in this chapter. Firstly, due to the detailed account of only two twin sets, generalisation, and additional confirmation, of results would require further research, as statements relate only to the specific TD environment they are in, and their specific twin relationship. Although I highlighted the importance and significance of adopting such an approach in Section 5.1 (cf. Normand, 2016). Secondly, my role as the head coach must be recognised. As I, supported by the coaching team, delivered to 36 junior athletes across two age groups, visibility of the twin sets was reduced intermittently. Furthermore, my values and beliefs may interfere with

neutrality, and create biases. In order to offset this, triangulation of sources were used, namely, through observations from the coaching team, interviews with parents (cf. Polit & Beck, 2015) and member checking (Smith & McGannon, 2017). Finally, when considering the structure of both family systems involved in this study (both having a third, older, sibling) the expansion of future studies to incorporate the perceived nature of the additional relationship would add value to our understanding of the role and function of the whole family.

5.5   Conclusion and Next Steps

This chapter has continued to build insight around the impact of siblings on TD in sport, through the exploration of twins within a talent pathway. While previously identified themes were verified as present in this context, new ones have added to this growing body of research. The practice-based approach has illuminated a plausible method for coaches considering the use of this relationship within their practice, and further illuminated the accuracy of parent knowledge and observation.

Overall, this chapter continues to advocate the complexity and individualised nature of the sibling subsystem, alongside the influence of twin type on their relationship when considering the impact on TD. Further examples of FST, also highlighted the variation in twin type relationship, and, I feel, highlighted the possibility of twins taking opportunities to go out of their comfort zone and seek support from external sources (e.g., coaches). Findings from this chapter would also be beneficial to wider family units as many families have siblings that are close in age, are constantly compared or look similar (Noble et al., 2017). Finally, I suggest further practical consideration of the impact these themes have on TD would afford the opportunity to explore the effectiveness of their use in TD environments. Having explored the role of siblings in TD through three empirical studies (Chapter's 3, 4 & 5), it is important to now synthesise the main elements through more general discussion.

Chapter 6: General Discussion and Implications to Practice

6.1 Introduction

Having explored the role of siblings in TD, this thesis uncovered a range of potential mechanisms that may support talented athletes when navigating a TD pathway (see Table 6.1). With this in mind, it is important to contextualise this knowledge. A general discussion will now align these findings with the biopsychosocial model of development and FST. This discussion will then provide informed implications for practice, highlighting the impact of these findings for exercising good PJDM skills in the TD environment.

Table 6.1   *Themes Identified Across the Thesis*

Themes	Subthemes across studies
Interactional context	Sport, competition, practice, play, other activities, recreation
Emotional interpersonal skills	Closeness, comfort, empathy, support
Rivalry	Competition, motivation, success, performance, affective response
Skill Development	Mentoring, co-operation, observation, challenge
Communication	Instruction, discussion, feedback
Conflict	Arguments, frustration, criticism
Resilience	Development, test, behaviour, mental process
Identity	Acceptance, characteristics
Separation	General, sport-specific, academy, self-initiated, time, distance

Note 1.   Skill development and communication are an extension of the theme co-operation identified in Chapter 3.

Note 2.   Identity and conflict only appear in the twin study in Chapter 5.

6.2   The Biopsychosocial Model of Development

As I highlighted in Chapter's 3, 4 and 5, Abbott et al. (2005) suggest that failing to recognise the multifaceted nature of TD by not focusing on the interaction of all three domains, risks providing a suboptimal approach. Effectively, developing talent is not solely attributable to an athlete's physical (e.g., speed), nor their psychological (e.g., realistic evaluation) or social (e.g., communication) abilities alone, instead, requiring subtle and

individualised interactions between all three (Collins et al., 2012). These references will now

be discussed in more detail.

6.2.1   The Potential Biopsychosocial Impact of Siblings

Evidenced by the potential mechanisms uncovered (see Table 6.1), the pervasive

sibling relationship may have developmental benefits beyond the social environment and in

fact, can support the holistic development of an athlete (i.e., biologically, psychologically and

socially). As Smoll and Smith (1996) advise, one of the keys to unlocking youth athletes'

potential revolves around understanding their physical, psychological and social

developmental needs. Earlier research by Kunst and Florescu (1971) also highlighted the

need to consider a multidisciplinary approach to support the development and performance of

an athlete through the contribution of physical, motor and psychological dispositions. Such

suggestions need to, of course, be represented appropriately for the age and stage of the

athletes involved across the studies in this thesis; with athletes either currently engaged

within a TD pathway (ages 8 – 15), or reflecting on their time in a TD or ERE pathway (cf.

Collins et al., 2012; Kunst & Florescu, 1971).

Kunst and Florescu (1971) highlight that the determining characteristics to advance

through a talent pathway, and beyond, are principally behavioural in nature and, therefore

requires an athlete to have a certain behavioural focus in order to acquire and master skills.

Such emphasis during this period aligns with the focus on particular domains within the

biopsychosocial sphere to this context (see Figure 6.1) and provides a much-needed reminder

for balance when compared to overly physiological models of TD. It is arguable that athletes

at this age and stage have appropriate biological, or psychomotor (e.g., co-ordination) and

anthropometric (e.g., body shape), attributes. Although these are not likely to be perfect, they

will be good enough otherwise they would not be able to perform at this level. Therefore, it

is still important that biological development occurs, but alongside the key psychosocial

characteristics required as a talented athlete, with the mapping of the biopsychosocial triad balance for individual athlete's key to preparing them for new challenges (Collins et al., 2012). In fact, some of the psychosocial characteristics developed at this age can assist in preventing negative biological consequences (e.g., injury), or supporting biological developmental needs (e.g., increase acceleration) later on, or technical refinement (Carson & Collins, 2015). Therefore, it is useful to invest in these at this stage of TD.
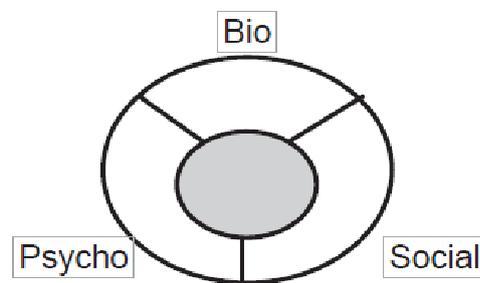
Figure 6.1. Participant ages (8 – 15)/stages (ERE) application of the biopsychosocial sphere (adapted from Collins et al., 2012)

When drawing attention to the findings from Chapters 3, 4 and 5, there is evidence that siblings have the potential to support the biopsychosocial development of an athlete. Consider the example provided in Chapter 4: *Reflective discussion between siblings around what happened, why and how it could be improved (psychological), re-enacting the skill as it would be intended to in the future (biological), followed by reinforcement and support from the sibling to ensure that it takes place (social).* This example not only highlights how a sibling can aid biopsychosocial development, through providing developmental opportunities for each domain, but also illuminates that these domains do interact, even if it is not always

clear. Consequently, coaches must recognise this interaction to exploit the practices within the TD process.

Reverting back to Kunst and Florescu's (1971) observation that psychobehavioral skills are needed to acquire and master skills, it is apparent that achieving an optimal outcome from this development opportunity would be limited if it was simply siblings re-enacting the skill in their garden, on a pitch or at a training session (*interactional context*). In fact, the development of the skill may be optimised, in part, by the realistic performance evaluation and goal setting (two of the PCDEs; MacNamara et al., 2010) that took place through discussion, feedback and/or criticism (*communication and conflict*) within the psychological domain. Before then re-enacting the skill through co-operation, mentoring or challenge (*skill development, rivalry and resilience*). This is then supplemented by instruction, positive praise and/or encouragement (*communication, emotional interpersonal skills and skill development*) before, during and after the execution of the skill (cf. Ford, 2016). Referring back to Figure 6.1., it would also be plausible to suggest that due to the age and stage of the athletes and their siblings, the psychosocial interactions going on around the biological interaction may well be more central to the athlete's ability to master the skill. These opportunities for TD appear to sit outside of the TD environment; therefore, consideration of how this knowledge can support coaching practice is the logical next step.

6.2.2   Considerations for Practice

Professional judgement and decision making (PJDM) encourages us, as coaches, to combine complex pedagogical skills together with the aim of being more effective, making best use of our skill set in order to define, deploy and refine our strategies to create an optimum environment for individualised TD (Collins & Collins, 2015). Developing knowledge of the biopsychosocial role siblings can play, adds to evidence informing a coaches PJDM.

The design of such strategies is dependent on the interplay of environmental and interpersonal challenges (Collins & Collins, 2015), and therefore, such consideration is not simplistic and requires an understanding of the complex nature of TD and the individual athlete. Figure 6.2 conveys a progression pathway in terms of activity options/motives/needs for an individual athlete as they get older. So, at a very young age there will be fewer options that a coach could take (e.g., agility, balance or co-ordination), however as they progress these become increasingly diverse (e.g., explosive power or lower back mobility), and finally, once these behaviours/skills/structures become more well established fewer options for change present themselves as realistic possibilities (e.g., changing running style to become more efficient). Using this idea against the findings within this thesis suggests that there will be a broader number of activity options/motives that would need to be considered per athlete (Collins et al., 2012), due to the athlete's age positioning them closer to the equator of the sphere. For example, the athlete may need to develop agility, balance and co-ordination at this stage, whereas, if the athlete was older (i.e., positioned towards the top of the sphere), they may only need to work on agility, as they have already developed, or do not need, balance and co-ordination or it is not worth them putting in the effort (e.g., a high performer changing their skills could be too risky). This high number of possible variables places high cognitive demand on us as practitioners and, therefore, understanding the role of expertise is an important developmental need (Collins & Collins, 2015; Martindale & Collins, 2013).
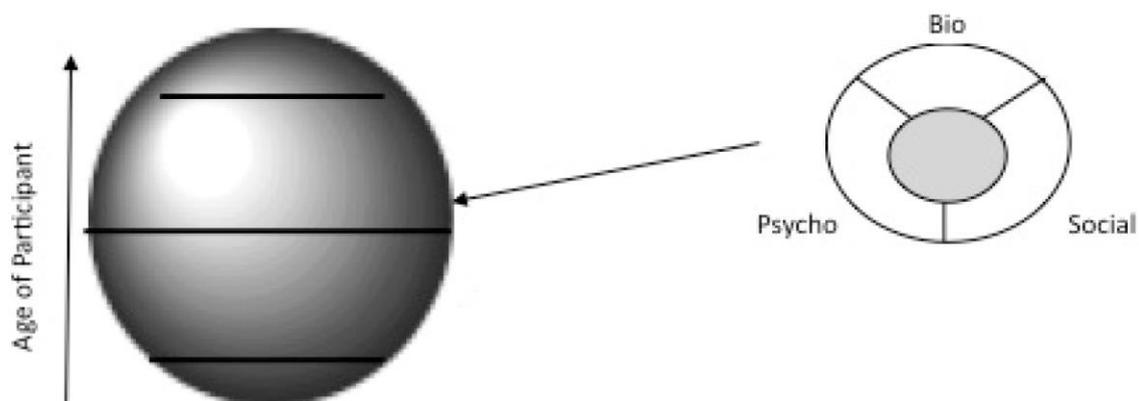
Figure 6.2. Participant ages (8 – 15)/stages (ERE) application of the biopsychosocial sphere (right), including maps of investigation/intervention possibilities (left; adapted from Collins et al., 2012)

When considering PJDM and biopsychosocial development it is apparent that a comprehensive view of the impact siblings can have within the TD environment is needed; incorporating macro (programme), meso (intervention) and micro (session) levels (Martindale & Collins, 2012). Mapping the domain balance for an individual as they progress through a TD pathway will enable an evaluation of their preparedness for new challenges (Collins et al., 2012), and there is the potential for siblings to support this across levels (i.e., programme, intervention and session). Once a broader mapping has taken place, highlighting their developmental needs, it is then possible to consider the potential role of a sibling in this, if appropriate, within both the TD environment (e.g., training and competition) and the family environment (e.g., at home or in the car, or in the garden).

When considering the possible impact at a programme level, encouraging siblings to engage, through a range of *interactional contexts* (e.g., play, practice and/or competition), in instruction, feedback and/or discussion (*communication*; e.g., discussing how to negotiate a particular tactical moment of the game); as well as, mentor, co-operate, observe and/or

challenge (*skill development*; e.g., engaging in 1v1 elimination practice), alongside consideration of the *emotional interpersonal skills* (i.e, support, empathy and/or comfort) they can offer, may be advantageous when developing talent (e.g., encouraging siblings to discuss challenges they faced during a training session). Additionally, acknowledging the role of *rivalry* and *conflict*, may also support an athlete's development (e.g., putting siblings on opposite sides for a small-sided game), and help develop *resilience* (cf. Sarkar & Fletcher, 2014). In combination, these mechanisms, through their interactions, have the potential to facilitate biopsychosocial development, and should be encouraged in combination, and not in isolation (Smoll & Smith, 1996). At an intervention level such interactions may be beneficial to an athlete, dependent on their biopsychosocial developmental needs, again, with siblings potentially being able to support this through a range of interactional contexts. For example, if one sibling is in the process of developing their communication skills during a game the other sibling could be encouraged to feedback (*communication*) on the quality of the communication during a game (*interactional context*), support (*emotional interpersonal skills*) the development of this through off-pitch discussion (e.g., in the car or at home). Of course, the success of such an intervention would be dependent on the particular mechanisms that characterise the individual sibling dyad.

At a session level (if both siblings are in the same group: e.g., the twins in Chapter 5), the opportunity may be available to actively utilise the sibling relationship to support their TD and encourage the interaction between the domains. For example, putting siblings on the opposite side's in a game scenario could allow for *skill development* through challenge (biological), with such a scenario testing the sibling's *resilience* (psychological). A coach could then encourage feedback to take place through *communication* (social), potentially allowing for the development of *emotional interpersonal skills*, such as support and empathy, to take place (social). This may be advantageous if the athlete's relationship with their

sibling is characterised by closeness (*emotional interpersonal skills*), as they may perceive their sibling as a more approachable support network, instead of coaches. In support of the bigger picture (i.e., programme and intervention levels), these small changes within an isolated session have the potential to create a snowballing effect that can induce substantial improvements in an athlete's functioning (Kottler, 1999). This can be labelled as a 'critical incident', and highlights the potential an individual session, and the role of a sibling, can have on producing change (Rice & Greenberg, 1984), both formally and informally (e.g., formally; in a game scenario or at a rest point, or informally; in the car on the way home or at the park).

However, as identified throughout this thesis, not all sibling relationships share the same characteristics and the use of these characteristics may be acute or chronic. It is important that we have an understanding of each family system, and the subsystems within it, in order to make appropriate decisions about interventions and developmental opportunities. Therefore, discussion now turns to the broader context and how such findings may be viewed through independent family systems.

6.3 The Broader Context – How does this fit into the Family System

Hellstedt (2005, p. 899) used the term "athlete families" to describe family systems that maintain intensive involvement in youth, collegiate or professional sport (e.g., through time, finances and emotional energy). However, there is a general acceptance that such a term focuses on the parental role within these families (cf. Hellstedt, 2005; Lindstrom Bremer, 2012), highlighting the need to explore additional family elements (i.e., the sibling subsystem) to further expand our knowledge of FST within the sporting context (Blazo & Smith, 2018; Lindstrom Bremer, 2012; Osai & Whiteman, 2017). With this in mind, and as has been highlighted throughout, this thesis has focused on helping us develop a deeper understanding of the role of the sibling subsystem in sport; specifically, TD, so that we can broaden our understanding of the family role. This discussion will now focus on two key

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elements highlighted in the FST literature; the sibling's contribution to the subsystem within the TD context and the permeability of the subsystem boundaries.

6.3.1   The Sibling Contribution to the Subsystem

Across this thesis, a number of themes have emerged regarding the role of siblings in TD (see Table 6.1). Bowen (1978) describes the role of individual elements (e.g., mother, son) within the family system, and describes the unique contribution an individual element can bring to the structure. I will now explore the unique nature of an individual sibling's contribution to the sibling subsystem, within the family system.

Recent research has made us aware of the impact siblings can have at the highest level with many 'super champions' (50 plus caps for their country) highlighting the significant developmental role played by their siblings during their journey to the top (D. Collins et al., 2016). These athletes were characterised by positive facilitation and gentle encouragement from significant others when navigating the pathway to the top (D. Collins et al., 2016). This thesis provides initial support for siblings supporting possible high achievement in sport (i.e., becoming a super champion) through identifying a number of mechanisms through which siblings can facilitate and encourage TD across a range of *interactional contexts*, and through a number of mechanisms, for example; *emotional interpersonal skills* (comfort, closeness, support, empathy), *skill development* (through challenge, observation, co-operation, mentoring), and *communication* (via discussion, feedback, instruction).

However, the unique nature of the sibling contribution to TD, from a family perspective (i.e., in comparison to the contribution of a parent) is not bound to the confines of an individual family system. The studies conducted across this thesis have recognised that this uniqueness is across families, and that each sibling's contribution to a subsystem is different, and therefore the characteristics of each sibling subsystem are also diverse. Take Figure 4.1 (p. 80) which illuminates this variation through depicting the use *and* importance

of mechanisms across the four sibling subsystems examined. Taking into consideration Collins et al.'s (2016) illumination of the role of siblings (i.e., significant others) through facilitation and encouragement, it would be plausible to suggest that some sibling subsystems may not provide such support to a talented athlete. For example, the sibling subsystem in Family 4 (Chapter 4) was characterised by frequent examples of *rivalry*, and lesser examples of *emotional interpersonal skills* and *resilience*. Such a combination may not provide clear opportunities for facilitation and encouragement, and therefore, possibly, negatively affect TD. In contrast, the sibling subsystem in Family 2 (Chapter 4) was characterised by frequent examples of *emotional interpersonal skills*, regular examples of *skill development*, and limited examples of *rivalry* and *resilience*. Perhaps the unique contribution of the siblings in this subsystem would be more prone to positive TD. Importantly, however, these almost inevitable differences are as a direct result of biopsychosocial interactions.

These considerations around the uniqueness, and perceived impact, of the sibling contribution are also influenced by, what Hellstedt (2000, p. 210) defines as "horizontal stressors". These are stressors that families may face across time, especially during times of transition, and appear more frequently within families where more than one child is participating in a talent pathway (Hellstedt, 2000), with such a statement reflecting those under study throughout this thesis. Evidence from this thesis suggests that these horizontal stressors may affect the use of specific mechanisms within the sibling subsystem, with examples of both chronic and acute usage across an extended period of time (see Chapters 4 & 5). Suggestively, therefore, this change in use is partly subject to these transitions (e.g., from pre-season, to season, to post season; or, movement through age groups; or, a sibling being released). As such, consideration of what influences this usage would be advantageous.

Hellstedt (2005) also outlined a developmental approach to considering family systems in relation to athlete families. He suggested that there are several tasks that need to be mastered as families move through stages of an athlete's development. The two stages of this model relevant to this study are; the family with young children (ages 4–12; Chapter 4), and; the family with adolescent children (ages 13–18; Chapter 5). Although much of the suggestions for these stages of the model focus on parents, I will now outline how siblings may be able to support TD during these stages, broadening the perceived role of the family. Of the five tasks that need to be mastered by families with young children (cf. Lindstrom Bremer, 2012), three of them correlate with the findings (in relation to this age) from this thesis; providing a safe sport environment – *interactional context* and *emotional interpersonal skills*; emphasising fun and skill development – *interactional context* and *skill development*; and, allowing for sport time as well as for non-sport individual and family time – *interactional context* and *separation*. Coach, and parent, knowledge, and consideration of how siblings can support such tasks adds value to the role of family at this stage.

At the adolescent stage, there are eight tasks (cf. Lindstrom Bremer, 2012), with four of these linking into the findings from this thesis; to encourage and support the athlete's commitment – *interactional context*, *emotional interpersonal skills* and *communication*; provide emotional support – *emotional interpersonal skills*; encourage healthy boundaries for the family and athlete – *separation* and *identity*; and, to allow the child athlete to have more independence in decision making – *resilience*, *separation* and *identity*. Such examples, not only demonstrate further relationships with the horizontal stressors that were defined by Hellstedt (2000), but also, the possible impact siblings can have on TD from a family systems perspective, adding broader consideration to the role of the family in this process (i.e., adding to the breadth of parent literature available; Knight, 2017)

Of course, triangulation between family subsystems (e.g., parent – child, child – child, parent – parent), as well as outside of the family system (e.g., coaches, teammates) is of importance here in order to encourage dynamic relationships that are reciprocal in nature (Becvar & Becvar, 2009), with the aim of creating an optimal environment to support TD. The need for such triangulation would require the subsystem boundaries to become permeable in order to allow interaction to take place outside of it (cf. Minuchin, 1974). With this in mind, I will now focus discussion on the permeability of the sibling subsystem boundaries.

6.3.2 Permeability of the Subsystem Boundaries

Osai and Whiteman (2017) advised that to only focus on each family relationship and how they act as interdependent parts of the family system would not be sufficient in isolation when considering the role of family in sport. As an expansion of this, they highlighted the need to explore and consider the permeability of the boundaries of those relationships. As highlighted in Chapter 2, such permeability can be measured on a continuum from enmeshed to permeable (Minuchin, 1974), with suggestions that this permeability may fluctuate depending on a range of factors. In this thesis, I have drawn on this element, highlighting how the sibling subsystems under study have moved in a bidirectional manner along this continuum.

Periods of enmeshment were evident across all the sibling subsystems, however, the extent of this altered depending on the unique characteristics of the subsystem. For example, the boundaries of all the sibling subsystems in Chapter 4 became far more enmeshed during the summer break from the academy, allowing for lots of opportunities for *informal* play and practice (*interactional context*), through which *emotional interpersonal skills*, *skill development*, *communication*, *rivalry* and *resilience* could all occur, potentially having a positive impact on TD at a stage when formal TD sessions (i.e., academy training and

matches) were far less frequent. This knowledge and understanding has the potential to impact at a macro level of TD (Martindale & Collins, 2012), as mentioned earlier, through the utilisation of this enmeshed period to facilitate and encourage developmentally beneficial activity (D. Collins et al., 2016). At this level of planning, siblings may be actively utilised as a support mechanism for the athlete. Implications for coaches, when considering the use of this informal environment, could include conversations with parents, or setting tasks for the athlete(s), to encourage such interaction during this enmeshed period.

The theme of *separation* (present in all three studies) highlighted various triggers for the increase in permeability through a range of factors such as; time, distance, sport-specific, self-initiated and general day-to-day separation. Initial exploration (Chapter 3) identified this potential change in permeability. For example, when athletes approached the investment stage of their development (Côté, 1999), and were at an age where they were moving away from the family home, they acknowledged an increase in permeability, through time and distance, as they trained (sport specific and non-sport specific) away from their siblings, either on their own or with others outside of the family system (e.g., friends or teammates). This movement along the continuum towards high levels of permeability could signify to coaches, and parents, the need to consider additional, or replacement, support networks (i.e., greater reliance on a coach or peers).

In Chapter 4, the longitudinal nature of the study illuminated the changeable nature of the permeability of boundaries through highlighting the impact of time of year (preseason, season and postseason) and the environment (e.g., academy, home, school) on the sibling relationship boundaries. For example, the sibling boundaries became highly permeable when one sibling moved to another academy further away from the family home. In Chapter 5, the dizygotic twins were characterised by *separation* and, partly due to their desire to form separate *identities*, spent much of their time apart through the *interactional contexts* of sport

and other activities. Therefore, it could be argued that the boundaries of their subsystem were nearly always highly permeable, emphasising the relative differences across sibling subsystems.

Such permeability of the sibling subsystem within the context of TD may have its benefits. Collins and MacNamara (2017), across many studies, have highlighted the need to consider the role of PCDE's when developing talented young athletes. In fact, much of their research has promoted the significance of this alongside the physical, tactically and technical requirements of sports performance (cf. Bailey et al., 2010). As such, the potential for increased permeability in the sibling boundary (i.e., siblings going outside of the relationship) may have a positive impact on their ability to actively seek and use appropriate support networks (one of the PCDE's; MacNamara et al., 2010), such as parents, coaches and teammates. This opportunity to draw on additional resources may, therefore, support the development of self-regulated learners (a developmental process required to achieve expert performance; Petlichkoff, 2004). Seeking support from others is one element of the skillset a self-regulated athlete must develop, and sits alongside the ability to self-monitor progress, manage emotions and focus on self-improvement (Petlichkoff, 2004). Such movement away from the subsystem potentially aligns with Hellstedt's (2000) 'families with adolescent children' stage of development, which encourages healthy boundaries for athlete's and family.

As discussed earlier, such skills may also be developed within the sibling subsystem, and therefore perhaps balance is required. This leads us to Broderick's (1993) suggestion that the family is a rule governed system, which regulates traffic across boundaries, therefore impacting on the relationship between family and environment. As the above discussion has highlighted, all sibling subsystems explored through this thesis have suggested that their boundaries fluctuate across time. It is plausible to suggest that such fluctuation can be linked

to the families need to disrupt or redraw the systems guidelines to create an appropriate system to manage a certain period of time (cf. Broderick, 1993).

This thesis has provided many examples of this happening within sibling subsystems. For example, Chapter 4 included a sister and brother who would come together in the summer to train/play together but were forced apart for long periods of time during the season due to the demands of the academy. During this period, their relationship was more focused on emotional support, than skill development and regular interaction, and would see them seek support from those outside of the subsystem (e.g., coaches and teammates). Such discussion, of course, raises the question; how do coaches utilise this knowledge? Therefore, I will now apply these findings to the coaching environment and consider the practical implications.

6.3.3 Considerations for Practice

Discussion above highlights the need to adopt an 'it depends' view of the use of siblings in TD. This may contradict the desire of some practitioners to be provided with a generalised approach to their use in TD, but reducing the process to such a simplistic level is at epistemological odds with the complex dynamics of the environment and the individuals within it (Cruickshank & Collins, 2016). Furthermore, a central element of appropriate judgement and decision making is the consideration of the context (i.e., TD environment) and the available options for taking action. Importantly, Cruickshank and Collins (2016), and Collins and Collins (2015), depict that this should involve reflective questioning around; when should this be used (and when not), with whom (and who not), where (and where not), and crucially (cf. Martindale & Collins, 2012), why (and why not).

For example, assuming that all siblings are competitive, and therefore you always play them *against* each other, will not enhance development opportunities for all siblings in TD. As the discussion above illustrates, different sibling subsystems have different

characteristics, and these may change over time. As Cruickshank and Collins (2016, p. 1201) suggest, looking for "neat and tidy" competencies (e.g., all siblings are competitive), over harder to define cognitive skills that underpin expertise (e.g., I have identified that sibling set A are highly competitive, but sibling set B are co-operative), will not allow us to optimally understand, explain and support effective TD. Therefore, 'it depends'!

In order to effectively utilise the sibling subsystem to support TD, applied practice requires a series of decisions in order to assess the requirements of the specific situation (i.e., finding and designing suitable actions; Simon, 1986), and it is essential that such a process is established prior to any intervention (Martindale & Collins, 2005). This 'intention for impact' stage is a crucial element of the PJDM process as it represents an understanding of the rationale for approach taken, and is therefore key to designing and applying an effective intervention (Hill & O'Grady, 1985) with the environment around the coach, and the athlete, impacting upon this intention for impact (Martindale & Collins, 2005). Accordingly, the ongoing audit and checking within the PJDM approach (cf. Collins, Carson, & Collins, 2016) is essential to optimise the temporal changes that occur within the environment (e.g., the changing sibling relationship).

Evidence provided in this study can support this process as there are a number of findings that can impact here. Firstly, knowing that each sibling subsystem is characterised by different mechanisms (e.g., skill development), and that the permeability of the subsystem boundaries moves bidirectionally across time (e.g., enmeshed during the off season, permeable when competing) provides a rationale for the need to develop declarative (answers to questions, such as who, what, where, when and why), as well as procedural (how to do something) knowledge. As this understanding is crucial when making informed decisions, carrying out effective practice and challenging any reliance on generic tools (Martindale & Collins, 2005).

Secondly, Chapter's 4 and 5 have brought our attention to the role of parents in identifying key characteristics of the sibling's relationship. When interviewed as part of the research, all parents could report on their children's relationship, what characterises it and when the boundaries shift. Such information provides an initial access point for coaches who engage with siblings within their talent pathway. This can have a useful impact on the intention for action stage of the PJDM process (Simon, 1986), and ongoing auditing of decisions made, with practical approaches to this including; conversations with parents around sessions (verbal) or communication via email (written), encouraging parents to highlight key elements of the siblings relationship (e.g., they are very close and demonstrate high levels of empathy, or, they are always very physical with each other). This can contribute to responses to questions around when or when not, and why or why not (Cruickshank & Collins, 2016). For example, encouraging siblings to be supportive in the off-season might be developmentally beneficial, but if they are in the same team and possibly competing for a place it may not be beneficial to do this around training and competition.

Finally, Chapter 5 identified a pragmatic way to view your athletes through longitudinal observations within the TD environment (either by yourself, or with your coaching team) leading to practice-derived knowledge (Holder & Winter, 2017). Identifying, and recording, interactions and reactions to interactions, can provide evidence that characterises the sibling relationship in the real world environment (cf. McKenzie & van der Mars, 2015). Again, such an approach not only has the potential to recognise specific characteristics, but also the temporal nature of this relationship (e.g., change in relationship around selection), and who else within the environment they may attach themselves to (e.g., peers or coaches). This, combined with the interpretation of what you saw, through conversations with the siblings can add value to the planning and rationale behind a given intervention. Overall, I would suggest the triangulation of the aforementioned findings in

order to underpin, and inform, both procedural and declarative knowledge, as Kreber (2002) describes, knowledge base alone does not determine expertise. Expertise is the ability to utilise knowledge effectively in practice.

6.4 Becoming a Pracademic: Its Impact on my Coaching Practice

Naturally, my PhD journey has afforded me lots of opportunities to reflect on my own practice and consider how I can implement my research to support the athletes I coach within the talent pathway. The use of siblings to support my athletes is not suitable for all that I coach, and therefore, careful consideration is crucial. Initial application of this research has taken place with siblings who both play in the pathway and train together. I have engaged in conversations (verbal and written) with parents to gauge preliminary understanding of the sibling relationship (in this case brother-brother), uncovering characteristics that could have an impact on TD. This has provided the foundation for observing the siblings in the TDE in order to consider how best these characteristics might be utilised to optimise TD.

Examples of my practice include; one set of twins are highly competitive therefore when playing games, it is more productive for them to be on opposite sides, therefore increasing their motivation to perform individually and as a team. Another set of twins are characterised by high levels of co-operation and challenge (skill development) so asking them to work together heightens their focus and pushes each other on. Finally, this research journey has encouraged me to consider how I can begin to bridge the gap between the formal and informal TDE in order to maximise development opportunities. As a consequence of this I have recently implemented a weekly development checklist with three of the points encouraging sibling interaction; 30-minute play with friends/family, 10-minute discussion with a family member about goals and actions and complete a sport-related challenge set by a family member.

Chapter 7: Conclusion and Future Research

7.1 Conclusion

This thesis has explored the role of siblings in TD in sport and has been shaped by the following progressive objectives:

1. Critically examine the role of the family in TD and highlight the need for further exploration of the role of siblings.

2. Identify the characteristics associated with sibling relationships within TD through access to athletes who had successful senior careers.

3. Track characteristics of the sibling relationship within TD across an extended period of time, in order to consider their significance and use, in detail, across families.

4. Consider the practical approach to identifying sibling characteristics, in order to provide possible avenues for coaches when considering this relationship in their TD environment.

5. Provide practical implications when considering the role of siblings in TD and highlight the need to continue studying the relationship within this context.

Through a qualitative approach this exploration has added insight to a relatively under-researched aspect of the family system that has the potential to support TD (cf. Knight, 2017). As highlighted in Chapter 1, the TD environment can be both formal (e.g., coach-led training) and informal (e.g., play at home; Ford, 2016), with the opportunity for coaches to exploit both having the potential to optimise TD (cf. Abbott & Collins, 2004). With this in mind, this thesis has provided initial evidence of the potential for siblings to influence TD through both informal (e.g., playing in the garden with their sibling) and formal (e.g., during a coaching-led training session) environments.

When considering how this thesis has built on our current understanding of the family role in TD, it is evident that the sibling impact on TD can go beyond the social domain, having a biopsychosocial impact on TD; creating opportunities for interactions to take place between all three domains. With parents tending to be able to progressively support athletes in TD psychosocially, it could be suggested that siblings might have a greater role in supporting the holistic development of an athlete. Therefore, within the family system, they provide a unique opportunity for TD through the potential mechanisms highlighted. This adds further insight into the role of the family in TD, by exploring the underexposed sibling relationship in order to build on the extensive literature around parenting in this context. Importantly, however, studies in this thesis have highlighted that the uniqueness of the sibling relationship is different across sibling sets; with different sets being characterised by different mechanisms, and that this dynamic can change across time, illuminating the complex and individualised relationship dynamic of siblings.

When considering the practical impact of this thesis within the TD environment, such consideration highlights the need for an individualised approach when identifying how siblings can be used to support TD. Subsequently, coaches should consider if, and when, the sibling dynamic can support TD, and how to utilise it effectively through understanding the characteristics of *that* sibling relationship. Accordingly, in order to support the complexity of using such a relationship, parents have been shown to provide an accurate understanding of their sibling relationship. Therefore, parents are a support network for coaches looking to utilise the relationship, alongside observing and communicating with the siblings themselves.

7.2   Future Research

With this thesis providing an initial exploration of the impact of siblings within the TD context, it is imperative that we continue to build on, and expand, this body of research so that we support those responsible for nurturing our young sporting talent. Consequently, there

are three components of research that must be considered as we move forwards and grow our understanding, and use, of the family as part of the TD environment.

Firstly, further research around the role of siblings should look to explore a wider range of sibling subsystem constellations in order to broaden our understanding of their impact on TD. This could include, but is not limited to, talented and non-talented siblings, variations of same-sex (e.g., sister-sister) and opposite sex (e.g., older sister and younger brother) and a range of sibling subsystems within the family unit (e.g., four siblings). Furthermore, as identified in Chapter 2, additional demographics such as social class, race and sexuality may have an influence on family systems and would therefore require closer attention. Such study would continue to build on what has been developed so far, and provide coaches, parents and academics with greater evidence of the role of siblings in TD.

Secondly, now that the sibling subsystem is receiving greater consideration (e.g., Blazo et al., 2014; Blazo & Smith, 2018; Davis & Meyer, 2008; Nelson & Strachan, 2017; Osai & Whiteman, 2017; Trussell, 2014), alongside the deep exploration of parents in TD, our understanding of the role of family in TD is expanding (cf. Knight, 2017). To review this further would require holistic consideration of the whole family and its interactions in order to illuminate the complexity of such support. Doing so through a theoretical lens, such as FST, would encourage us to consider the individual subsystems at work within the family, their unique contributions and their interactions across subsystems (i.e., the permeability of the subsystem boundaries; Bowen, 1978). Overall, such an approach would develop deeper understanding of the role of family in TD. Furthermore, to allow siblings to have beneficial involvement with an athlete's development, it is necessary to also conduct further research into the athlete's perceptions of this involvement and how they can embrace such support positively, as well as considering what influences the temporal use of mechanisms across an extended period of time.

Finally, the transfer of theory, around the role of siblings, to practice is relatively unexplored within the TD environment. Therefore, further testing, tweaking and repeating would be advantageous in our quest to provide coaches with the opportunity to utilise such relationships as optimally as possible. Moreover, when considering the evidence available of practical implementation of such research, relatively few NGBs in sport have specific materials available for engaging in the development of family involvement within their sport. Additionally, even those NGBs that have, have not systematically monitored or evaluated their initiatives and resources, making it very difficult to consider the strengths and weaknesses of such attempts (Brackenridge, 2006). This supports the notion that 'one-size does not fit all' and that individual sports, and individual athletes, must be treated as that, individually. Therefore, how we create and sustain appropriate environments for TD, through the use of the sibling relationship should be explored.

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Appendices

Appendix A

A1. Ethics Approval Form

5th March 2015

David John Collins/Robin David Taylor
School of Sport, Tourism and the
Outdoors University of Central
Lancashire

Dear David/Robin,

Re: BAHSS Ethics Committee Application
Unique Reference Number: BAHSS 235
The BAHSS ethics committee has granted approval of your proposal application 'How brothers and sisters (siblings) can help or hinder a player's development'. Approval is granted up to the end of project date* or for 5 years from the date of this letter, whichever is the longer.

It is your responsibility to ensure that:
- the project is carried out in line with information provided in the forms submitted
- you regularly re-consider the ethical issues that may be raised in generating and analysing your data
- any proposed amendments/changes to the project are raised with, and approved, by Committee
- you notify roffice@uclan.ac.uk if the end date changes or the project does not start
- serious adverse events that occur from the project are reported to Committee
- a closure report is submitted to complete the ethics governance procedures (Existing paperwork can be used for this purposes e.g. funder's end of grant report; abstract for student award or NRES final report. If none of these are available use e-Ethics Closure Report Proforma).

Yours sincerely,

Megan Knight
Vice Chair
BAHSS Ethics Committee

A2. Ethics Approval Form – 2nd Phase Amendment

![UCLan logo - University of Central Lancashire]

5 May 2017

David Collins/Robin Taylor
School of Sport and
Wellbeing University of
Central Lancashire

Dear David and Robin

Re: BAHSS Ethics Committee Application
Unique Reference Number: **BAHSS 235** (2nd phase amendment)

The BAHSS ethics committee has granted approval of your proposal application 'How brothers and sisters (siblings) can help or hinder a player's development'. Approval is granted up to the end of project date.

It is your responsibility to ensure that:
- the project is carried out in line with information provided in the forms submitted
- you regularly re-consider the ethical issues that may be raised in generating and analysing your data
- any proposed amendments/changes to the project are raised with, and approved, by Committee
- you notify roffice@uclan.ac.uk if the end date changes or the project does not start
- serious adverse events that occur from the project are reported to Committee
- a closure report is submitted to complete the ethics governance procedures (Existing paperwork can be used for this purposes e.g. funder's end of grant report; abstract for student award or NRES final report. If none of these are available use e-Ethics Closure Report Proforma).

Yours sincerely

B1.   Information Sheet for Participants

Robin Taylor
PhD Student & Associate Lecturer
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30/05/2013

A Retrospective study investigating the effect the presence of an elite athlete had on family dynamics within the developmental years: Sibling rivalry or sibling consent?
You are being invited to take part in a research study for a PhD/postgraduate qualification. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please read through the following information carefully.

What is the purpose of the study?
The purpose of this study is to examine the sibling relationship during the period of the elite athletes, now either established within their sport or retired, progress through the developmental stage of their career. It is intended to explore the positive and negative aspects of this relationship during that period, as well as investigating the impact parental involvement has on both the elite and non-elite sibling/s.
From this study it is anticipated that the outcomes will allow for substantial theoretical understanding, development of elite sport-specific literature, and enhancement of practice in relation to Sibling relationships within the context of sport, more specifically elite sport.
The study will consist of an individual interview of each and every participant involved, with participants being both the elite athlete and their sibling/s.

Why have I been invited to participate?
You have been chosen to take part in this study as you are either an elite athlete, or a sibling of an elite athlete. The study will also explore similar relationships of a further three elite athletes and their siblings

Do I have to take part?
It is up to you to decide whether or not to take part. If you do decide to take part you will arrange a meeting with the researcher where you will be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. Withdrawal will not be possible after final analysis has been undertaken.

What are the potential risks of participation?

There is the possibility of distress during the study. Questions could potentially ignite feelings and/or memories that may be of an upsetting nature, and could potentially impact relationships. In the case of such a scenario direction and advice surrounding professional help, through the researchers Director of Studies; Professor Dave Collins (Chartered Psychologist and qualified counsellor), will be provided.

What will happen to me if I take part?
As outlined above, the study requires the participation of both the elite athlete and their sibling(s) for a single interview. These interviews will take place on a one to one basis, on a time and date that is convenient for you, and in an environment you feel comfortable in. The interviews will be recorded for transcription and analysis purposes, each lasting no longer than 30 minutes, and will contain a number of open questions allowing for the facilitation of discussion and enquiry. This will therefore incorporate the collection of personal data – this includes personal opinions, descriptions of past events and occasions. Due to the nature of the interviews it is vital that they are recorded allowing for full transcription, therefore if the participant is uncomfortable with being recorded unfortunately participation/recruitment will not be possible.

Will what I say in this study be kept confidential?
All information collected within this study will be kept strictly confidential. Your names and that of your fellow participants will be removed from all publications of the research material, with data being stored on a password secure University network computer, under the University's policy on Academic Integrity. Transcripts will be kept in a secure location within the School of Sport, Tourism and the Outdoors building, and retained for up to a period of five years after the completion of the study allowing for examination and analysis by the researcher. After this period, all recordings and transcripts will be destroyed.

What should I do if I want to take part?
To 'opt in' to this study please contact the researcher via telephone or email to arrange a meeting, where you will be required to complete a consent form. Please do not hesitate to get in touch with the researcher if you have any questions regarding the study.

What will happen to the results of the research study?
The results of this study will be used to aid the researcher in compiling their PhD Thesis, as well as contributing to the publication of any papers identified by the researcher and their supervisory team. A copy of any published research can be obtained through contacting the researcher or their Director of Studies (DoS).

Who is organising and funding the research?
The researcher is conducting the research as a member of staff, with the division of Sports Coaching and Development at UCLan, as part of their continued professional development. The research is therefore being funded by the School of Sport, Tourism, and the Outdoors.

Who has reviewed the study?
The research has been approved by the University Research Ethics Committee BUSH (Built Environment, Sports and Health).

Contact for Further Information
For further information, feel free to contact either the researcher, using the contact details at the top of this document, or their Director of Studies:

Appendix C

C1.   Interview Matrix – Elite Sibling

Question (ELITE)	Probes	Stimuli	Purpose
1. Can you tell me about your background as an elite athlete during the specialisation years?	• How many siblings do you have? • Are they involved in sport? • How old were you when you specialised? • How often did you train? • Who was involved?	What is the age difference between you and your siblings? How old were your siblings? When you focused solely on the one sport? Distance travelled How often were you away from home Parents/Siblings Attendance	• To what extent were you aware of how your specialisation effected your siblings? • How did you decide how it affected your siblings? • How did your specialisation affect their sport involvement? • Who did you discuss this with? • How did your relationship with siblings compare/contrast to before you specialised? • What did you think was of most importance during this period? Sport/family relations • Who did you discuss this/these with? • How did this compare/contrast with what you felt was important before you specialised? • How did your frequency of involvement and need to travel affect the family dynamic?
2. Can you tell me about certain behaviours and experiences during the specialisation period?	• Commitment • Motivation • Encouragement • Resistance/reluctance • Competitive	Siblings Parents Personally	• Who? • What forms did this behaviour come in? • When was this behaviour at its highest? • Why did you think this was? Where did it come from? • How did this make you feel? • When did this behaviour drop? Why? • Why did you think this was? Where did it come from? • How did this make you feel? • Who didn't encourage/motivate you? • Why did you think this was? Where did it come from? • How did this make you feel?

			• To what extent were you aware of this behaviour? • How did you react to it? • How did this behaviour affect your relationship outside of sport? • Why? How did this make you feel?
3. Could you tell me about the support network within the family?	• From parents • From siblings	Distribution of resources/time Examples Rivalry for attention	• How much were you aware of this support? • How was it shown? • When/where was it shown? • Why do you think it was shown? • Did you acknowledge it? • How did they respond to this? • Was it consistent? • When did it deviate? Why? How did this make you feel?
4. Could you tell me about how you felt about your development?	• Pride • Stress • Pressure • Enjoyment • Living as a star athlete • Additional feelings • Family	Achievement Commitment Time management Investment from family Expectations Love for the sport Enjoyment of success Acknowledgement from others Desire to outperform other siblings Their feelings	• To what extent did this affect your development? • How did you manage this? • Who caused you to feel like that? • When did you feel this way? • How did you deal with these feelings? • How do you think your parents/siblings felt? • Why do you think they felt that way? • When did they demonstrate these feelings? • How did they demonstrate these feelings? • How did it make you feel?
5. Can you tell me about how you felt about the success?	• Importance of it • Judgement – family or sport	Commitment Which came first	• How much did success mean to you? • Why did it mean that to you? • How did you show this? • Do you think this affected your family relationships? • How did it affect them? • Why did it affect them? • WHY?

6. Could you tell me about the impact your development had?	• On parents • On siblings • Yourself	Distribution of resources Distribution of time Relationship with you Relationship with parents Involvement in sport/other interests Your direction Your goals/aims	• Who did your development impact on? • To what extent were you aware of this impact? • When did you realise this impact? • How did it make you feel? • What did you do about this impact? • WHY?

C2. Interview Matrix – Sibling

Question (SIBLING)	Probes	Stimuli	Purpose
1. Can you tell me about your background as a sibling of an elite athlete during the specialisation years?	• Age when sibling began to excel? • Interests	What is the age difference between you and the elite athlete? When they focussed on their chosen sport. Sport – level of involvement Aside from sport	• To what extent were you aware of the effect their specialisation had on your relationship? • How did their specialisation affect you? • When did this become noticeable? • How did you feel about this? • Who did you discuss this with? • How did your relationship with the athlete compare/contrast to before they specialised? • How did this change make you feel? • Did you demonstrate this? How? • What were the results of this? • Did the elite athlete know how you felt? • What did they do? How did they react? • How did this make you feel?
2. Can you tell me about certain behaviours and experiences during your sibling's specialisation period	• Continuation • Elite athlete • Parents • Family time	Involvement in sport Support from family Support from elite athlete Understanding Supporting Encouraging Friendly Fair/Accommodating Supportive/encouraging Distribution of time/finances/commitment Regular Enjoyable Within sport/outside of sport	• How did their development effect your participation? • Why was this? • How did it make you feel? • Did the athlete acknowledge your interests and support you? How? When? • How did this make you feel? • Did your parents support you? How? When? • How did this make you feel? Was it equal? • How often did you have family time? When? • How did it occur? • Who was involved? • Was it enjoyable? • Did you feel it was effected by the elite athlete's status?

			• Negatively or positively? How? • Why do you think this was? • How did it make you feel?
3. Could you tell me about your feelings towards the elite athlete during the specialisation years?	• Pride • Respect/Admiration • Envy/jealousy • Anger • Living with a star athlete	Their dedication/achievement Rivalry Competitive Rivalry The effects of	• How did you feel about your sibling's success? • How did you demonstrate this? Why? • What caused this emotion? • Did you speak to anyone about it? Who? • What did they say? How did that make you feel? • Did these feelings develop/change over the period of specialisation? How? Why do you think this was?
4. Could you tell me about how you felt about your parent's actions/behaviours?	• Understanding • Respect • Supported/valued • Anger • Resentment	Need to provide such levels of support Loved/encouraged Equal distribution Left out Didn't spend enough time with them Through jealousy towards athlete Lack of understanding	• How did you feel towards your parents? • When did you feel like this? • Was it always that way? • Why did you feel that way? • Who did you talk to about it? • What did they say? • How did that make you feel? • To what extent did this affect your relationship with them? • How did it affect it? • Was it a long term affect? • How did this make you feel?
5. Can you tell me about how you felt about your family's acknowledgement of you?	• Achievements • Interests	Were they acknowledged No matter what they were Sporting/non-sporting Were your interests given the time they deserved/needed Elite athlete/siblings/parents	• Did you receive equal amounts of support/encouragement? • How was it given to you? • By Who? • When? • How did this make you feel?

D.1 Information Sheet for Families

Robin Taylor
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How brothers and sisters (siblings) can help or hinder a player's development.

You are being invited to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

What is the purpose of the study?
The purpose of this study is to examine the impact siblings can have on a player's development within elite sport, with the aim of discovering the variety of characteristics exemplified by this dynamic and their positive or negative nature.

Studies around the sibling impact on talent development are very limited in the sporting context. This study aims to expand on the very little information available currently, and hopes to unveil a range of characteristics of sibling relationships that can have positive and negative impacts upon an athlete's development. It is hoped that the information collected will be of use to sporting organisations across the UK who wish to incorporate sibling management into their talent development programs/pathways.

The study will run for the period of 12 months and will consist of the interviewing of each family member, and coaches, a total of 7 times each. The interviews will take place at the start of month one, and then every 2 months until the 12-month mark. The first and last interviews will be conducted face to face, with the interviews in-between taking place over the phone. This will permit a greater depth of information to be collected, allowing for the detection of particular trends at different times of the athlete's year.

Why have I been invited to participate?
You have been chosen to take part in this study as you are either an elite athlete, a family member of that athlete, or a coach of the elite athlete. Along with your participation the study will also engage with a further five elite athletes and their family, and coaches.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

What will happen to me if I take part?
As outlined above, the study requires the participation of each family member/coach for a total of seven interviews. These interviews will take at a time and date that is convenient for you within proximity of the schedule explained above, either at the training ground or over the phone. The interviews will be recorded for transcription and analysis purposes, lasting no longer than 30 minutes, and will contain a number of open questions allowing for the facilitation of discussion and enquiry.

What are the possible benefits of taking part?
The nature of the investigation will reveal issues and trends relating to the sibling impact on talent development in elite youth sport allowing for light to be shed on this area of development that has so far received little attention. It is hoped that the data gathered will be instrumental in informing sporting organisations across the UK of the benefits of being aware of the sibling dynamic and how it can be used to maximise development.

Will what I say in this study be kept confidential?
All information collected within this study will be kept strictly confidential. Your names and that of your fellow participants will be removed from all publications of the research material with data being stored on a password secure University network computer, under the University's policy on Academic Integrity. Transcripts will be kept in a secure location within the School of Sport, Tourism and the Outdoors building, and will be kept securely for up to a period of three years after the completion of the study allowing for examination and analysis by the researcher.

What should I do if I want to take part?
To 'opt in' to this study please make sure you have read and understood the information within this document – Please do not hesitate to get in touch with the researcher if you have any questions regarding the study. Once you are happy to 'opt in' simply complete the consent form attached and return to the researcher by any of the contact methods at the top of this document or in person. You may also pass the documents onto Hayley Prior (the academy operations manager).

What will happen to the results of the research study?
The results of this study will be used to aid the researcher in compiling their PhD Thesis, as well as contributing to the publication of any papers identified by the researcher and their supervisory team. A copy of any published research can be obtained through contacting the researcher or their Director of Studies (DoS).

Who is organising and funding the research?
The researcher is conducting the research as a member of staff, with the division of Sports Coaching and Development at UCLan, as part of their continued professional development. The research is therefore being funded by the School of Sport, Tourism, and the Outdoors.

Who has reviewed the study?
The research has been approved by the University Research Ethics Committee,

Research Portfolio

uclan

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Siblings in sport: How brothers and

sisters can help or hinder a player's

development.

Robin Taylor

Associate Lecturer

rdtaylor2@uclan.ac.uk - 07821690540

Researcher Profile

Name: Robin Taylor (Rob)

Age: 27

Birthplace: Lichfield, Staffordshire

Sports played: Hockey, cricket, badminton, football, running

Sport specialised in: Hockey

Achievements: Current National League player, 1st team captain (Preston Hockey Club), junior representative honours for Staffordshire and the Midlands, England trialist at U16 age group.

Football team: Huge Everton fan—brother and cousins all support Liverpool, so it was the obvious choice to make!

Siblings in sport

There are several examples of siblings who have gone on to play high level sport either together or separately.

As a family, can you name all the siblings from the 10 families above and on the previous page?

1. Yaya and Kolo Toure (Manchester City and Liverpool) - Recently won the African Cup of Nations together, and played at Man City together.

2. Jamie and Andy Murray—both won Wimbledon titles (Jamie—mixed doubles, 2007, with Jelena Jankovic/Andy—singles, 2013)

3. Serena and Venus Williams— 26 singles and 13 doubles major

    titles between them.

4. Gary, Phil and Tracey Neville—Gary and Phil played for Man Utd and England together before Phil moved to Everton. Tracey played England netball.

5. Eden and Thorgan Hazard—Thorgan currently on loan to Borrusia Monchengladbach from Chelsea, where Eden is a star player.

6. Michael and Ralph Schumacher—Michael is a 7-time Formula One World Champion. Ralph recorded 6 race wins.

7. Wladimir and Vitali Klitschko—Both have been Heavyweight World Champions in boxing.

8. Fabio and Rafael de Silva—Both played at Man Utd before Fabio joined Cardiff City.

9. Rio and Anton Ferdinand—Both came through he West Ham   academy before Rio signed for Man Utd (now at QPR), and Anton moved around before his current club Reading.

10. Nikita and Natasha are arguably Liverpool's most famous sporting sisters. At the London 2012 Games, Natasha became the first British female boxer ever to fight in an Olympics. Her 18-year-old sister Nikita Parris signed for Everton when she was just 14, and has since played for England U17s, U19s and U23s.

All of these siblings grew up together and each would have had an impact on the others development.

Can you think of anymore siblings that are involved in high level sport?

My Research

With the previous examples of siblings playing high level sport my research with you aims to explore the sibling relationship and how siblings can help or hinder a players development in football.

The diagrams on the following two pages provide some guidance around the key themes my interviews with yourselves will focus on.

The aim of these, and this pack, are to allow you the opportunity to consider some of these themes before we meet. The first diagram is for the parent (s) and the second for the players/siblings.

If you could provide sometime for your children to have a look at these, and maybe help them gain some understanding around them I would be very grateful.

If you have any questions regarding anything on the diagrams, please feel free to contact me via email or phone. Again many thanks for your help and support with this study, I am really looking forward to meeting you all, and seeing what comes from our meetings.

All the best,

Rob

Player (s)/Sibling (s)

Play computer games   Watch TV   Train/practice   Play outside   Play inside

What do you do together?

Your relationship

with your sibling

What do you talk about?

What you would like to be   What you are good at?   School   Sport   Football

better at?
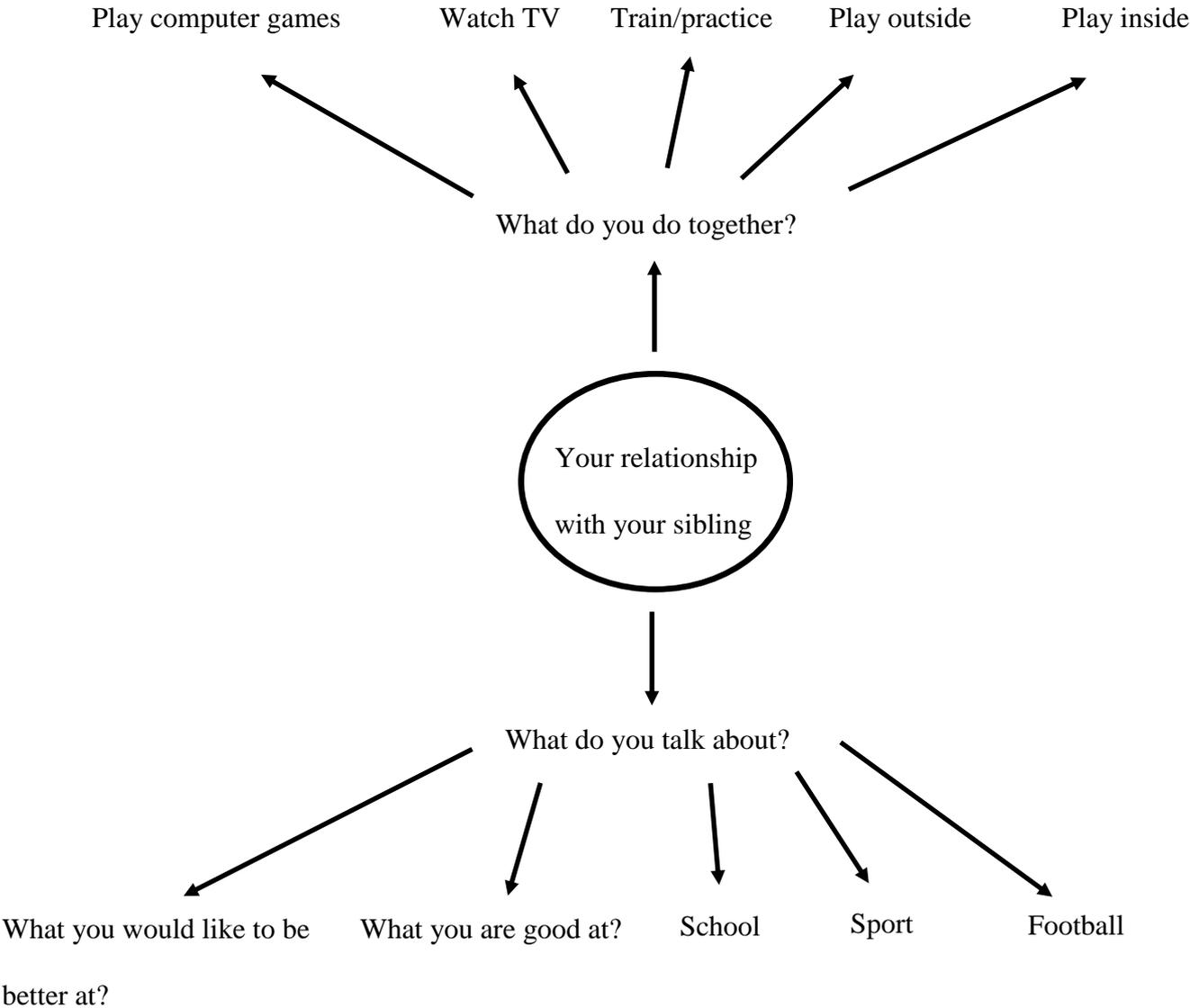
Appendix E

E.1   Interview Matrix – Players

Questions (Players/siblings)	Probes	Stimulus	Purpose

1. How much time do you spend together?	• In general
	    o Sociably
	    o Recreationally
	    o School
	• Sport specific
	    o Deliberate play
	    o Deliberate practice
	    o Training
	    o Matches
		• Closeness
		• Resourcefulness
		• Predetermined (forced/no choice)
		• Co-operation
		• Influence
		• Regular
			• How much time do you spend together?
			• How much time do you spend separately?
			• Who else do you spend time with?
			• What sports are you or have you been involved in?
			• Would you spend time together if you didn't have to?
			• Why wouldn't you?
			• What would you get out of it?
			• How do you view your relationship?
			• What suggests this?

2. What are the characteristics of your relationship?	• Co-operation • Motivation • Rivalry – positive/negative • Warmth • Supportive • Admiration • Respect	• Interactions • Influence • Self-identity • Role models	• Do you work together to develop? • How does this look? • How do you think you feel about this? • Is there a leader/role model? • Are you competitive? • When/How does this come across? • How does it make you feel? • Do you realise this? • Do you compare yourselves to each other? • If one performs and the other doesn't what happens?

			• Are you supportive? • How does this come across? • How is it received?
3. What types of physical activities do you undertake?	• Fun • Deliberate play • Deliberate practice • Training • Challenging/difficult	• Skill development • Feedback • Repetition • Thoughtful/specific • Role specific	• Who initiates these activities? • Why is it them? • How does the sibling feel? • Are all involved always willing? • Why wouldn't you be? • What happens if you aren't? • Are activities thought out? • Who thinks them out? • What roles are undertaken? • Why do you focus on these activities? • Is it always sport specific? • What skills are developed? • Do you know you are developing these? • Do you talk about it?
4. What activities do you do outside of PA?	• Talk • Homework • Watch TV/football • Play computer/board games	• Social and Cognitive development • Feedback • Discussion • Critical thought	• What do you talk about? • Do you talk football/other sports? • Do you relate it to your own skills and experiences? • Do you discuss specific situations? • How do these discussions go? • Who leads them? • Is there any adult involvement? • How do you respond to this? • Do you seek this? • Are you competitive when you play games? • How does this come across? • Who loses? • How do you react?

			• Does the other sibling respond to this?
5. Emergent themes from previous research.	• Context for interaction • Emotional interpersonal skills • Rivalry • Resilience • Skill development • Separation • Communication	• Themes from previous research that may not have been mentioned	• You haven't mentioned the following (insert theme), is this an aspect of your relationship

E.2 Interview Matrix – Parents

Questions (Parents)	Probes	Stimulus	Purpose

6. How much time do they spend together?	- In general
	  o Sociably
	  o Recreationally
	  o School
	- Sport specific
	  o Deliberate play
	  o Deliberate practice
	  o Training
	  o Matches
		- Closeness
		- Resourcefulness
		- Predetermined (forced/no choice)
		- Co-operation
		- Influence
		- Regular
			- How much time do they spend together?
			- How much time do they spend separately?
			- Who else do they spend time with?
			- What sports are they or have they been involved in?
			- Would they spend time together if they didn't have to?
			- Why would they?
			- What would they get out of it?
			- How do you view their relationship?
			- What suggests this?

7. What are the characteristics of their relationship?	- Co-operation - Motivation - Rivalry – positive/negative - Warmth - Supportive - Admiration - Respect	- Interactions - Influence - Self-identity - Role models	- Do they work together to develop? - How does this look? - How do you think they feel about this? - Is there a leader/role model? - Are they competitive? - When/How does this come across? - How does it make them feel? - Do they realise this? - Do they compare themselves to each other? - If one performs and the other doesn't what happens? - Are they supportive? - How does this come across?

			• How is it received?
8. What types of physical activities do they undertake?	• Fun • Deliberate play • Deliberate practice • Training • Challenging/difficult	• Skill development • Feedback • Repetition • Thoughtful/specific • Role specific	• Who initiates these activities? • Why is it them? • How does the sibling feel? • Are all involved always willing? • Why wouldn't they be? • What happens if they aren't? • Are activities thought out? • Who thinks them out? • What roles are undertaken? • Why do they focus on these activities? • Is it always sport specific? • What skills are developed? • Do they know they are developing these? • Do they talk about it?
9. What activities do they do outside of PA?	• Talk • Homework • Watch TV/football • Play computer/board games	• Social and Cognitive development • Feedback • Discussion • Critical thought	• What do they talk about? • Do they talk football/other sports? • Do they relate it to their own skills and experiences? • Do they discuss specific situations? • How do these discussions go? • Who leads them? • Is there any adult involvement? • How do they respond to this? • Do they seek this? • Are they competitive when they play games? • How does this come across? • Who loses? • How do they react? • Does the other sibling respond to this?

10. Emergent themes from previous research.	• Context for interaction • Emotional interpersonal skills • Rivalry • Resilience • Skill development • Separation • Communication	• Themes from previous research that may not have been mentioned	• You haven't mentioned the following (insert theme), is this an aspect of your relationship

THE SIBLING IMPACT ON DEVELOPING TALENT

Purpose

The purpose of this report is to present the findings collected from four sets of siblings who currently play in the academy. The findings provide insight into how siblings can be encouraged to work together in order to help develop talent.

Introduction

Due to the complex and competitive nature of the talent development environment (TDE), organizations are looking for ways to maximize their academy/pathway in order to produce better athletes. One way of doing this is engaging with the family in order to understand and maximize development opportunities away from the main TDE. To date, however, parents have been the primary focus. With this in mind, this study explored the potential impact which siblings can have on athlete development, in order to identify whether such a relationship may compliment the TDE. In this particular study, we examined families with two sporting siblings; that is, both engaged in a TDE/pathway.

Study approach

In order to explore the sibling relationship in significant depth, the study took place across a 12-month period, engaging with both siblings and parents. Four families from the academy agreed to take part in the study, with all siblings' part of the club academy at commencement of the study period. Both parents and siblings were interviewed every two months, with a focus around what the siblings do together and how they interact relative to the challenges and opportunities provided. Parents were interviewed in order to provide observations, and their own thoughts about their children's' interactions in order to strengthen the data collected. The table below provides information for the whole sample. Players involved were both male and female and ranged from U8 to U14 at the start of the study.

Findings

The findings have been broken down into seven key themes. These key themes have been further broken down to provide greater depth around their meaning, alongside exemplar quotations from the participants, and some *possible* methods of implementing these into your practice. We would be happy to discuss/present these further at the academy with coaches/managers etc.

Key theme	Sub-themes	Exemplar quotations	Possible implementation
Interactional Context	Practice	"Practicing on our weaker foot and stuff like that" "We both got goals, so we trained on tackling and tricks"	Set or encourage specific practices to do at home.
	Play	"They spend more time just playing football, but they might also in the summer play other things"	Consider blocks against above to encourage creativity etc.
Emotional Interpersonal	Closeness	"They have the same interests and emotionally they are connected" "We have a good understanding because we are brothers'"	Mechanism to be aware of throughout player TD.
Skills	Support	"If they do talk about it, then they do support each other" "Sometimes I am tense and excited, I want to see him do well"	Encourage player to seek/use/provide support from sibling if/when required.
Skill Development	Mentoring	"Sometimes I teach her some techniques, like how to score a goal" "We practice and then once I can do it I'll try to coach him how to do it"	Older sibling external coaching source during skill dev. Teaching helps your own learning
	Co-operation	"If I didn't have a sister to train with me I don't think I would be as good"	Consider for *practice* design
	Challenge	"We do skill challenges against each other" "We set targets before we go to the park … we'll say 3 targets"	Encourage this *if* siblings are competitive.
Talk	Instruction	"When I was your age I faced the same situation, you could do it like this" "I will suggest things to him, like maybe do this or that"	Particular emphasis on younger sibling seeking advice.

	Discussion	"There is definitely football talk … they always discuss their matches"	Encourage informal BUT
		"They talk about the game, they replay on everything"	REALISTIC performance evaluation.
Rivalry	Performance	"Both very competitive, and it's all about winning"	Encourage if r'ship is comp.
	Psychological Impact	"He definitely benefits from the competitive aspect, drives him yes, he looks up to him"	Actively discuss with players at the academy, then use as appropriate.
Resilience	Development	"If we don't practice physicality she could probably get knocked off the ball easier"	As above so that players can identify benefits to TD.
	Test	"Never seen him[older] give him[younger] any benefit"	As above so that players can identify benefits to TD.
		"If she failed then she is trying again and again"	
Type of Separation	Academy	"It is always when one is at home, the other is away. One has a tournament on a Saturday, one on a Sunday"	Be mindful of this if implementing any of above.
	School	"After school they don't have as much time as when they get back from school it is dark"	Be mindful of this if implementing any of above.
	Self-initiated	"Sometimes I will go out and train and she will just play on her own"	Could help optimize impact of all above on TD.
		"I still go outside a lot with my mate … he will stay inside and play"	

Conclusions

Siblings CAN have a positive impact on developing talent, and do so through a number of different domains; *physical* (e.g., skill development), *psychological* (e.g., resilience), and *social* (e.g., emotional support, interpersonal skills). HOWEVER, it must be highlighted that the nonlinear nature of the relationship was apparent through the findings, in particular through the theme of separation with the need for time apart also apparent. All families involved felt the relationship was a positive influence on both athletes' developments. It is, however, important to acknowledge that each set of siblings displayed these themes at different levels of importance, with the prominent theme for each set/family being different. This shows that "one size does not fit all" and, therefore, careful consideration must be taken when considering utilizing the sibling relationship to support athlete development. For example, one set of siblings' prominent theme was their emotional support and interpersonal skills, therefore suggesting their importance as a support network for navigation of the talent pathway. Another family identified rivalry as the prominent theme; therefore, the sibling relationship may have the potential to support TD through a highly competitive environment that challenges the siblings'.

Consequently, the implications for coaches may include:
- The need to know how the sibling relationship functions, both inside and outside the academy, and how it varies through the year/under certain conditions (e.g. one just had a bad game).
- Having an understanding of the key characteristics of the relationship in order to make informed choices about which mechanisms identified in this study may be beneficial.
- Opportunities to talk athletes (and parents) through the process, and seek progressive feedback around impact (i.e., monitor and evaluate).

An interesting outcome from this study was the accuracy of the parent's observations and thoughts with regard to how the siblings interact, highlighting a potential avenue for accessing insight into a sibling relationship through chats with parents before using it to support development.

Recommendations

With the sibling relationship having the potential to be a powerful context for developing talent it is especially worthy of consideration when both siblings are talented athletes. However, due to the complex nature of the relationship it is crucial to gain an understanding of that particular relationship before encouraging any type of outcome. Talking to both siblings and parents will provide you with direct access to precise information about strengths and weaknesses of the relationship, before making informed decisions about how to use it. For example:
- One set of siblings might be very close - therefore encouragement of using the sibling as a support network could be beneficial.
- If a set of siblings are highly competitive, skill development at home through challenge could be advantageous.
- If there is a noticeable structure due to birth order, encouraging the older sibling to mentor the younger sibling through skill development, and instruction. This may aid TD of BOTH siblings through roles/responsibilities.

F.1 Participant Information Sheet

How siblings can help or hinder a player's development.

You are being invited to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

What is the purpose of the study?
The purpose of this study is to examine the impact siblings can have on each other's development within elite sport, with the aim of discovering the variety of characteristics exemplified by this dynamic and their positive or negative nature.

Studies around the sibling impact on talent development are very limited in the sporting context. This study aims to expand on the very little information available currently, and hopes to unveil a range of characteristics of sibling relationships that can have positive and negative impacts upon an athlete's development. It is hoped that the information collected will be of use to coaches and sporting organisations across the UK who wish to incorporate sibling management into their talent development programs/pathways.

The study will look to capture this relationship through participant observations of the siblings across eight training sessions/tournament days (ending 9th July). On completion of these observations both siblings, and parents will be interviewed on a one-to-one basis in order to interpret the significance of what has been observed. Finally, a focus group, with all family members, will be held to allow discussion around the significance of all findings.

Why have I been invited to participate?
You have been chosen to take part in this study as you are an elite youth athlete, or a family member of that athlete. Along with your participation the study will also engage with another sibling pair and their parent(s).

Do I have to take part?
It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

What will happen to me if I take part?
As outlined above, the siblings will be observed by the researcher (coach) within the talent pathway environment. Due to the coach-athlete relationship, participants of the study will be treated as consistently as possible in line with all athletes and coaches involved at the centre. This will have no impact on progression through the pathway.

The study then requires the participation of both siblings and parents through a one off interview, followed by a focus group with the whole family. These interviews will take place at a time and date that is convenient for you, with the interviews being recorded for transcription and analysis purposes. They will last between 30 to 60 minutes, and will contain a number of questions informed by the researcher's observations.

What are the possible benefits of taking part?
The nature of the investigation will reveal issues and trends relating to the sibling impact on talent development in elite youth sport allowing for light to be shed on this area of development that has so far received little attention. It is hoped that the data gathered will be instrumental in informing coaches and sporting organisations across the UK of the benefits of being aware of the sibling dynamic and how it can be used to maximise development.

Will what I say in this study be kept confidential?
All information collected within this study will be kept strictly confidential. Your names and that of your fellow participants will be removed from all publications of the research material with data being stored on a password secure University network computer, under the University's policy on Academic Integrity. Transcripts will be kept in a secure location within the School of Sport and Wellbeing building, and will be kept securely for up to a period of three years after the completion of the study allowing for examination and analysis by the researcher.

What should I do if I want to take part?
To 'opt in' to this study please make sure you have read and understood the information within this document – Please do not hesitate to get in touch with the researcher if you have any questions regarding the study. Once you are happy to 'opt in' simply complete the consent form attached and return to the researcher by any of the contact methods at the top of this document or in person.

What will happen to the results of the research study?
The results of this study will be used to aid the researcher in compiling their PhD Thesis, as well as contributing to the publication of any papers identified by the researcher and their supervisory team. A copy of any published research can be obtained through contacting the researcher or their Director of Studies.

Who is organising and funding the research?
The researcher is conducting the research as a member of staff, with the division of Sports Coaching and Development at UCLan, as part of their continued professional development. The research is being funded by the School of Sport and Wellbeing, and the Institute of Coaching and Performance.

Who has reviewed the study?
The research has been approved by the University Research Ethics Committee.

Appendix H

G.1 Interview Matrix

Question	Probes	Stimuli	Purpose
1. Test context	How are they/you at home? What is going on away from the pitch?	Communication? Work together? Types of interaction? Type of relationship? Any time apart?	• How much time do you spend together? • How much time do you spend separately? • Who else do you spend time with? • What sports are you or have you been involved in? • Would you spend time together if you didn't have to? • Why wouldn't you? • What would you get out of it? • How do you view your relationship? • What suggests this?
2. Interpretation of observations	*This is what we've seen (coaches), can you provide some thought?*	*See observation sheet*	*See observation sheet*
3. Reference to previous studies (If necessary)	1. Interaction 2. Emotional Interpersonal Skills 3. Skill development 4. Communication 5. Rivalry	Comp/play/training Closeness/support/empathy Co-operation/challenge/mentoring Instruction/discussion	• Do you work together to develop? • How does this look? • How do you think you feel about this? • Is there a leader/role model? • Are you competitive? • When/How does this come across? • How does it make you feel? • Do you realise this? • Do you compare yourselves to each other?

	6. Resilience	Performance/impact on mentality –	• If one performs and the other doesn't what happens?
	7. Separation	Competition/success/ambition	• Are you supportive?
		Development/test/behaviour	• How does this come across?
		Self-initiated/school/hockey –	• How is it received?
		Time/distance	