Commitment, adherence and dropout among young talented dancers: A multidisciplinary mixed methods investigation.

Imogen Jane Aujla (née Walker)

Submitted for the degree of Doctor of Philosophy at Trinity Laban Conservatoire of Music and Dance for PhD Dance Science, December 2011.

Submitted to City University, Northampton Square, London EC1V 0HB.

Research conducted at Trinity Laban Conservatoire of Music and Dance, Creekside, London SE8 3DZ.

Table of Contents

List of tables and figures

Chapter 10

Acknowledgements

I would like to thank my supervisors, Dr Emma Redding and Dr Sanna Nordin-Bates for challenging, supporting and inspiring me.

I wish to thank the staff and students from the Centres for Advanced Training, who helped to make this research run so smoothly and enjoyably.

Thank you to the dance science team at Trinity Laban, the most supportive and reliable group of colleagues and friends anyone could wish for, to Angela Kerkhoff for answering all of my questions with speed and patience, and to Jonathan Clark for his support and advice.

Thank you to my family, for their unending support and encouragement, and to my friends, for helping to keep things in perspective.

A very special thank you to my wonderful husband Amo, for supporting and distracting me at the right times.

Declaration

I grant power of discretion to the University Librarian to allow the thesis to be copied in whole or in part without further reference to me. This permission covers only single copies made for study purposes, subject to normal conditions of acknowledgement.

Abstract

The aim of this research was to understand why some young talented dancers stay in dance training while others decide to leave. In order to meet this aim, commitment, adherence and dropout among young talented dancers was investigated in five studies using a multidisciplinary mixed methods design. Participants were from eight of the UK Centres for Advanced Training (CATs) in Dance, nationwide talent development schemes that provide high quality part-time training to young people aged 10-18 years. The first study was a review of the literature on talent identification and development in order to understand the nature of the cohort and the type of environment in which the young people trained. The second study investigated multidisciplinary characteristics of 334 students to gain a descriptive understanding of the participants. Thirdly, nineteen committed students were interviewed to understand their experiences in dance and reasons for staying in training from their own perspectives. In the fourth study, ten students who had dropped out from a CAT were interviewed about their experiences and reasons for leaving; this data was triangulated using demographic information gathered from the CATs. Finally, a set of multidisciplinary characteristics was used to predict adherence to the CATs in the fifth study (N = 287).

Results revealed that commitment to the CATs was underpinned by enjoyment, social relationships with peers and teachers, the opportunities available on the scheme and parental support. Adherence was positively predicted by harmonious passion, a love of dance characterised by a flexible type of involvement, and negatively by ego-involving motivational climate perceptions. This means that students were less likely to stay in training if they perceived their learning environment to emphasise other-referenced learning, competition among peers, objective success and punishment of mistakes. The main reasons for dropping out of the scheme according to the participants were having conflicting demands, change in aspirations, course content, difficulty making friends, and lost passion. Injury, financial factors, low perceived competence, and teacher behaviour emerged as minor reasons. Younger students were more likely to cite course-related reasons for dropping out than older students, while older students were more likely to cite change in aspirations and lost passion than their younger counterparts. Although participants were involved in a talent development scheme, aspects of physical competence, as identified in the first literature review study, did not appear influential in adherence and dropout.

Overall these studies address a complex and under-researched area in dance. Results indicate that commitment can be maintained or enhanced by maximising enjoyment and passion, minimising elements of ego-involving motivational climates, facilitating positive peer relationships, ensuring training incorporates appropriate challenge and encouraging parental support.

Chapter 1

Introduction

“You need to be passionate about it. You need to really want it. Otherwise, you have no motivation at all. ’Cause when you’re really, really tired, you don’t feel like you could do another class or whatever, yet you have to have that little kick to be able to do it I suppose. Yeah, you’ve just got to really want it.”
Rebecca Haw, 16 year old undertaking vocational ballet training at Elmhurst School for Dance, on 2010 BBC Wales documentary Ballet School*, Episode One, directed by Gordon Main and produced by Kate Hamer.*

Dance is a unique art form that uses movements of the body to communicate artistic intention. The pursuit of a career in this demanding art form often takes years of dedicated practice, yet given the subjective and competitive nature of dance, no amount of training can guarantee a successful career. How does a young person in training remain committed and dedicated to his or her craft when the eventual outcome is so unknown? Why do some young people persist in dance while others withdraw? The aim of this PhD research was to begin to answer such questions.

The popularity of dance in the UK is growing. An estimated 3000 young people are enrolled in full-time vocational dance training, there are approximately 292 university courses with dance as a subject area, and the popularity and diversity of community dance continues to grow with approximately 4.8 million people participating (Burns & Harrison, 2009; Dance UK, 2009). Ninety six percent of mainstream schools offer dance, with dance rated as the most popular physical activity in school surpassed only by football (Quick, Dalziel, Thornton & Rayner, 2008). Dance is frequently recommended as a physical activity for girls in particular as it is less overtly competitive and has more opportunities to be creative and expressive than traditional sports which may make it more attractive to girls (Allender, Cowburn & Foster, 2006; Thompson, 2009).

While the popularity of dance appears to be increasing, the pursuit of a performing career can be fraught with difficulties as the chances of success as a performer are relatively small. Table 1.1 from a recent *Dance Mapping* exercise (Burns & Harrison, 2009, p. 128) illustrates this point:

Table 1.1. Employment figures for the UK dance sector.

Total employed in dance sector	30,000
Total performers	2,500
Total teachers	22,500
Total 'supporting' dance (management, therapy, notation, etc.)	5,000

The UK dance sector comprises 30,000 professionals, only 8.33% of whom attained a performing career. Similar statistics have emerged elsewhere: in America, a national survey of 960 dancers found that 65% of respondents did not achieve professional performing roles even though 90% aspired to this goal (Hamilton, 1998). At one elite American ballet school, only 5% of students will complete the 9-year training; in a research study of this school, 55% of the participants left over a four-year period, although this percentage included those who dropped out as well as those who were asked to leave by the school (Hamilton, Hamilton, Warren, Keller & Molnar, 1997). Success is more difficult for female dancers than their male counterparts: in the US only 22% of female dancers are estimated to be working full-time compared with 61% of male dancers (Hamilton, 1998). Mennesson (2009) suggests that, because of fewer numbers of males in the sector reducing competition, males have a privileged status in the dance world which encourages their persistence and commitment to the profession. Of course, this is to presume that the ultimate goal of a dance trainee is to perform professionally. The non-performing 27,500 professionals employed in the dance sector remained involved in dance in a different capacity (e.g. teaching). However, it would be reasonable to assume that most young dance students in high-level training dream of a career on stage at some point during their development.

Even when dancers successfully achieve a performing career, the nature of the sector itself is difficult, with self-employment and portfolio careers replacing permanent contracts as the norm (Burns, 2007). Furthermore, the financial rewards of such a career are limited. Burns and Harrison (2009) found that in general,

although the dance workforce in the UK is highly educated (62% have degrees), it is poorly paid. According to their research, of those able to make a living from dance, 38% earned between £5,000-20,000 in 2008-2009, while 23% earned under £5,000 during that year. This is not to mention other sources of stress associated with a performing career, such as injury, competition, issues with choreographers, performance anxiety and self-doubt (Hanna, 1988; Hardy, 2006; Stinson, Blumenfeld-Jones & Van Dyke, 1990). For example, the male principal ballet dancer Dmitri Gruzdyev said: "It's a very hard profession and a hard life. Sometimes, I think if I had a chance to start all over again, I wouldn't be a dancer – the training, the incredible stress ahead of the first performances, the regime, are all so hard." (Gruzdyev in Dowler, 2010, p.19). Nicky Ellis explained her transition from performing to teaching and osteopathy: "…the financial frustrations of being a freelance contemporary dancer began to emerge. The catalyst for change came after signing on between jobs (yet again) with a successful dancer ten years my senior. I knew I couldn't sit there in ten years" (Ellis, 2010, p.25).

Such an array of statistics and anecdotes inevitably leads to questions about *why* individuals pursue dance. Why do some dancers continue to pursue their art in the face of arduous training, uncertainty around career attainment, low wages and a relatively short performing career? Anecdotal accounts, such as the one that heads this section, suggest that a passion and drive for dance are essential in order to deal with its associated difficulties. The ballerina Darcey Bussell (1998, p.3) similarly explained: "No one can go into dance and not want it really badly." Kogan (2002, p.15) suggests that, "there are individuals for whom the passionate and persistent involvement in an activity is of such immense importance that the issues of career longevity or low odds of success are viewed as trivial". Furthermore, the experiences unique to dance may help to explain why many dancers continue to pursue their art. For example, a student dancer in a study about experiences in dance stated: "When I dance, I'm more of a soul" (Stinson et al., 1990, p.9). Given the positive – and even transcendental – experiences that can be gained from dance, another question emerges: why do some dancers drop out from training given that it appears to be both challenging and rewarding? Ultimately, why do some young dancers stay in training while others withdraw? Anecdotal accounts may go some way to explaining the reasons behind dance participation, but they have not been systematically explored in research. Evidence from other domains such as sport suggest that commitment to training and professional practice is complex, consisting of factors beyond passion and drive. Reasons for dropping out

of sport go beyond factors such as competition and limited career prospects. It is reasonable to assume that dance participation behaviour is similarly complex.

The aim of this PhD research was to better understand commitment, adherence and dropout in dance using a multidisciplinary mixed methods approach. Quantitative and qualitative data were gathered in order to understand dance participation behaviour from several perspectives. Participants were recruited from talent development programmes to ensure that data collected was relevant to young people who were, or may previously have been, interested in a career in dance, rather than those participating in recreational settings. Talent development programmes aim to improve specific skills and emphasise technique and discipline, whereas the main focus of recreational programmes is often fun and enjoyment. Moreover, high-level training entails not only physical, technical and artistic demands, but also a willingness to work on one's weaknesses, take responsibility for one's performance, an understanding of 'what it takes' to succeed and often a willingness to forego other activities in order to further one's practice. It could be that these high demands may spur some young dancers on to achieve their dreams, while discouraging others. As such, it is likely that reasons for adherence to, and dropout from, talent settings may differ from those in recreational settings. This PhD research is focused on talent development contexts which train young people with aspirations for a professional dance career.

A secondary background factor of importance was that the benefits of participating in regular physical activity have long been acknowledged. Improvements in cardiorespiratory fitness, muscular endurance, speed, and agility as a result of regular physical activity have been associated with decreased risk of heart disease, obesity, and depression, and have positive effects on bone mineral density, life expectancy, mood status, quality of life and self-esteem (Ortega, Ruiz, Castillo & Sjöström, 2008; Penedo & Dahn, 2005; Scully, Kremer, Meade, Graham & Dudgeon, 1998; Warburton, Nicol & Bredin, 2006). Dance-specific research has demonstrated the positive impacts of recreational and creative dance on areas such as aerobic fitness, flexibility, upper body strength, self-esteem and social inclusion (Blazy & Amstell, 2010; Connolly, Quin & Redding, 2009; Joynson, Hui & Stickley, 2009; Keay & Spence, 2009; Nordin & Hardy, 2009; Quin, Redding & Fraser, 2006). Further benefits of extracurricular activity involvement include positive educational trajectories, meaningful relationships with adults and peers, a sense of community, the development of self-regulatory skills and reduced engagement in risky

behaviours such as drinking alcohol and school dropout (Eccles & Barber, 1999; Fraser-Thomas & Côté, 2009; Mahoney & Cairns, 1997; Oreck, Baum & McCartney, 2000). However, adolescence is a key risk period for dropping out of physical activity, particularly for females (Gould & Petlichkoff, 1988). It has recently been suggested that females who drop out of traditional physical activities may be more likely to choose to participate in dance (Redding, Quin, Connolly & Blazy, 2011). Therefore, further understanding of commitment, adherence and dropout in dance may help more young people to accrue the health and development benefits associated with regular physical activity.

Overall, the aim of this PhD research was to investigate commitment, adherence and dropout among young talented dancers in order to better understand this largely under-researched area in dance. The results may yield findings for pedagogy to help ensure that training programmes design content that encourages enjoyment, satisfaction and commitment among young people. Doing so may also facilitate the health and well-being benefits that dance can provide. Furthermore, skilled practitioners (e.g. performers, teachers, choreographers) are required to advance the art form in innovative and diverse ways. The more young people that stay in training, the greater the pool of potential future artists.

1.1 Context of Thesis

1.1.1 Centres for Advanced Training in Dance

Prior to delving into existing relevant literature, it is important to place this work within a context. The PhD studies were conducted as part of a larger talent development project (see below section) working with the Centres for Advanced Training (CATs) in dance. The CATs are part of the UK government's Music and Dance Scheme, set up in 2004 to provide high quality pre-vocational training on weekday evenings and weekends for young people around the UK. In order to widen access, the CATs provide financial assistance to families through means-testing, and also identify those with exceptional potential ('raw talent') as well as talented dancers with prior training. Currently ten CATs are operating nationwide, as the following table demonstrates:

Table 1.2. CATs in operation nationwide.

Centre	Location	Main dance style
Dance City	Newcastle	Contemporary
Northern School of Contemporary Dance	Leeds	Contemporary
Northern Ballet	Leeds	Ballet
The Lowry*	Salford	Contemporary
Dance4*	Nottingham	Creative dance
DanceXchange	Birmingham	Two strands: Contemporary; South Asian
Dance East	Ipswich	Contemporary
Trinity Laban	London	Contemporary
The Place	London	Contemporary
Swindon Dance	Swindon	Two strands: Contemporary; Urban

Note: * indicates CATs that were not in operation at the commencement of the larger research project and PhD, and hence are not included in the PhD studies.

Students must audition to secure a place at one of the CATs, indicating that the participants in this research were talented in dance or exhibited exceptional potential. CAT audition criteria are broad in nature and encompass four categories:

Table 1.3. CAT audition criteria.

Physicality, facility and technical skills	• Fundamental body skills (e.g. coordination, flexibility, mobility, elevation, balance and control, strength, placement and line) • Ability to perceive and respond to rhythmic patterns, musical phrasing and timing • Movement memory • Capacity to pick up dance material • Spatial awareness • Response to feedback given in class
Performance qualities and skills	• Expressiveness/understanding of movement qualities/sense of style • Presence/projection/focus • Readiness to engage in the material and to respond to performance aspects emphasised • Capacity to sustain concentration
Creativity	• Imaginative response to tasks and the ability to develop ideas through movement • Able to take risks when working creatively; questioning and curious
Approach to working in dance	• Ability to stay on task/concentrate/focus • Tenacity • Engagement in all aspects of dance activities • Ability to reflect on personal practice • Openness to change • Capacity to work in cooperation with others (where group task is set) • Response to feedback • Interest in dance activities/performing/watching dance

The audition criteria are broad in that they include physical, psychological and artistic indicators of talent. Furthermore, and of particular relevance to this research, CATs hold informal interviews with applicants and their parents as part of the audition process. Interviews with students include questions regarding the applicants' future goals and commitment to training (e.g. "Do you understand the

commitment that CAT requires – weekly classes, holiday projects?" and "What do your parents think about your commitment to dance?"). Interviews with parents cover parental commitment to the student's development in addition to the economic and time demands inherent in the training programme. Therefore, commitment is a key concept that the CATs consider before offering a potential student a place on the scheme. Greater understanding of commitment, adherence and dropout among the CAT students appears particularly relevant as the concept of commitment forms both an important part of the selection process and an essential part of talent development.

The CATs offer training in a variety of dance styles, as well as choreography sessions, workshops and performances. The provision also includes health sessions, tutorials and individual training plans. Graduates have gone onto further training at such institutions as the Northern School of Contemporary Dance, Rambert School of Ballet and Contemporary Dance, English National Ballet School, and Trinity Laban Conservatoire of Music and Dance. The first cohort of graduates has secured positions in companies including Scottish Dance Theatre, Bad Taste Cru and Hofesh Schechter Company. The following pie chart shows information on graduate destinations from 2005-2009 (139 graduate students).

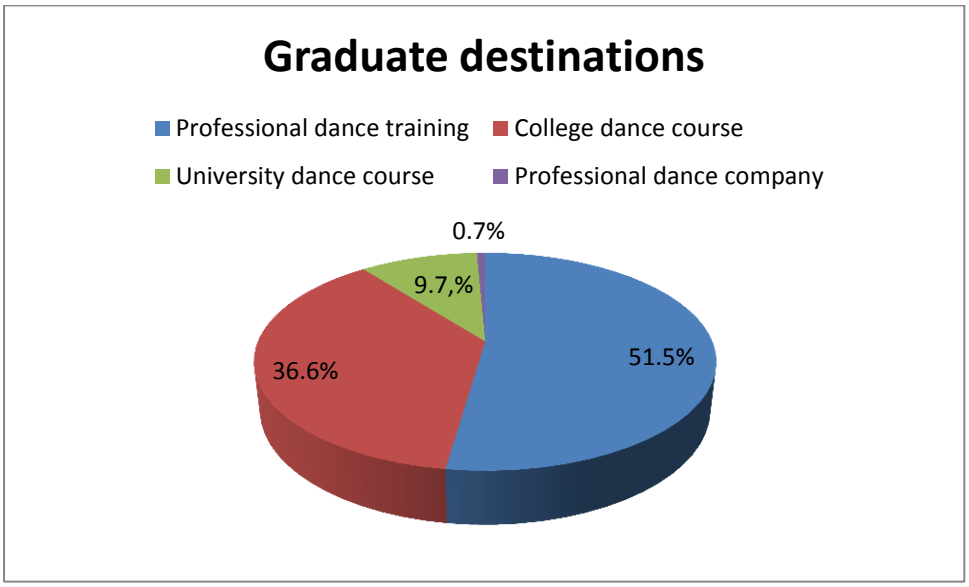

Figure 1.1. Graduate destinations.

While the CATs' success rate appears high, it is important to note that during this same period (2005-2009), 155 students dropped out of the programme[1]. As such, commitment, adherence and dropout appear to be relevant considerations for research within the CAT scheme.

1.1.2 Talent Project

The PhD studies were part of a larger longitudinal research project that investigated talent development in dance. The larger project sought to better understand the characteristics of talented young CAT dancers and how they developed over time. The larger project was interdisciplinary, in that it investigated physiological, anthropometric, psychological, injury-related and artistic (creativity) characteristics of talented dancers and explored the factors that might contribute to optimal talent development. It was the largest project of its kind in dance science, breaking new ground with regards to the understanding of talent identification and development among young people. One of the key aims of the larger project was to contribute to pedagogy, enhancing teaching and training in both the CATs and the wider dance field. The final report produced from the project, entitled *Passion, pathways and potential in dance: Findings from an interdisciplinary, longitudinal research project into dance talent development* (Redding, Nordin-Bates & Walker, 2011) will be referred to when appropriate in the General Discussion section.

Talent is not defined as a single innate characteristic but as a complex multi-faceted phenomenon comprised of physical, technical, artistic and psychological factors, some of which are heritable but many of which can be trained (e.g. physical fitness; self-confidence). The development of such trainable characteristics may not occur in a linear fashion, particularly during adolescence. A student may exhibit talent in one or several areas (e.g. artistic and technical ability); weaknesses in some areas may be compensated for by strengths in others. Furthermore, while talent tends to be conceptualised as being solely related to the individual dancer, the environment in which the student trains is pivotal to optimal talent development. As such, quality training and practice, as well as social support from parents and peers, are highly likely to impact on the extent to which a young dancer develops his or her talents. Therefore, talent is a complex and multi-faceted phenomenon relating not only to the individual dancer and his or her characteristics but also to the immediate and wider social environments and the quality of practice. Given the impact that

[1] This is further explored in Chapter 7.

developmental and social factors can have on the talent development process, as well as on adherence and dropout, this broad definition appeared most appropriate to the PhD studies as well as the larger research project. Greater detail on talent and a rationale for this definition can be found in Chapter 4, but it is noteworthy that this definition of talent is broader than that used by the Department for Education's Music and Dance Scheme which refers solely to the skills and attributes of the individual performer (and has been developed to form the CAT audition criteria outlined in Table 1.3).

Over two and a half years, five biannual data collections were conducted at each of the eight CATs that were in operation at the start of the project in 2008. The thesis author contributed to each wave of data collection, and also led some of the data collections. Physiological variables taken were: aerobic fitness; upper body muscular strength; lower body muscular power; hamstring flexibility; external hip rotation; height and sitting height; anthropometry (leg and arm length; calf, thigh and upper arm girth; arm span); hypermobility; and balance. Psychological variables included: self-esteem; anxiety; perfectionism; eating attitudes; passion; the motivational climate (at CAT and at other dance classes); and creativity. Where possible the majority of data were collected using validated field tests and questionnaires. As such it is important to note that while the majority of data reported in this PhD was collected by the thesis author, a larger research team contributed toward collection of the multidisciplinary data reported in Chapters 5 and 8. Participants were recruited for quantitative data collections as part of the larger research project, but the thesis author recruited participants specifically for Chapters 6 and 7, and gathered the quantitative data for Chapter 7 from the CAT managers. The research studies reported here were designed by the thesis author although the quantitative variables under investigation were to an extent guided by those chosen for the larger project prior to the start of the PhD.

1.1.3 Commitment, Adherence and Dropout in a Talent Context

Without a personal commitment to an activity, it is unlikely that an individual will continue developing his or her talents (Martindale, Collins & Daubney, 2005). Furthermore, it has been suggested that the attributes necessary for successful sport performance are similar to those necessary for lifelong participation in physical activity (Wolstencroft, 2002), demonstrating that talent and commitment are indeed related. In particular, studies have frequently shown that elite and world-class athletes are characterised by high levels of commitment not only to the pursuit of

excellence but also to specific long-term and short-term goals, individual performances, preparation for performance, negotiating talent development stages and maintaining top-level athletic status (Giacobbi, Roper, Whitney & Butryn, 2002; Gould, Diffenbach & Moffett, 2002; Gould, Guinan, Greenleaf, Medbery & Peterson, 1999; Gould & Maynard, 2009; Holt & Dunn, 2004; Legg, Mackie & Park, 2005; MacNamara, Button & Collins, 2010a; Orlick & Partington, 1988). For instance, MacNamara and colleagues (2010a) noted that world-class athletes were characterised by a "desire and commitment that underpinned their successful development" (p.63). Studies of elite musicians demonstrated that commitment both to music itself and to excelling in music are crucial to talent development (MacNamara, Button & Collins, 2010b; Talbot-Honeck & Orlick, 1998). Therefore, investigation of commitment, adherence and dropout in dance was deemed to make a valuable contribution to the larger research project because commitment and adherence form essential parts of the talent development process.

1.1.4 Overview of Thesis Chapters

This PhD is structured into an Introduction, a Literature Review, Ontological, Epistemological and Methodological Concerns, five chapters reporting on five studies in the form of scientific papers, a General Discussion, and General Implications and Conclusions. In the Literature Review, relevant literature in the domains of the arts, dance, and sport is reviewed in order to provide a context for the PhD studies. The Ontological, Epistemological and Methodological Concerns chapter outlines the broad methodological considerations for the PhD studies and the perspectives from which they were conducted. Specific methodologies for each study are found in Chapters 4-8.

Chapters 4-8 detail five specific studies that were conducted using a mixture of quantitative and qualitative designs and a longitudinal component in order to best capture factors associated with commitment, adherence and dropout in dance. Each study is presented in the form of a scientific paper and as such each contains a specific literature review, method, results and discussion section. All aspects of this PhD research were approved by the Trinity Laban Research Ethics Committee before being conducted. Each participant was required to complete an informed consent form prior to taking part in any of the research, and participants under the age of 16 years were additionally required to provide parental consent. Copies of information sheets and consent forms can be found in Appendices 1, 3 and 4.

At the time of thesis submission, three of the five studies had been published in scientific journals, one is currently undergoing peer review and the fifth and final study is soon to be submitted for publication in a scientific journal. In the thesis, the results sections of Chapters 6 and 7 are extended versions of those submitted to journals. This was to allow additional information to be included in the Results sections that were not included in the scientific papers due to journal word count restrictions. Publication details of the studies in each chapter are as follows:

Chapter 4

Walker, I.J., Nordin-Bates, S.M., & Redding, E. (2010). Talent identification and development in dance: A review of the literature. *Research in Dance Education, 11*(3), 165-189.

Chapter 5

Walker, I.J., Nordin-Bates, S. M., & Redding, E. (2011). Characteristics of talented dancers and age group differences: Findings from the UK Centres for Advanced Training. *High Ability Studies, 22*(1), 43-60.

Chapter 6

Aujla, I.J., Nordin-Bates, S.M., & Redding, E. (under review). A qualitative investigation of commitment to dance: Findings from the UK Centres for Advanced Training. *Gifted Child Quarterly.*

Chapter 7

Walker, I.J., Nordin-Bates, S.M., & Redding, E. (2012). A mixed methods investigation of dropout among young talented dancers: Findings from the UK Centres for Advanced Training. *Journal of Dance Medicine and Science, 16*(2), 65-73.

Chapter 8

Aujla, I.J., Nordin-Bates, S.M., & Redding, E. (in preparation). Multidisciplinary predictors of adherence to dance: Findings from the UK Centres for Advanced Training. *Research Quarterly for Exercise and Sport.*

The first two studies (Chapters 4 and 5) were concerned with talent identification and development, to provide a context for the variables studied and a description of participant characteristics. As adherence and dropout are essential considerations

in talent development (e.g. Martindale et al., 2005), a literature review was first conducted to better understand the factors that are important in dance talent (Chapter 4). This was also deemed important because, conversely, characteristics of talent may be important in relation to adherence and dropout (e.g. physical factors related to physical competence; passion). The talent literature review was also used to provide background information for the larger talent development project, hence it being more specifically focused on talent than the later studies.

The second study (Chapter 5) described the physical and psychological characteristics of the CAT cohort from the first set of data collections (Winter 2008), investigating age differences in these variables. This paper 'set the scene' and provided a description of the participants across a range of variables which fed into later analysis of adherence and dropout.

The third study, reported in Chapter 6, was qualitative in nature and investigated the important factors that influence commitment among the young dancers, allowing understanding of dance commitment to emerge from the participants' own words.

The fourth study, which forms Chapter 7, investigated reasons for dropout in two ways: firstly using a qualitative design to explore dropout via in-depth interviews with a sample of former students; and secondly, by employing demographic information from the CATs' own databases to triangulate the qualitative findings.

Finally, in response to calls for more inter- and multidisciplinary and longitudinal research in the area (Burwitz, Moore & Wilkinson, 1994; Feltz & Ewing, 1987; Fraser-Thomas, Côté & Deakin, 2008a; Lindner, Caine & Johns, 1991; Musch & Grodin, 2001; Weiss & Petlichkoff, 1989), the fifth study, reported in Chapter 8, examined whether adherence and dropout could be predicted by some of the multidisciplinary variables investigated in Chapter 5. While the terms multidisciplinary and interdisciplinary are often used interchangeably it is important to note the conceptual distinction between them. Essentially, multidisciplinary refers to research that entails different subdisciplines of a research field being considered in parallel. Interdisciplinary research is that which involves different subdisciplines of a research field in an integrated manner (Burwitz et al., 1994). For example, multidisciplinary research might investigate a variety of physical and psychological characteristics among dancers and their impact on an outcome variable but would not examine how the physical and psychological variables themselves are related.

Interdisciplinary research might investigate the same range of variables but consider their interrelationships as well as their impact on an outcome variable. The PhD is multidisciplinary as the studies were largely concerned with the impact of physical and psychological variables on participation behaviour, but not on relationships between the physical and psychological variables themselves. In Chapter 8, a prospective design was employed to assess whether a set of multidisciplinary variables could (a) distinguish between adhering students and those who later dropped out, and (b) predict adherence to the CAT scheme. Following Chapters 4-8, findings are discussed in light of previous research in the General Discussion chapter. Finally, key implications and recommendations from the research findings are outlined in the General Implications and Conclusion chapter.

Chapter 2

Literature Review

2.1 Introduction to the Literature Review

In dance, research into commitment, adherence and dropout is scarce. Several studies have investigated participation motives in dancers of different levels, highlighting relevant findings, and two have investigated adherence and dropout, yet such studies are limited when compared with the large amount of sport research in the area. This literature review will therefore cover research in the arts, particularly focusing on dance, followed by the body of research in sport. The review will provide a background and context to the subsequent PhD studies and a rationale for the variables investigated. It should be noted that a literature review on talent identification and development was also conducted for the PhD and forms Chapter 4. As such, areas which overlap between talent and adherence and dropout are mentioned in both reviews, while areas more specific to each are typically covered in the relevant section only.

It is important to define three terms used in the literature review which are related but somewhat distinct: participation motives; commitment; and adherence. Participation motives "address the factors that lead individuals to take up and continue (or discontinue) an activity such as dancing" (Nieminen, 1998a, p.32). Participation motives are typically investigated via questionnaires or surveys that list potential reasons for participating in an activity, from which participants choose their most important motives or give each motive an importance rating. Participation motives are descriptive in nature and do not represent an in-depth investigation of long-term activity involvement. Much research (particularly in sport) has moved on from examining participation motives to more comprehensive investigations, in particular looking at commitment, using a variety of methodologies. Commitment has been defined as a psychological construct reflecting "the desire or resolve to continue sport participation" (Scanlan, Carpenter, Schmidt, Simons & Keeler 1993b, p.1). Studies of commitment attempt to understand persistence or continued involvement in an activity even in the face of adversity, often employing either qualitative or theory-based research designs. Adherence is the behavioural outcome of commitment (Weiss & Amorose, 2008). As such, a young person might be psychologically committed but sustains an injury, or is selected out of training, thus cannot adhere. Alternatively, a young person may adhere to training because of parental pressure for example, but is not actually committed to the activity.

2.2 Descriptive Research: The Arts and Dance

2.2.1 Combined arts

Four studies have investigated participation and commitment in relation to the arts. Dudek, Bernèche, Bérubé and Royer (1991) investigated commitment to visual art by comparing the personalities of 50 committed students and professional visual artists with 17 uncommitted students (who withdrew two years later). Differences were found between the two groups in terms of motivation and self-image. Uncommitted artists had low self-esteem, a negative self-image, impaired motivation, low staying power and an inability to find a clear direction. In comparison, committed artists were characterised by more positive self-attitudes, greater motivation and a drive to achieve. The committed artists placed importance on autonomy, ease of inspiration, early identification with the art profession and goal setting. Committed artists also appeared to have a more 'artistic temperament' than the uncommitted students, being more impulsive with a tendency toward questioning, experimentation and rebelling against the norm. Such characteristics are presumably advantageous for becoming a successful artist, suggesting that characteristics associated with talent in the art domain may also be important for adhering to it.

A range of factors relating to commitment and dropout were explored with talented young people participating in dance, sport, music and art in two studies (Fredricks, Alfeld-Lido, Hruda, Eccles, Patrick & Ryan, 2002; Patrick, Ryan, Alfeld-Lido, Fredricks, Hruda & Eccles, 1999). Enjoyment was the most common participation motive and comprised feeling competent and cultivating social relationships with like-minded peers. Peers played a positive role in facilitating continued commitment to the activity by enhancing enjoyment and investment. Persisting students were passionate about their activity and gained emotional satisfaction from their involvement, reporting perceived benefits such as emotional release, increased confidence, and learning self-regulatory skills such as resilience and personal responsibility. On the other hand, dropout students cited feelings of stress that resulted from pressure to perform, disappointment with failures, conflicts with teachers/coaches and peers, a lack of time and difficulties balancing the activity with other commitments. For example, 27% of participants felt that their involvement reduced the amount of time they could spend with friends outside of the activity; when reduction was perceived to be a significant social cost, participation was reduced or ceased altogether. Overall, the cost of involvement far outweighed the

benefits for dropouts and they were unwilling to make the sacrifices that some activities demanded.

Finally, a longitudinal study of artistic talent development uncovered valuable findings relevant to adherence and dropout by studying young people enrolled on a performing arts talent development programme (Oreck et al., 2000). The authors followed 23 talented performing arts students before and after the 25-week programme. Four main barriers to participation were reported by participants: family circumstances such as difficulties providing transportation; inappropriate or expensive instruction; negative peer relationships; and the practical realities of pursuing a career in the arts such as competition and poor remuneration. The authors also found four key factors that enabled students to overcome these barriers: family support; instructional opportunities such as performances and workshops; school and community support; and personality characteristics (Oreck et al., 2000). Similar to Dudek et al.'s (1991) study, important personality factors included an early interest in the arts, a family that valued the arts, enjoyment of challenging tasks, and a sense of professionalism. Over time, students developed an internal drive and intrinsic motivation (the inherent satisfaction and enjoyment gained from activity engagement; Deci & Ryan, 1985) to pursue their talent while balancing the many other commitments in their lives.

A final relevant finding in Oreck and colleagues' (2000) research was that participating in the arts appeared to provide students with flow experiences. Flow experiences are optimal psychological states in which there is a balance between the individual's skills and the challenge level of the activity, allowing freedom from worries about failure (Csikszentmihalyi, 1990). When individuals experience flow they may feel that action and awareness merge, the activity becomes autotelic (an end in and of itself) and time becomes distorted. Flow experiences have been found to predict commitment to talent activities among young people more strongly than personality factors, academic scores and family background (Csikszentmihalyi, Rathunde & Whalen, 1993), presumably because flow experiences relate conceptually to enjoyment. Interestingly, Hefferon and Ollis (2006) argued that flow experiences should be particularly prevalent in dance because it is a 'mimicry' activity that involves the creation of a new reality. Indeed, the dancers in their study described dance as an autotelic activity (Hefferon & Ollis, 2006). If dance is a vehicle for experiencing flow, it may be well placed to facilitate or enhance commitment (Csikszentmihalyi et al., 1993; Oreck et al., 2000).

2.2.2 Dance

A limited number of dance studies have investigated factors relating to commitment, adherence and dropout, tending to focus on vocational or recreational groups. Only two dance studies to date have compared adhering with dropout dancers; the second (Hamilton et al., 1997) is reviewed later in the Multidisciplinary and Physiological Research section. In the first study, Bakker (1991) found that continuing student ballet dancers scored slightly higher on emotionality and impulsivity, but lower on sensation seeking and attitudes towards own physical abilities, than dropout dancers. While these differences were small, the finding that dropouts had more favourable attitudes towards their own physical abilities than continuing dancers could suggest that the dance environment did not facilitate positive self-attitudes in the persisting dancers. The dropout students continued participating in recreational ballet classes, indicating that these students enjoyed dance, but that the more intense professional training did not meet their individual needs. Bakker (1988, 1991) concluded that ballet is a subculture that attracts certain personality types; however, there is insufficient evidence to suggest that dancers with particular personality traits adhere to ballet training while those without such traits drop out. Indeed, as the review of sport literature below demonstrates, personality traits have not typically been investigated in relation to adherence and dropout, making these results difficult to compare to other studies.

Instead of investigating personality traits, several authors have been interested in participation motives. Pickard and colleagues conducted several interview studies investigating motivation and talent development with young ballet dancers aged 9-16 years enrolled on a talent scheme. The dancers were passionate about dance, and reported being motivated by enjoyment, affective engagement (emotional responses and feelings associated with movement sensations), expression, identity development, and achievement and success such as the feelings of pride associated with performance (Pickard, 2006, 2007b; Wellard, Pickard & Bailey, 2007). While the dancers felt positively challenged and supported by their teachers, parents and peers, they were largely self-motivated, and gave their development as a dancer high status in their lives (Pickard, 2006). They enjoyed the way in which dance enabled them to cultivate a talent and passion outside of school that gave them a sense of identity within a different social group. Even though some of the dancers had received negative comments from their non-dancing peers, the experience of dance was so enjoyable that they continued participating regardless (Wellard et al., 2007). Crystallising experiences – either initial (e.g. seeing others

dance, or performing on stage) or refining (e.g. mastering certain movements) – also helped to facilitate continued dance involvement as such experiences enhanced the students' confidence, motivation and self-belief (Pickard & Bailey, 2009). This finding led the authors to suggest that a lack of crystallising experiences could lead to dropout. However, it appears unlikely that crystallising experiences – which could be somewhat rare and unpredictable occurrences – account for the key reasons underlying long-term commitment to, or drop out from, a domain in which a young person may have been engaged for several years.

In a study of participation motives among 96 college and university dancers, Alter (1997) found that the participants loved dance, saw it as a means of self-expression and emotional release, reported that it made them feel 'good' or 'high', felt a sense of accomplishment, and felt that it integrated their minds with their bodies. Fifty-two per cent of dancers loved performing while 30% enjoyed choreographing. However, similar to the themes explored in the Introduction and emergent in the study by Oreck et al. (2000), some participants felt that the field of dance was overly competitive and were discouraged by the prospect of low wages, feelings of rejection and a lack of fun. A further 20% of dancers acknowledged that their own physical limitations meant that they could not achieve their potential. Although the study was limited to survey findings (rather than using validated questionnaires), it indicated that dancers dance because of the experiences inherent in the art form (e.g. self-expression, feeling 'good'), but are sometimes discouraged by the profession in terms of both its limited career prospects and its high technical demands.

What of the participation motives of dancers who may not have dreams of a dance career? In two studies, Nieminen (1998a, 1998b) investigated participation motives in 308 dancers enrolled in recreational classes in four dance styles (folk, ballet, modern and ballroom). Six main participation motives were identified: self-expression; social contacts; achievement/performing; fitness; breaking away from daily routines; and preparing for a career (Nieminen, 1998a). Self-expression was the most important motive regardless of dance style or gender (Nieminen, 1998b). Participating in a greater number of dance styles was associated with self-expression and preparing for a career motives; participating in a greater number of hours per week was positively related to self-expression, preparing for a career and achievement/performing, and negatively to breaking away from daily routines and fitness motives. Finally, dancers were surveyed about their expectations of future

involvement. Only 11% anticipated dropping out, while 47% wanted to continue participating at the same level, and 42% hoped that dance would become part of their future profession. Dancers with hopes for professional involvement ranked self-expression, preparing for a career and achievement/performing motives higher than those with recreational or dropout intentions (Nieminen, 1998b). The results of this study began to address the notion that dancers at different levels of engagement (i.e. recreational or 'serious') have different motives for participating. Research with young talented dancers could provide further support for these findings.

A recent study involved focus groups with 65 girls and telephone interviews with 16 of their parents to learn how best to recruit and retain girls for a recreational dance-based intervention (Jago et al., 2011). Participants reported that they would attend the classes if they were enjoyable, with opportunities to socialise and learn new skills. They also reported that being afforded autonomy through creating their own phrases and using goal setting would help them to stay motivated. Overall, enjoyment and social opportunities appeared to be the most important factors for recruitment and retention; it would be interesting to test these findings were such an intervention conducted.

Although several of the above studies highlighted the importance of enjoyment or fun as a participation motive, these terms have not been defined in previous studies. Stinson (1997) investigated sources of fun among students participating in school-based dance classes. She found that fun could mean social interactions (working with friends), the experience of moving around, experimenting and creating movements, and learning dance steps. Fun and enjoyment for many students came from the perception that dance was challenging, engaging and personally meaningful. For students who were particularly interested in dance, the opportunity for self-expression, a means of escaping daily life, and feeling a sense of freedom were defined as fun, and some even recounted transcendental experiences. However, learning was only fun when it was perceived to be relevant, otherwise it was described as 'stupid' or 'boring' and something that could not be used in real life.

Taken together, the studies reviewed above suggest that individuals participate in dance largely because of the enjoyable experiences inherent in the art form. The importance of opportunities for self-expression, emotional release, performing and creating were consistently reported, particularly among those with a 'serious'

interest in dance (Nieminen, 1998b; Stinson, 1997), suggesting that artistic factors are important participation motives and thus potentially facilitate long-term commitment to dance. Social relationships appear important in terms of identity development and interacting with like-minded peers. Other motives such as fitness and achievement or mastery appear less important; however more dance research in the area is warranted. Most of the studies were limited by methodological issues such as small sample sizes and a limited number of dance styles: in particular, none of the studies involved contemporary dancers despite the dominance of contemporary dance forms in university dance courses, school provision and community dance programmes (Dance UK, 2009). Therefore, existing dance research serves as an informative starting point, but further investigation is warranted incorporating larger sample sizes and dancers training in a range of styles. Furthermore, a larger range of factors than has been examined to date is worthy of investigation because, as the section on sport research will demonstrate, commitment, adherence and dropout is a complex topic that can be examined using a wide variety of variables and perspectives. Moreover, with the exception of two studies (Lacaille et al., 2005, 2007; see Section 2.5.2), researchers have yet to move beyond descriptive research to theory testing and development in order to begin explaining the underlying relationships between factors. The antecedents of adherence and dropout in dance have not been examined, nor have the potential mediators between antecedents and the eventual behavioural outcome been established. More research is needed in general in the domain of dance that investigates the same cohort in a variety of ways. To this end, quantitative and qualitative research is required to enhance and extend existing findings in dance.

2.2.3 Music

A small amount of research in music has been conducted in relation to participation motives and commitment. Chapman (2010) found that professional composers were intrinsically motivated, passionate individuals for whom artistic expression was more important than commercial success. Composers enjoyed the self-expression, emotional release and communication their craft afforded them; it has been suggested that musicians are motivated by a desire to express themselves through music and establish a unique, individual musical identity (Holmes, 2011). While the composers enjoyed receiving recognition and praise, intrinsic motivation was crucial in remaining committed to an insecure profession with few financial rewards (Chapman, 2010). Such research supports the notion expressed above that artistic factors are important for long-term involvement in the performing arts.

Several authors have reported that children who later dropped out were less likely to practice, and had different attitudes and intentions towards practice, when compared with adhering students (Costa-Giomi, 2004; Hallam, 1998; McPherson & Davidson, 2002). Dropout piano students were also found to seek more teacher approval, accomplish fewer goals and achieve lower music exam marks than adhering students (Costa-Giomi, Flowers & Sasaki, 2005). Interestingly however, dropout students did not differ from adhering students on measures of self-esteem, motor and cognitive abilities, and demographics such as family income (Costa-Giomi, 2004; Costa-Giomi et al., 2005), suggesting that practice resulted in the differences in achievement between the two groups. This is consistent with the theory of deliberate practice in which performance improvements are said to be directly attributable to the amount of practice undertaken (Ericsson, Krampe & Tesch-Römer, 1993). It is likely that the dropouts practiced less due to a lack of interest in music: one study reported that dropout children were more likely to have begun lessons for non-music reasons and often relied on external motives to practice (Pitts, Davidson & McPherson, 2000). Overall, music research is currently limited but there are some similarities to dance research regarding the role of artistic factors; music research has also indicated potential avenues for future research such as ability-related factors.

2.3 Summary of Arts Research

Existing research in the arts suggests that both psychological and artistic factors are related to participation motives and potentially long-term involvement. Arts-specific factors associated with participation include self-expression, performing, creating, and emotional release, with some indications that ability-related factors (such as practice) are influential. However, more research is needed to extend these findings. In particular, as noted previously, a wider range of factors deserves research attention than has previously been examined; other aspects such as sources of social support within and outside of the talent activity may be implicated. Moreover, few researchers in the performing arts have attempted to test or develop theories in order to identify the psychological mechanisms which underlie adherence and dropout. On the other hand, theory testing is common in the domain of sport; indeed, research in the sport domain is far more advanced than that in the performing arts and has investigated a broad range of factors.Tthe large body of sport research is now reviewed.

2.4 Sport Research: Descriptive

Early to mid-adolescence is a key period for dropping out of sport and physical activity (Allender et al., 2006; Butcher, Lindner & Johns, 2002; Fraser-Thomas, Côté & MacDonald, 2010; Hedstrom & Gould, 2004; Scheerder et al., 2006), with an estimated 35% of young people dropping out of sport every year in the US (Gould & Petlichkoff, 1988). Because of this, a large body of research has emerged in sport over the last three decades to understand and attempt to reduce the dropout phenomenon and thereby help to ensure that young people gain the health and well-being benefits associated with regular physical activity. Sport science research has evolved from descriptive studies to those which are theory-based. Descriptive research is often the starting point for research in a new topic or domain because it allows an exploratory approach in which findings emerge largely inductively, before theory is developed and tested. As such, descriptive studies will be reviewed first.

As early as the 1970s, researchers were interested in participation motives and dropout in sport. As in the dance studies reviewed above, such research typically involved young people indicating their reasons for participating in, or dropping out of, sport from a list of potential reasons in questionnaires and surveys. The most common reasons for participating in sport are enjoyment, developing physical and perceived competence, and social interaction or acceptance (Gill, Cross & Huddleston, 1983; Gould, Feltz & Weiss, 1985; Gould & Petlichkoff, 1988; Klint & Weiss, 1986; Ryska, Hohensee, Cooley & Jones, 2002; Sapp & Haubenstricker, 1978; Salguero, Gonzalez-Boto, Tuero & Marquez, 2003a; Ullrich-French & Smith, 2009). Some differences in participation motives have been reported in terms of age: for example, Gould and colleagues (1985) found that younger swimmers rated external factors (e.g. ‘achievement-status’, ‘parents or friends wanted me to participate’) as more important participation motives than older swimmers who cited more intrinsic motives (e.g. ‘skill’, ‘excitement-challenge’). Although young people generally choose which activity to specialise in during mid-adolescence, younger children may still be attending activities as a result of parental influence (Bloom, 1985), meaning that they may not have developed intrinsic motivation for the sport. In contrast, older athletes may have developed intrinsic motivation for swimming and personally chose to specialise in the activity of their own volition. Overall, the factor most strongly associated with adherence is enjoyment (Weiss & Petlichkoff, 1989).

The most common reasons for dropping out of sport include having other things to do, training being too time-consuming, a lack of success or progress, disliking the coach and too much pressure or a lack of fun (Bennie & O'Connor, 2006; Enoksen, 2011; Gould, Feltz, Horn & Weiss, 1982; Klint & Weiss, 1986; McPherson, Marteniuk, Tihanyi & Clark, 1980; Molinero, Salguero, Alvarez & Marquez, 2006; Molinero, Salguero, Tuero, Alvarez & Marquez 2009; Salguero, Gonzalez-Boto, Tuero & Marquez, 2003b; Sefton & Fry, 1981). Often, both reasons related to the activity and factors outside of the activity are influential. For example, one study reported that dropout footballers had low perceived competence, tended to feel less like they were part of the team, perceived the coach as an autocrat and perceived less support from their fathers than did continuing players (Robinson & Carron, 1982). Additional personality factors may be implicit: Bussman (2004) found that dropouts were more likely to perceive competition as a pressure to perform rather than a challenge, had poor coping abilities and greater anxiety than their persisting counterparts.

Similar to the research on adherence, some differences were observed in dropout reasons according to age. For instance, Butcher and colleagues (2002) reported that lack of enjoyment as a reason for dropout became progressively less important, while needing time for studying became more important, with age. As athletes got older, the dropout reasons of other sports taking too much time, the coach, injury and jobs also became increasingly important. Ryska et al. (2002) found that while younger dropouts tended to cite reasons for withdrawal relating to the programme structure and social context, older dropouts reported conflicting interests between sport and other activities. Sport has much to compete with for older teenagers such as socialising, college work, part-time jobs and romantic relationships. Furthermore, as Nieminen (1998a, 1998b) found when comparing participation motives among recreational and career-minded dancers, reasons for sport dropout appear to vary according to competitive level. For example, barriers to school-based and recreational physical activity include negative school experiences, peer pressure and too much emphasis on competition (Allender et al., 2006), whereas former elite athletes are more likely to cite reasons relating to low self-belief, a lack of coach support and injury (Bennie & O'Connor, 2006; Koukouris, 1991). Therefore, researchers should consider age and competitive level in adherence and dropout research.

A final point of interest is that the notion of dropout is itself complex. Several studies reported that dropouts intended to return to the same sport at a different level or try a different sport (Butcher et al., 2002; Klint & Weiss, 1986; Gould et al., 1982; Sefton & Fry, 1981), a similar finding to that reported in Bakker's (1991) study of dropout ballet dancers. Such findings led Gould (1987) to conclude that dropout could be activity-specific (dropping out of a specific training programme), or domain-general (dropping out of sport in general). Those individuals who dropped out of a specific sport to try a different one may be labelled sport transfers (Linder et al., 1991). Gould (1987) also recommended that studies distinguish between internally and externally controlled dropout reasons: injury or financial problems are externally controlled reasons, whereas other factors such as conflicts with other interests and disliking the coach could be considered internally controlled reasons (a decision to drop out made by the individual). Most research has focused on internally controlled reasons, yet external factors are important to consider; for example, socioeconomic status can have an impact upon participation (Chan, Goldthorpe, Keaney & Oskala, 2008; Gagné, 2004; Kay, 2000; Scheerder et al., 2006). However, studies do not typically specifiy the type of dropout (e.g. activity-specific) nor differentiate between internal and external reasons for dropping out. There are interesting research directions to consider by making such distinctions. For instance, it could be valuable to compare the dropout reasons of activity-specific and domain-general dropouts so that interventions could be appropriately targeted. To the thesis author's knowledge, research of this nature has yet to be conducted in any domain.

Descriptive research in sport has yielded relatively consistent findings. Although some similarities can be identified between sport and dance findings (such as the importance of enjoyment and social relationships), the artistic characteristics unique to dance provide a rationale for more dance-specific research. Furthermore, investigations of adherence and dropout reasons must extrapolate the *why* from the *what*: for example, adhering participants are characterised by an enjoyment of their sport, but an understanding of why the sport is enjoyable is necessary. This will be considered in the next section.

2.4.1 Enjoyment

The consistent finding that enjoyment was associated with adherence led sport researchers to investigate *why* sport participation was perceived as enjoyable in order to produce practical applications from findings. Across a range of sports, ages and ethnic backgrounds, common factors associated with enjoyment include the

excitement of the game, challenge, positive social interactions, social support (from parents, coaches and team-mates), perceived competence, social recognition of competence, effort, mastery, goal attainment and movement sensations (McCarthy & Jones, 2007; Scanlan, Carpenter, Lobel & Simons, 1993a; Scanlan & Lewthwaite, 1986; Scanlan, Stein & Ravizza, 1989; Stein & Scanlan, 1992; Wankel & Kreisel, 1985; Wankel & Sefton, 1989). In general, participants afforded intrinsic motives greater importance than extrinsic ones (factors external to the activity itself, such as rewards or pressure). Additional enjoyment sources in the aesthetic sport of figure skating include self-expression, creativity and performance achievements such as commanding the audience's attention (Ryba, 2007; Scanlan et al., 1989), which bear similarities to participation motives reported in dance studies (e.g. Alter, 1997; Nieminen, 1998a, 1998b; Pickard, 2006, 2007b). Interestingly, Scanlan and colleagues (1989) reported that aesthetic sports provide a greater number of enjoyment sources than non-aesthetic sports. It would be interesting to evaluate to what extent a greater *number* of enjoyment sources influences adherence, or whether it is the *quality* of enjoyment sources that is important. Research of this nature has yet to be conducted.

Despite the consistent reports of enjoyment being important in relation to sport adherence, several studies indicated that enjoyment decreases as age and ability increase (Butcher et al., 2002; Casper & Andrews, 2008; Scanlan & Lewthwaite, 1986; Weiss & Weiss, 2007). These discrepancies could be explained by the fact that as athletes progress through talent development stages, the focus on deliberate practice increases. Deliberate practice is a structured form of practice aimed at improving specific skills, and, although athletes have attested to enjoying deliberate practice (see page 97), in artistic disciplines it may not be inherently enjoyable as was found among student musicians (Ericsson et al., 1993). As such, a change in focus from fun in recreational activity to deliberate practice and technical skill in higher competitive levels may explain the decrease in enjoyment, particularly if coupled with high levels of pressure from coaches or parents. It could also be that quantitative measures of enjoyment do not sufficiently capture participant experiences in higher-level training. For instance, enjoyment for elite athletes may stem more from feelings of mastery and satisfaction than from having fun; perhaps the challenges and hardships of elite participation are themselves viewed as enjoyable (Csikszentmihalyi et al., 1993) but are simply not defined in this way in research instruments. Dancers may find satisfaction in the physicality of dance such as feeling exhausted, as well as small aches and pains as an indication of having

worked hard (Stinson et al., 1990; Wainwright, Williams & Turner, 2005). The ballerina Natalia Makarova explained, “I like to fight with my body, and to achieve a victory over it” (Austin, 1978, p. 72). This type of enjoyment may help to explain why some young people persist in high-level training; indeed, this alternative form of enjoyment may be prevalent in later talent development stages, but has not necessarily been captured in existing survey instruments. More research is clearly warranted to further unpick these suggestions.

2.5 Sport Research: Theory-based

Several theoretical approaches have been adopted to better understand the underlying psychological mechanisms of adherence and dropout in sport. For example, a participant may cite interest in other activities as a dropout reason in descriptive research, but this may be due to a change in interests *and/or* stress in the sport (Gould, 1987). The main theoretical approaches that have been used to investigate commitment, adherence and dropout will be briefly explained then accompanying research reviewed. It should be noted that most theories originate from mainstream social psychology, leading some authors to question their applicability to sport given that aspects of sport diverge from those in other domains such as education (Landers, 1983; Martens, 1987). However, the theories have been applied and tested in specific sport domains in a variety of studies, suggesting that they are largely relevant to the field of sport.

2.5.1 Competence motivation theory (Harter, 1987, 1981)

Competence motivation theory is based on the idea that feelings of success from the demonstration of competence result in motivation to take on new challenges. When mastery attempts of optimal challenges are successful, perceptions of competence and control increase and subsequently motivation to continue demonstrating competence also increases. During childhood, adult feedback is most important in forming perceived competence, whereas older children and adolescents find peer feedback more important (Horn & Weiss, 1991). Several sport studies have demonstrated the association between high perceived competence and adherence, and low perceived competence and dropout (e.g. Boiché, & Sarrazin, 2009; Burton & Martens, 1986; Gould & Petlichkoff, 1988; Ommundsen & Vaglum, 1997), indicating that competence perceptions are important in continued sport involvement. The theory is also supported by descriptive findings and documented enjoyment sources (e.g. Gould et al., 1985; Klint & Weiss, 1986; Stein & Scanlan, 1992; Wankel & Kreisel, 1985). However, studies of elite gymnasts and

dancers found that dropout participants reported positive competence perceptions (Bakker, 1991; Johns, Lindner & Wolko, 1990; Klint, 1985). It is probable that young people previously training and competing/performing at elite levels had experienced success and consequently had high perceived competence (Feltz, 1988). Hence, competence motivation theory does not account for some of the key variations in adherence, particularly in talent development contexts.

2.5.2 Achievement goal theories (AGT)

Achievement goals relate to an individual's interpretation of achievement situations and represent the individual's definition of success and failure, their motivation, their affect and behaviours (Harwood, Spray & Keegan, 2008). Several authors have conceptualised achievement goals, the best-known theorist in this area being Nicholls (1984, 1989). Like competence motivation theory, Nicholls' theory was based on the notion that individuals desire to demonstrate competence or ability in achievement situations; however, the judgement of that ability could be self-referenced (task involved) or other-referenced (ego involved). Task involvement values personal mastery and achievement; ego involvement values superior performance to others. Sport research has demonstrated that task-involved achievement goals are associated with positive outcomes including enjoyment, satisfaction, intrinsic motivation and flow experiences (see Harwood et al., 2008 for a review). Ego-involved achievement goals are associated with more negative outcomes such as performance anxiety, maladaptive perfectionism and concentration disruption (Harwood et al., 2008). Some sport research has also reported that task goals are associated with adherence whereas ego goals relate to dropout (Burton, 1992; Cervelló, Escartí & Guzmán, 2007; De Bruin, Rikers & Schmidt, 2007; Le Bars, Gernigon & Ninot, 2009). However, it has been suggested that when competence perceptions are high, for example among elite athletes, having high levels of both task and ego goals may be beneficial (Duda, 2001; Harwood et al., 2008; Hodge & Petlichkoff, 2000). This has implications for the use of AGT in talent settings: a combination of high task and ego goal adoption might be observed which may make differentiating adhering from dropout participants difficult.

Two studies in the performing arts have indicated that the traditional achievement goal framework is inadequate to capture the motivational processes inherent in artistic development (Lacaille, Koestner & Gaudreau, 2007; Lacaille, Whipple & Koestner, 2005). In these studies, task goals were unrelated to performance and

emotional outcomes, while performance-related (ego) goals were associated with negative outcomes (greater anxiety and intention to quit, lower life satisfaction). However, intrinsic goals, particularly those which emphasised the experiential aspects of performance such as immersion and communication, were associated with positive outcomes including a perception of better performance, satisfaction after performance, lower anxiety and lower intention to quit compared to those with performance-related (ego) goals. The authors argued that the achievement goal framework should be expanded for performing artists in order to capture the more aesthetic, expressive and enjoyable elements characteristic of the performing arts. Such findings relate to Scanlan and colleagues' (1989) conclusion that aesthetic physical activities generate a greater number of enjoyment sources than non-aesthetic ones, together suggesting that the elements unique to the performing arts (such as expression and creativity) require consideration in this type of research.

Given that achievement goal adoption is influenced by environmental and situational factors such as the teacher-created learning environment (Boyce, Gano-Overway & Campbell, 2009; Lloyd & Fox, 1992), a final relevant component of AGT is that of motivational climates. Ames (1992) defined two types of motivational climate: a task-involving climate, which emphasises mastery, self-referenced ability criteria, effort and learning; and an ego-involving climate, which emphasises interpersonal comparison and competition, and punishes mistakes. Research has consistently demonstrated associations between perceptions of task-involving climates and adherence (Boiché & Sarrazin, 2009; Le Bars et al., 2009; Ntoumanis, Vazou & Duda, 2007; Vazou, Ntoumanis & Duda, 2006), while perceptions of ego-involving climates are associated with dropout (Pelletier, Fortier, Vallerand & Brière, 2001; Sarrazin, Vallerand, Guillet, Pelletier & Cury, 2002). Perceptions of controlling or autocratic behaviour from coaches (which align conceptually to the definition of ego-involving climates) have also been related to dropout (Robinson & Carron, 1982). The motivational climate aspect of AGT appears relevant to the study of dance adherence and dropout given such consistent findings in sport; moreover, the motivational climate has not previously been investigated in dance in relation to adherence and dropout making it a valuable avenue for research. Furthermore, being situated within a larger research project on talent development presented a unique opportunity to examine the impact of the talent development environment (the motivational climate) as part of the PhD studies. However, following the suggestions of Lacaille and colleagues (2005, 2007), it appears that the other tenets of the original achievement goal framework (task/ego-involved achievement goals)

may be insufficient to use with young people engaged in the performing arts. Additional frameworks have been created and applied in sport, such as the approach-avoidance model (see Harwood et al., 2008), but these appear to further add to confusion around the topic. As such, achievement goals were not investigated as part of the PhD studies.

2.5.3 Self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000, 2002)

Self-determination theory (SDT) is composed of four mini theories regarding human behaviour, the two most relevant of which for this thesis are the continuum of motivation, and basic needs theory. The continuum of motivation ranges from self-determined motives such as intrinsic motivation to non-self-determined forms of motivation such as extrinsic motivation and amotivation (a lack of motivation; Figure 2.1. For definitions of terms in the Figure see Weiss & Amorose, 2008). Individuals can be motivated by a combination of intrinsic and extrinsic factors, however, research has consistently demonstrated that self-determined forms of motivation are associated with a range of positive outcomes such as greater positive affect and higher incidences of flow experiences (see Weiss & Amorose, 2008, for a review). Self-determined motives have also been associated with adherence in several studies (Boiché & Sarrazin, 2007; Calvo, Cervelló, Jiménez, Iglesias & Murcia, 2010; Mallett & Hanrahan, 2004; Ryska et al., 2002), although this has not universally been the case (Boiché & Sarrazin, 2009).

Non-self-determined	←				-determined
Amotivation	External	Introjected	Identified	Integrated	Intrinsic motivation

Figure 2.1. The motivation continuum.

The motivation continuum was expanded to include three types of intrinsic motivation (IM; Vallerand, Pelletier, Blais, Brière, Sencal & Vallieres, 1992). IM *to know* is defined as the pleasure and satisfaction gained from learning or trying to understand something new. IM *toward accomplishment* represents the pleasure and satisfaction gained from trying to accomplish or create something new. IM *to experience stimulation* is defined as participating in an activity in order to experience stimulating sensations derived from activity engagement, such as sensory pleasure, fun and excitement (Vallerand et al., 1992). Such definitions clearly relate to aspects

of dance (e.g. skill development; performing). Hein, Muur and Koka (2004) found that intention to be physically active in the future was predicted by IM to experience stimulation and IM toward accomplishment, the former being the strongest predictor. As such, the different types of IM represent a potential theoretical means of investigating enjoyment sources, although little research of this nature has been conducted.

The second mini theory within SDT to consider is basic needs theory, which states that optimal human functioning is achieved through the satisfaction of the needs for competence, autonomy and relatedness (Deci & Ryan, 1985; Ryan & Deci, 2000, 2002). Competence represents the need to demonstrate ability in a certain area; autonomy represents the need to think and act freely; and relatedness represents the need to connect with one's environment (e.g. to peers and teachers). Pelletier and colleagues (2001) reported that persistent swimmers perceived greater autonomy support from their coach, had greater levels of IM, and were less amotivated than dropouts. Similarly, dropout from youth football was explained by lower satisfaction of the needs for relatedness and autonomy, and having less self-determined forms of motivation (Calvo et al., 2010). Research with young athletes in a range of sports found that autonomy support from coaches positively predicted IM, which in turn predicted intentions to be physically active in the future (Almagro, Sáenz-López & Moreno, 2010). According to these studies, autonomy was the most important basic need to satisfy, which again questions the role of perceived competence in talent contexts.

Overall, SDT is a complex theory that attempts to account for many aspects of human behaviour. However, Weiss and Amorose (2008) note that in previous sport studies, SDT tenets often explained a small amount of the variance in outcome variables, indicating either that expansion of the constructs is necessary, or that the theory – or its measurement instruments – does not fully encompass the adherence and dropout phenomenon. Moreover, a cluster analysis found that participants with high scores on both non self-determined *and* self-determined motives reported greater scores for enjoyment, effort, frequency of attendance, satisfaction and intention to continue sport participation, when compared to participants with high scores on self-determined motives but low scores on non self-determined motives (Vlachopoulos, Karageorghis, & Terry, 2000). This suggests that further understanding of motivation is required; it is also possible that reasons for committing and adhering to dance go beyond factors explained by SDT. Dance is

often referred to in emotive terms, for example, Martha Graham stated that: “Great dancers are not great because of their technique, they are great because of their passion”. Such quotes suggest that reasons for engaging in dance go beyond those of intrinsic motivation to represent a deeper attachment to the activity.

2.5.4 The passion model (Vallerand et al., 2003)

Talented individuals frequently refer to their passion for their activities (e.g. Fredricks, Alfeld-Lido & Eccles, 2010; Gagné, 2007; Legg et al., 2005; Mallett & Hanrahan, 2004; Robson, 2001; Stinson et al., 1990; Talbot-Honeck & Orlick, 1998). It is important to consider passion – a deeper form of motivation based on an emotional attachment to an activity – in relation to commitment, adherence and dropout. It is intuitively logical that passion be implicated in understanding long-term commitment to a demanding and time-consuming activity, but to date researchers have focused on factors such as enjoyment and self-determined or non-self-determined forms of motivation. While the literature has shown that enjoyment and motivation are certainly important to commitment and adherence, the role that a deeper emotional attachment to an activity might play has been largely neglected. A relatively recent dualistic model of passion proposes that individuals are passionate about an activity when they like it, value it highly, feel passionate about it and spend a lot of time on it (Vallerand et al., 2003); being passionate means that the activity becomes internalised into the person’s identity. It is important to note that the studies reviewed below are not specific to sport alone but have been conducted in several domains including the performing arts, romantic relationships and work situations; nevertheless the review of such literature is best placed here among other the theories.

The passion model posits that two types of passion exist: harmonious and obsessive. Harmonious passion (HP) is associated with an autonomous internalisation of the activity into a person’s identity which enables him or her to engage in the activity freely. HP has been associated with a range of positive outcomes such as positive affect, flow experiences, well-being, vitality, work satisfaction, positive coach-athlete relationships, positive interpersonal relationships with work colleagues, and reduced burnout symptoms (Carbonneau, Vallerand, Fernet & Guay, 2008; Carpentier, Mageau & Vallerand, 2011; Lafrenière, Jowett, Vallerand, Donahue & Lorimer, 2008; Mageau, Vallerand, Rousseau, Ratelle & Provencher, 2005; Mageau & Vallerand, 2007; Philippe, Vallerand & Lavigne, 2009; Philippe, Vallerand, Houlfort, Lavigne & Donahue, 2010; Vallerand et al., 2003;

Vallerand, Rousseau, Grouzet, Dumais, Grenier & Blanchard, 2006; Vallerand, Paquet, Philippe & Charest, 2010). On the other hand, obsessive passion (OP) is associated with a controlled internalisation of the activity into a person's identity, resulting in a rigid persistence at the activity either because the individual cannot control his or her urge to engage in the activity, or because feelings of self-esteem and social acceptance are attached to it (Vallerand et al., 2003). OP has been associated with more negative outcomes such as negative affect, feelings of guilt, rumination while engaged in other activities, a decline in positive affect when not engaged in the passionate activity, aggressive behaviour in sports fans, burnout, shame, anxiety, and chronic injuries in dancers (Carpentier et al., 2011; Donahue, Rip & Vallerand, 2009; Mageau et al., 2005; Mageau & Vallerand, 2007; Rip, Fortin & Vallerand, 2006; Vallerand et al., 2003, 2006, 2010). Typically, when individuals are high in OP the passionate activity tends to take on disproportionate importance in their identity, causing conflicts with other life areas (Mageau et al., 2005; Vallerand et al., 2003). Vallerand et al. (2003) argue that passion theory goes beyond that of intrinsic and extrinsic motivation because the activity becomes internalised into the individual's identity. Furthermore, although OP bears some resemblance to extrinsic motivation, it is characterised by a love and value of the activity, whereas extrinsic motivation is not.

Some research has begun to address passion in relation to talent development. Among musicians, drama students, athletes and psychology students, both types of passion have been associated with deliberate practice, which in turn predicted performance (Bonneville-Roussy, Lavigne & Vallerand, 2010; Vallerand et al., 2007; Vallerand, Mageau, Elliot, Dumais, Demers & Rousseau, 2008). However, only HP was associated with mastery (task) goals and subjective well-being, while OP predicted both mastery (task) and performance-related (ego) goals, perhaps because OP led to attempts at success by any means. Mastery goals directly predicted deliberate practice, which in turn predicted performance, while performance-related goals tended to negatively predict performance (Bonneville-Roussy et al., 2010; Vallerand et al., 2007). As such, HP led to adaptive behaviour and improved performance, while OP resulted in less consistent performance outcomes. The authors concluded that passion may help individuals to persist at deliberate practice, and subsequently maintain long-term commitment to practice and performance in their domain (Vallerand et al., 2007, 2008). Vallerand and colleagues (2006) have recommended commitment, adherence and dropout as a valuable avenue for future research using the passion model; being situated within

the larger talent development project offered a unique opportunity to test intuitive assumptions empirically as part of the PhD studies.

There are some indications that passion is implicated in commitment: according to one study, 100% of expert musicians were passionate about music, compared to 36% of beginning novice musicians, potentially indicating that those lacking passion for music drop out along the path towards expertise (Mageau et al., 2009). Similar suggestions that passion underlies persistence have been made in studies of arts and sport participants (Bonneville-Roussy et al., 2010; Fredricks et al., 2010). However, it is as yet unclear which type of passion might best predict adherence to activities. Although the positive experiences associated with HP could lead to adherence, it is also associated with flexible involvement, so that if an activity is in conflict with other interests or involves negative returns, an individual can withdraw (Vallerand et al., 2003). Conversely, as OP is characterised by rigid persistence, it has been associated with intentions to continue participating in activities in the face of risk or negative consequences, such as cycling in treacherous winter conditions (Vallerand et al., 2003). Interestingly, some dancers have described themselves as obsessive; for example the choreographer Richard Alston explained: "I did have a sort of strange obsessive interest...Dance just began to be more and more of an obsession." (Alston in Newman, 2009, p.15). Perhaps the way dancers anecdotally discuss dance as taking over one's life and requiring sacrifices represents OP. However, OP has been correlated with chronic injuries in dance because dancers were unwilling to stop practicing (Rip et al., 2006), and could result in burnout (Vallerand & Miquelon, 2007; Vallerand et al., 2010). Further study appears necessary to investigate the potential relationships between the two types of passion and commitment, adherence and dropout; consequently the PhD studies began to address this gap in the literature.

2.5.5 The sport commitment model (Scanlan et al., 1993b)

Several authors have adapted Rusbult's (1980) investment model of relationships in which commitment is the result of satisfaction, investments and alternatives. Schmidt and Stein (1991) adapted Rusbult's (1980) model to create 'attracted' and 'entrapped' athlete profiles. Attracted athletes participate in sport due to the positive benefits derived from involvement, such as enjoyment. Entrapped athletes are likely to report lower enjoyment, higher costs, high levels of investment and few attractive alternatives, and may become burned out because the athlete is 'pushed' into the sport. The dropout profile is neither attracted nor entrapped and is characterised by

low enjoyment, rewards and investments, and high costs and alternatives. Raedeke (1997) investigated these notions with 236 swimmers. Participants generally enjoyed their activity, with low burnout scores being reported. Malcontented swimmers (similar to an entrapped profile) had the highest burnout scores while enthusiastic (attracted) swimmers had the lowest. However, the conceptual profiles outlined by Schmidt and Stein (1991) could not be fully supported; for example, the malcontended swimmers reported low, rather than high, investment and perceived attractive alternatives to swimming, in contrast to the conceptual entrapped profile. Weiss and Weiss (2006) later found that dropout gymnasts were more likely to be entrapped than adhering athletes, suggesting that eventually entrapped athletes perceived few reasons to continue participating and thus withdrew. Recent research in the domain of exercise adherence reported that 'want to' commitment (similar to an attracted profile), but not 'have to' commitment (similar to an entrapped profile) was related to time spent in physical activity (Gabriele, Gill & Adams, 2011). Again, however, the two profiles were not entirely distinct: 'want to' commitment was positively related to satisfaction and investments; 'have to' commitment was also positively related to satisfaction and investments, as well as to alternatives. Little research using the attracted/entrapped model has been conducted to date perhaps because the conceptual profiles have not been supported empirically (Gabriele et al., 2011; Raedeke, 1997). Furthermore, although burnout can be responsible for athletes' withdrawal from sport (e.g. Gould, Urdry, Tuffey & Loehr, 1996), burnout is distinct from dropout (Schmidt & Stein, 1991) as it is not directly under an individual's control.

A more popular adaption of Rusbult's (1980) model is the sport commitment model (SCM). Scanlan and her colleagues (1993b) hypothesised that sport commitment would be determined by five antecedents: enjoyment, attractive alternatives, personal investments, social constraints (social pressures or obligations from others to continue) and involvement opportunities. It was hypothesised that commitment would be predicted by greater enjoyment, involvement opportunities, personal investments and social constraints, and fewer attractive alternatives (Figure 2.2). Research with a variety of participant groups generally found support for the model, although some issues arose around the social constraints and personal investments scales which did not emerge as consistent predictors of commitment (Alexandris, Zahariadis, Tsorbatzoudis, & Grouios, 2002; Carpenter & Scanlan, 1998; Carpenter, Scanlan, Simons & Lobel, 1993; Scanlan et al., 1993b; Scanlan, Simons, Carpenter,

Schmidt & Keeler, 1993c; Sousa, Torregrosa, Viladrich & Cruz, 2007; Weiss, Kimmel & Smith, 2001; Young & Medic, 2011).

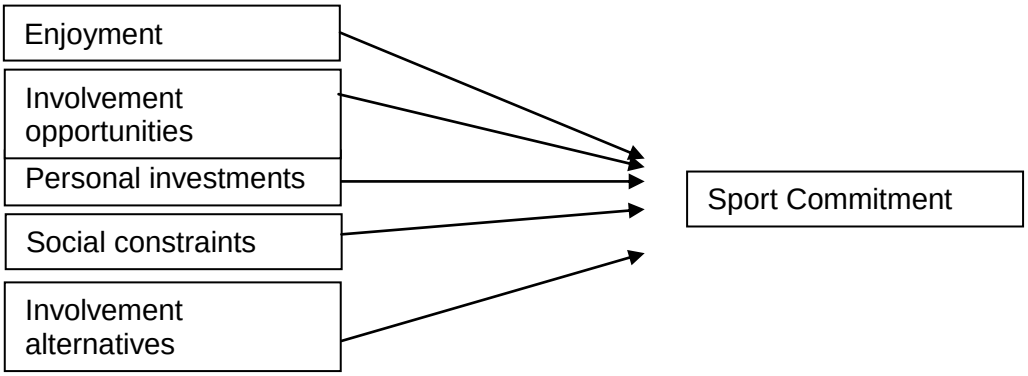

Figure 2.2. The sport commitment model.

Later tests added additional factors to the model such as social support, negative affect, friendship, perceived costs and perceived competence. To date only social support has received sufficient empirical support to be considered a sixth antecedent of commitment (Casper, Gray & Babkes Stellino, 2007; McDonough & Crocker, 2005; Scanlan, Russell, Beals & Scanlan, 2003; Scanlan, Russell, Magyar & Scanlan, 2009; Weiss & Weiss, 2007), although it has not universally been found to predict commitment (Weiss, Weiss & Amorose, 2010; Weiss et al., 2001).

Overall, the SCM is a useful tool for examining antecedents of sport commitment in a range of settings. However, more empirical research is required to test additional predictors of commitment (Sousa et al., 2007). Furthermore, only two studies have examined the predictive ability of the model in terms of participation behaviour (Guillet, Sarrazin, Carpenter, Trouilloud & Cury, 2002; Lukwu & Guzmán, 2011). Commitment in the study by Guillet and colleagues (2002) predicted 44% of actual behaviour, while commitment predicted only 4% of actual behaviour in Lukwu and Guzmán's (2011) study, indicating not only that further testing and expansion of the model is required, but also that one single theory is insufficient to capture all of the complexities inherent in commitment, adherence and dropout.

2.5.6 Social exchange theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959)

Social exchange theory (SET) is based on the notion that individuals seek to maximise the benefits and minimise the costs associated with relationships. If the costs are felt to outweigh the benefits, the relationship will be discontinued. Smith (1986) applied this theory to sport involvement, suggesting that athletes weigh the

perceived benefits of participation (e.g. enjoyment) against the costs (e.g. time demands), relative to the availability of alternative activities. If the costs outweigh the benefits, and alternatives are more attractive, withdrawal is likely. Johns and colleagues (1990) used SET to understand dropout from competitive gymnastics, finding that while dropouts had enjoyed their gymnastics participation and had a positive perception of their competence, the amount of time spent in training meant that they missed out on other leisure activities such as seeing friends. Because most dropouts reported positive experiences during their time as gymnasts, withdrawal in this instance appeared most related to alternative activities than to the quality of the dropouts' sport experience; being a 'normal' teenager became more important than becoming an international athlete. This study extended previous descriptive findings on time conflicts by giving an insight into which other activities the participants wished to engage, and why, highlighting the social costs of intensive talent development programmes. Furthermore, the study demonstrated that dropout is not necessarily a consequence of negative experiences in the activity, but can instead be a function of adolescence as young people seek an activity that suits their developing identity (Burton & Martens, 1986; Weiss & Petlichkoff, 1989).

The notion of costs and benefits has been frequently referred to and incorporated into other models, rather than being tested in-and-of itself. It stands to reason that there are several costs and benefits associated with dance involvement, to which the research and surveys reviewed earlier alluded (e.g. self-expression as a benefit and the competition in the field as a cost; Alter, 1997). Another theory that incorporates benefits and costs is expectancy-value theory.

2.5.7 Expectancy-value theory (Eccles et al., 1983)

Expectancy-value theory (EVT) states that individuals choose to participate and persist in activities due to expectancies of success and subjective task value. Expectancies of success relate to competence beliefs while subjective task value is composed of four components: attainment value (the importance of succeeding in an activity); interest value (the extent to which the activity is intrinsically motivating and enjoyable); utility value (the extent to which the activity is useful in achieving goals); and perceived costs. Individuals weigh the values against the costs to make participation decisions. Success expectancies and task value can predict behaviours such as intention to participate in physical education, and effort and persistence at tasks in sport (Cox & Whaley, 2004; Xiang, McBride & Guan, 2004; Xiang, McBride, Guan & Solomon, 2003). However, despite there being a large

body of EVT research in education, little sport research has addressed tenets of the theory in relation to adherence and dropout.

2.5.8 Studies combining theories

Gould (1987) noted that one single theory alone will not be able to fully explain adherence and dropout due to the complexity of sport participation behaviour. Douthitt (1994) recommended the use of interactional models that incorporate influences from several areas. In response to such suggestions, some studies have attempted to use several theories to explain adherence and dropout.

Several studies have investigated sequences of relationships between the motivational climate, basic needs satisfaction, self-determined and non self-determined motivation and behavioural outcomes. One study found that dropout handball players perceived their coach as less task-involving and more ego-involving than adhering players, and perceived themselves as less competent, autonomous and related than persisting players. Dropouts reported lower levels of the three types of IM and higher levels of amotivation than persisting players. A lack of self-determined motives led to dropout, although the impact of motivation on actual behaviour was not direct but mediated by intentions (Sarrazin et al., 2002). Furthermore, intention did not fully predict behaviour, indicating that some participants dropped out due to factors outside of their control (e.g. injury). In another examination of female handball players, Guillet and colleagues (2002) predicted adherence and dropout using tenets of SET, SDT and the SCM. Perceived benefits, which predicted 91% of sport enjoyment, were perceived competence, autonomy, relatedness, progress, coach support and time of play. Persisting players perceived less pressure from significant others, had fewer attractive alternatives, were more invested and reported greater commitment than dropouts. Dropouts perceived themselves to be less supported by the coach, less competent, autonomous, and related to their team, lower in progress, and experienced a lower time of play in matches than persisting players. High levels of commitment negatively predicted dropout eight months later, however, commitment only predicted 44% of the variance in actual behaviour. This indicates that the SCM does not account for all participation behaviour, capturing as it does psychological commitment rather than behavioural adherence which could be affected by, for example, financial constraints. The authors concluded that when key participation motives or psychological needs are not met, the costs of involvement exceed the benefits and dropout becomes likely. Finally, a recent study built on those reported

above, employing tenets of AGT, SDT and the SCM (Lukwu & Guzmán, 2011). Results revealed that perceptions of a task-involving motivational climate predicted basic needs satisfaction, which led to greater self-determined forms of motivation and in turn greater commitment. Commitment predicted adherence, but accounted for only 4% of the variance in participation behaviour, questioning the extent to which sport commitment is associated with behavioural adherence. Although there is a logical relationship between the two constructs, adherence can be affected by a wide range of internal and external factors (i.e. not solely the individual's experience of the activity but also injury or family relocation for example). Collectively, these studies have begun to demonstrate the relationships among different theoretical constructs, suggesting that future studies could similarly combine theories in order to produce comprehensive findings.

Boiché and Sarrazin (2009) used tenets of the SCM, EVT, SDT, AGT and Chelladurai's (1993) leadership research to examine proximal and distal factors associated with adherence and dropout in athletes from a range of sports. Persisting athletes perceived greater parental and team-mate investment, fewer goal conflicts with parents and team-mates, and a more task-involving coach-created climate. Persisting participants also reported greater competence and autonomy, valued their activity more highly, felt more satisfied, and perceived fewer attractive alternatives than dropout players. However, in contrast with SDT tenets, self-determined motivation did not differ significantly between persisting and dropout athletes, supporting a previous study which found discrepancies in forms of motivation and intentions to continue participating in sport (Vlachopoulos et al., 2000). Overall, activity value, investment, satisfaction and goal conflicts emerged as important factors in continuing in or withdrawing from sport.

Finally, three studies assessed relationships between the SCM and other theories associated with adherence and dropout. Investigations of SDT and the SCM in participants from a range of sports revealed strong positive relationships between IM and commitment, and a negative relationship between amotivation and commitment (Krinanthi, Konstantinos & Andreas, 2010; Zahariadis, Tsorbatzoudis & Alexandris, 2006). A study of youth basketball players assessed relationships between sport commitment and motivational climates (Leo, Sánchez, Sánchez, Amado & García Calvo, 2009). Findings revealed that athletes' commitment was positively predicted by perceptions of a task-involving climate, and was negatively correlated with perceptions of an ego-involving climate.

Only seven studies to date have investigated a combination of several theories, and have demonstrated the complexity of commitment, adherence and dropout. However, while research based on sport theories and models is relevant to consider in relation to dance, it would be premature to apply many of these theories to dance at this point. Given how little is known about commitment, adherence and dropout in dance, important information might be missed by applying a theory which naturally has a narrowed focus; as highlighted above, most theories can be said to have such limitations at this point. Exploratory methods and descriptive data can yield specific details that generate applicable findings that might otherwise by missed by imposing a theoretical framework. For example, Lacaille and colleagues (2005, 2007) found that the AGT framework in its original format was limited when applied to performing artists, so it is reasonable to assume that other theories might be similarly limited when applied to dance. As such, descriptive dance-specific information from both a quantitative and qualitative perspective is required for the generation of new knowledge without an *a priori* hypothesis or theory in mind (e.g. Hassandra, Goudas & Chroni, 2003). Only once sufficient descriptive data in dance has been gleaned might theory testing be conducted. Therefore, the PhD studies were not based on single theories but considered aspects of all of the theories reviewed above to various extents. The exceptions to this were the employment of the passion model, because it is highly aligned with anecdotal work in dance and has an emerging body of research in multiple domains, and the motivational climate aspect of AGT, due to the consistent findings reported in sport.

2.6 Sport Research: Developmental

Several researchers have chosen to study adherence and dropout from a developmental perspective in order to understand stages of participation in sport. This is a relatively new area of enquiry and is of interest to dance. Longitudinal studies that have tracked physical activity participation from childhood to adulthood demonstrated how participation in organised sports in youth was positively related to leisure time physical activity in adulthood (Kjønniksen, Anderssen & Wold, 2009; Scheerder et al., 2006), and that active families had an impact upon physical activity participation during childhood and beyond (Yang, Telama & Laakso, 1996). Scheerder and colleagues (2006) found that very active adolescents involved in competitive sports were less likely to participate in physical activity 20 years later compared to moderately active and non-competitive adolescents; conversely those

with a diverse sports participation pattern during adolescence were more likely to participate in adulthood (Scheerder et al., 2006).

One model to arise from such research is the developmental model of sport participation (DMSP; Côté & Hay, 2002; Côté, Baker & Abernethy, 2003). The DMSP has three trajectories. The first is recreational participation via sampling a range of sports recreationally throughout development and into adulthood (Robertson-Wilson, Baker, Derbyshire & Côté, 2003). The second trajectory is of elite performance attained through initial sampling of playful activities in childhood, followed by specialising in one activity during mid-adolescence, characterised by deliberate practice. This second trajectory is posited as being optimal for expertise development and well-being as it may enhance intrinsic motivation, peer relationships, perceived competence, and identity development as well as balanced muscular development (Côté, Horton, MacDonald & Wilkes, 2009; Côté, Lidor & Hackfort, 2009; Kirk, 2005; National Association for Sport and Physical Education, 2010). Research studies of elite athletes in a range of sports demonstrated that this second trajectory is associated with long-term participation and/or expertise (e.g. Carlson, 1988; Côté, 1999; Hill, 1993; Scheerder et al., 2006; Soberlak & Côté, 2003). The third trajectory in the DMSP is elite performance attained through early specialisation in one sport during childhood, which continues through adolescence and is characterised throughout by deliberate practice. Findings indicate that early specialisation can result in emotional and physical exhaustion (Strachan, Côté & Deakin, 2009), injury and less fun (Law, Côté & Ericsson, 2007), and dropout (Wall & Côté, 2007). However, the study of ice hockey players by Wall and Côté (2007) reported that persisting and dropout players differed in only one aspect of deliberate practice (off-ice training) while the rest of their participation histories, including other aspects of deliberate practice, were similar. Moreover, one study found no differences in enjoyment between specialising child athletes and those sampling a range of sports (Strachan et al., 2009). While the third trajectory can result in expert performance via deliberate practice (e.g. Baker, Côté & Abernethy, 2003; Ericsson et al., 1993; Helsen, Starkes & Hodges, 1998; Sloboda, Davidson, Howe & Moore, 1996; Ureña, 2004), more research is required to clarify the discrepant findings around aspects of well-being.

Applying the DMSP qualitatively to swimmers, both persisting and dropout athletes experienced similar early training, yet the dropouts also recalled early peak performances which altered their training focus from fun to competition (Fraser-

Thomas et al., 2008a). Persisting athletes recalled the delay of early specialisation and a coaching philosophy of personal development. In a further study with young swimmers, Fraser-Thomas, Côté and Deakin (2008b) found that dropouts were involved in fewer extracurricular activities, participated in less unstructured swimming play, received less one-on-one coaching, reached several developmental milestones earlier, and were less likely to take time off during their careers. It could be concluded that the adhering swimmers were in the second trajectory, while the dropouts had been in the third trajectory, of the DMSP. Additional factors outside of the model were also found in both of these studies: dropout swimmers discussed a lack of swimming peers, pressurising athletic parents and sibling rivalries, whereas persisting swimmers mentioned open communication by parents and coaches, support from school friends and positive sibling influences (Fraser-Thomas et al., 2008a, 2008b). Thus developmental factors relating to the social environment both within and outside of the activity, not accounted for in the DMSP, appear important.

A final interesting area within developmental research is that of community size. Previously it has been suggested that small communities are ideally suited to the development of sporting talent due to factors such as increased access to space, more play and sampling opportunities, and more supportive and intimate relationships with coaches and peers (Carlson, 1988; Côté, Baker & Abernethy, 2007); it stands to reason that such factors may also influence participation behaviour. A study of 92 current and 89 withdrawn swimmers found that dropouts were nearly five times more likely to come from bigger cities than persisting athletes (Fraser-Thomas et al., 2010). Although just the start of research in this area, this study demonstrated the impact of wider community influences on adherence and dropout among young athletes.

Overall, developmental research demonstrates that activity involvement changes over time and that the volume, intensity and focus of training relates to adherence and dropout. However, concepts within the DMSP require clearer definition (Baker, Cobley & Fraser-Thomas, 2009). For example, what constitutes specialisation in dance: a focus on a single dance style or a focus on the domain of dance only? Dance training often incorporates several dance styles and choreography, and it seems unlikely that reducing training to one technique would be recommended for dancers today; rather the opposite is true. For example, Nieminen (1998b) found that dancers aiming for a career in dance practiced a greater range of dance styles than those participating recreationally. As such, the applicability of the DMSP to

dance in its current format is questionable. For this reason, the PhD studies began to address developmental factors as a first step toward understanding the impact of different developmental patterns on participation behaviour among young dancers, but did not investigate the DMSP in depth.

2.7 Summary of Sport Research

Overall, a large body of research into commitment, adherence and dropout exists in sport. Consistent findings around the importance of enjoyment, social relationships, and time conflicts or having other commitments have been reported (Weiss & Petlichkoff, 1989). Researchers have examined a broad range of factors including developmental patterns, perceived competence, and social relationships outside of the talent activity. Having established a large amount of descriptive data, sport researchers applied theories to understand the processes underlying commitment, adherence and dropout. A range of interesting results was produced, although these were not entirely consistent. Furthermore, while sport research can inform dance studies, it cannot be assumed that findings from sport are directly applicable to dance.

Dance and sport differ in several ways, not only in terms of the activities themselves but also the nature of training. Dance involves both physical and technical facility as well as artistic performance skill. Dancers are expected not only to meet the high technical demands of the form but also to communicate the artistic intent behind it, expressing a choreographer's intention through movement rather than simply executing a series of steps. Nowadays, dancers are often expected to be creative, providing input to the generation of new movement material alongside a choreographer. In addition, dancers are expected to be proficient in a variety of dance styles, such as ballet and the various forms of contemporary dance like Cunningham and Limón techniques. Because of these varying demands, dance training generally involves training in an eclectic mix of dance techniques, undertaking creative study and learning about analytical and historical factors to help place creative work in context. In contrast, artistic factors are not important components of performance in most sports. Moreover, determinants of success differ when comparing sport and dance: in most sports, success is indicated by times, distances and speeds, and winning or losing. The concepts of winning and losing are not applicable to most dance forms except for competitive dancesport; success in other dance forms may be defined in terms of critical reviews, promotion, or individual artistic expression (e.g. choreography that has satisfied a personal

goal). Therefore, it is possible that dance and sport findings relating to commitment, adherence and dropout will differ, indicating that dance-specific research is required. The PhD studies began to address the gap in the dance literature by exploring the area using a largely descriptive and inductive approach.

2.8 Multidisciplinary and Physiological Research in Sport and Dance

The majority of adherence and dropout research has adopted a psychological perspective, but authors have suggested that this phenomenon be examined from both a psychological and physical or physiological perspective (Burwitz et al., 1994; Feltz & Ewing, 1987). Interdisciplinary and multidisciplinary research considers various sub-disciplines to understand the 'whole person' rather than separating the 'body' and 'mind' (Burwitz et al., 1994), and appears particularly relevant when considering talented youth, whose physical characteristics may be pivotal to their selection onto talent development programmes and subsequent progress. Gould and Petlichkoff (1988) proposed a model that included surface level explanations for dropout (including psychological, physical and situational factors) which related to underlying motivational theories and then resulted in actual behaviour. Interdisciplinary factors could interact so that, for example, physical factors such as a lack of improvement could interact with psychological perceptions of competence, which may result in dropout. However, the model was not tested empirically, perhaps because it would be complex and challenging to do so. The PhD research adopted a multidisciplinary approach, meaning that several disciplines were considered in parallel, rather than in an integrated fashion (Burwitz et al., 1994). Future research could endeavour to consider interdisciplinary predictors of adherence, provided there was a sound rationale for doing so.

Theoretical assertions have been given weight by the small body of research in this area. Firstly, factors relating to actual competence appear relevant. Ommundsen and Vaglum (1997) found that for 223 youth male football players, both low perceived *and* actual competence predicted dropout. Low actual competence directly predicted dropout in young players (12-13 years), whereas perceived competence mediated the relationship between actual competence and dropout in older players (14-16 years). The impact of actual competence upon perceived competence was affected by the extent to which participants valued being competent in football, highlighting the importance of task value. However, in this study actual competence was assessed by a single measure according to how often the coach allowed the young person to play from the start of the match (i.e. the

coach's perception of athletic ability rather than more objective physiological or technical measures). One study in football did objectively assess the physiological characteristics and technical skills of young players who dropped out, persisted or advanced in their sport (Figueiredo, Gonçalves, Coelho E Silva & Malina, 2009). Participants were split into two age groups for analysis, with findings indicating that for 11-12 year-olds, elite (advancing) players had more years of training, were taller with longer segment lengths, and performed better on all but one functional test. In the older group (13-14 years), elite players were older in both skeletal and chronological age, had more years of training, were taller with longer segment lengths, and performed better in most functional and skill tests than dropouts. Finally, coach evaluations of players' ability also suggested that actual football competence, at least according to a more subjective judgement, had an effect on adherence and dropout. This study indicated that growth, maturation, function and skill all influence participation behaviour in young footballers.

While the above studies of young football players suggest that actual competence is related to adherence and dropout in sport, a study of gymnasts did not support this notion (Claessens & Lefevre, 1998). Over a three-year period, 46 gymnasts continued training while 35 dropped out. Measures of anthropometry, skeletal maturation, physical fitness and gymnastics-specific strength and flexibility were taken, revealing that gymnasts who later dropped out were older, more physiologically mature, taller, heavier and performed better on the fitness tests than continuing gymnasts. However, analysis demonstrated that once age was controlled for, no significant differences emerged on most of the tests, leading the authors to conclude that physical and performance-related factors only had a minor influence in gymnastics dropout, and that instead psychological and social factors were presumably more important (Claessens & Lefevre, 1998). A similar study comparing adhering gymnasts with those who later dropped out on a range of physical and performance tests reported the same conclusions (Lindner et al., 1991). As such, findings around actual competence in aesthetic physical activities appear to diverge from those reported in non-aesthetic physical activities.

In dance, one study investigated multidisciplinary factors associated with adherence and dropout (Hamilton et al., 1997). During a four-year period, 55% of 40 elite ballet students dropped out (either by choice or through being assessed out of the school; the study did not distinguish between such groups in the results presumably due to the small sample size). Compared to continuing dancers, dropouts tended to have

experienced more injuries, and had a greater number of anatomical limitations that affected technique such as impaired hip external rotation and muscular tightness. Similar to the football studies reported above, this study suggested that factors relating to actual dance technique had an impact upon adherence and withdrawal from ballet. Thus, findings to date around actual competence are not entirely consistent and are worthy of further research.

It is also apparent that maturation may play a role in adherence and dropout. For example, late maturing boys were in the minority in persisting and elite groups in the above-mentioned study of young footballers (Figueiredo et al., 2009). This is presumably because early maturation in males is associated with greater gains in height, weight, and lean mass, and consequently superior performance in many physical tasks (Cumming, Standage, Gillison, Dompier & Malina, 2009). These findings support reports around the relative age effect (RAE), a phenomenon whereby those born earlier in the selection year are over-represented in talent settings and elite sports (e.g. Helsen, Van Winckel & Williams, 2005; Musch & Grondin, 2001). Some studies have found that the RAE is associated with dropout (Delorme, Chalabaev & Raspaud, 2010; Delorme, Boiché & Raspaud, 2010; Helsen, Starkes & Van Winckel, 1998), but no RAE has been reported in dance (Van Rossum, 2006) or gymnastics (Baxter-Jones, 1995). Studies in both domains report that late maturing, smaller individuals appear to persist or be selected for elite practice (Baxter-Jones, 1995; Hamilton et al., 1997; Lindner et al., 1991; Malina, 1994). This may be due to the fact that biomechanically, late maturation is an advantage for performance in these activities in terms of lever length for example (Baxter-Jones, 1995), while physiological advantages include a lower percentage of body fat (Cumming et al., 2009). The findings may also be explained by the aesthetic preference for prepubescent physiques in some dance styles (Pickard, 2007a); indeed, dancers are frequently reported to be leaner than non-dancers (Kadel, Donaldson-Fletcher, Gerberg & Micheli, 2005; Padfield, Eisenman, Luetkemeier & Fitt, 1993; White, Philpot, Green & Bemben, 2004). Hamilton and colleagues (1997) reported that dropout ballet dancers were slimmer, had a poorer body image and greater incidences of secondary amenorrhea and disordered eating attitudes than continuing dancers. The dropout dancers tended to have matured early or on time, and may have attempted to recapture their prepubescent physique by restricting food intake (Hamilton et al., 1997). Furthermore, one study suggested that thinness was interpreted by some ballet institutions as a sign of commitment and dedication, and was subsequently rewarded with professional advancement

(Benn & Walters, 2001). However, the physical 'requirements' of ballet are quite different to those of other styles meaning that research of this nature with dancers from a range of styles is necessary.

Finally, injury has been cited as a reason for dropping out from sport (e.g. Baxter-Jones, Maffulli & Helms, 1993; Bennie & O'Connor, 2006; Butcher et al., 2002; Enoksen, 2011; Klint & Weiss, 1986; Koukouris, 1991; Maffulli, Baxter-Jones & Grieve, 2005) and dance (Hamilton et al., 1997; Wainwright et al., 2005). Taking time off due to injury was found to enable gymnasts to consider the role of the activity in their lives and weigh up the benefits and costs of continued involvement (Johns et al., 1990). For some this meant withdrawal from gymnastics, but it is also possible that time off due to injury can strengthen commitment to an activity. For example, a professional ballet dancer explained a new sense of commitment when coming back from injury: "...I was somewhat re-energized. I found a new devotion and dedication...You get a sense of how lucky you are to be doing something of this nature" (Wainwright et al., 2005, p. 55). Therefore, injury may result in psychological processes that either strengthen or lessen commitment.

Taken together, a small body of research has indicated that physical factors have an impact upon adherence and dropout. The effects of maturation on factors such as flexibility and body shape could influence participation behaviour given that withdrawal from physical activity is common between the ages of 11-14 years (Weiss & Petlichkoff, 1989). For example, a young dancer may feel that following maturation, his or her body shape no longer 'fits' the restrictive expectations of some dance techniques. Adolescence is also the age at which the accuracy of competency evaluations increases (Horn & Weiss, 1991), which may make young dancers more aware of the ways in which they differ physically and technically from those around them (Musch & Grondin, 2001); this is probably exacerbated in talent development settings (Durand-Bush & Salmela, 2001). While to date research of this nature is limited, there is much scope to further explore these factors. Therefore, the PhD research included measures of physical competence, maturation and injury to extend existing research in the area.

2.9 Summary of the Literature Review

A wide range of findings from a variety of domains have been reviewed. The large body of sport research indicates that more research in dance is certainly warranted to enhance existing findings as well as to explore factors that have not yet been

considered. This includes investigating enjoyment sources (in particular artistic factors) explicitly in relation to commitment, the extent to which passion is associated with behavioural outcomes, the role of social agents both within and outside of dance (including the motivational climate), developmental patterns that might be influential including the impact of other activities and commitments, and measures of physical competence that might distinguish adhering dancers from those who later drop out. In order to capture such a variety of factors, a descriptive approach appeared most appropriate. Broader methodological considerations are outlined in Chapter 3.

Chapter 3

Ontological, Epistemological and Methodological Concerns

This chapter introduces the overarching methodological considerations that underpin the thesis studies. First, the ontological and epistemological framework that informed the study design is outlined, followed by the context of the research and the recruitment of the sample. Ethical concerns are addressed and a rationale for the variables is provided. Finally, the process of cleaning and screening the data is described, and validity and reliability is discussed. Specific methodologies including statistical analyses can be found in Chapters 5-8.

3.1 Ontological and Epistemological Framework

Traditionally, researchers have expressed loyalty to particular paradigms such as positivism and constructivism, which then determined the methodology employed. Positivists use observations and measurements (i.e. quantitative measures) to understand an objective reality through independent observation and establishment of validity and reliability (Guba, 1990; Guba & Lincoln, 1994). Positivist research relies on hypothesis testing whereby the researcher is separate from the respondent. On the other hand, constructivism is based on the notion that there are multiple realities. The researcher is placed in the context of the respondent and fully acknowledges potential biases and influences on the research itself (Seale, 1999). Meaning is created through the interaction between the researcher and the researched (Guba, 1990; Guba & Lincoln, 1994), typically using qualitative methods such as interviews and observations (Krauss, 2005; Olsen, 1995). Such stances have guided researchers in their choice of methodology and analysis. While other paradigms exist, such as post positivist and critical theory (Guba, 1990; Guba & Lincoln, 1994), it is most relevant to consider positivism and constructivism here as they are typically viewed as being in direct opposition with one another (e.g. Olsen, 1995). However, some authors have suggested that the choice of methodology should depend upon the best way in which to answer the research question according to informed choice and "principled decisions" (Seale, 1999, p.476), rather than the researcher's loyalty to a particular epistemological paradigm (Krauss, 2005).

More recently, researchers have begun to promote the use of mixed methods research in several fields (e.g. education, the social sciences), even suggesting that mixed methods research could represent a third research paradigm (Johnson & Onwuegbuzie, 2004). It is thought that the combining of quantitative and qualitative research methods can offer researchers the opportunity to fully answer research questions, drawing on the strengths and minimising the weaknesses of each type of

research method, providing both breadth and depth in research findings and interpretations (Coll & Chapman, 2000; Denzin & Lincoln, 1998; Moran-Ellis et al., 2006). The use of quantitative and qualitative research can be combined in triangulation to understand aspects of a phenomenon from different perspectives and to strengthen the confidence with which conclusions are made, particularly because each type of method has its own criteria by which to judge the work's quality (Guba & Lincoln, 1994; Moran-Ellis et al., 2006; Seale, 1999). As such, a mixed method approach to understanding commitment, adherence and dropout appeared most appropriate for the PhD studies.

Mixed methods research appears well-placed to address inter- and multidisciplinary research questions, particularly in under-researched areas. Indeed, "Today's research world is becoming increasingly interdisciplinary, complex and dynamic; therefore, many researchers need to complement one method with another" (Johnson & Onwuegbuzie, 2004, p.15). The actual combining of methods can occur at any stage of the research process but typically occurs during analysis and interpretation (Moran-Ellis et al., 2006). For this PhD research, data was collected in various ways, and the interpretation of such data in the General Discussion section could also be considered mixed.

A final methodological consideration is that much previous research in the area has been cross-sectional in nature. It appears that the best way to understand interactions between factors is through a combination of cross-sectional and longitudinal investigation. Several authors have recommended longitudinal enquiry that incorporates quantitative and qualitative research to better understand how inter- and multidisciplinary factors relate to adherence and dropout (Fraser-Thomas et al., 2008a; Lindner et al., 1991; Musch & Grodin, 2001; Weiss & Petlichkoff, 1989). Due to the limited dance research in this area, the case for a mixed methodology including a longitudinal component appears particularly strong in order to capture descriptive data from various sources and through a variety of means. This argument provided a basis for the structure and design of the PhD research, enabling a range of factors to be studied alongside one another.

For this PhD, mixed methods were employed in the form of: (a) baseline descriptive statistics to characterise the young talented dancers according to physiological, psychological and social factors, (b) qualitative data to allow the most salient factors to come to the fore from committed and dropout participants' own words, and (c)

prospective longitudinal analysis to understand whether descriptive characteristics could predict behavioural outcomes (i.e. adherence to or dropout from training). In order to learn about the students' experiences of dance and CAT training from their personal perspectives, an interview-based qualitative methodology was deemed most appropriate to generate rich data. This was particularly important given that no qualitative investigation of dropout in dance had previously been conducted, and as such little is known about dropout participant's experiences and opinions. The use of quantitative data permitted a description of the cohort and their characteristics, and most importantly a comparison of adhering and dropout participants according to physical and psychological factors and a predictive analysis to determine whether differences in such factors could influence their participation behaviour. Although employing this type of methodology meant that the qualitative data yielded would not be as rich as that generated from a purely qualitative approach (such as grounded theory or phenomenology), the interest for this PhD research was a combination of the subjective and the 'objective'. Ultimately it was felt that both breadth and depth would emerge by using a mixed methodology, yielding more comprehensive findings than would emerge from a purely qualitative or quantitative approach. A mixed methods approach therefore appeared to be not only the best way in which to answer the research questions regarding commitment, adherence and dropout among young talented dancers, but also a means of strengthening recommendations and implications that resulted from the research (Johnson & Onwuegbuzie, 2004; Moran-Ellis et al., 2006).

3.2 Aims, Objectives and Research Questions

The overarching aim of the PhD studies was to understand commitment, adherence and dropout from a dance talent scheme. Specific aims and research questions were identified for each chapter:

Chapter 4: The aim of this chapter was to review existing literature relating to aspects of dance talent. This was deemed important given that the participants in the PhD studies had been identified as talented, and given that aspects of physical competence needed to be established for later analyses. What factors comprise talent in dance, and are they most important in terms of identification or development?

Chapter 5: The aim of this chapter was to investigate potential differences in physical, psychological and social characteristics among young talented dancers in

relation to age groupings. Do young talented dancers of different ages differ in their characteristics?

Chapter 6: The aim of this chapter was to investigate the factors that facilitate young people's commitment to the CATs using a qualitative methodology. Why do some young people commit to high-level dance training, and what factors facilitate this?

Chapter 7: The aim of this chapter was to understand reasons for dropout from the CATs, using a mixed methods design. What are the reasons for drop out from a talent scheme?

Chapter 8: The aim of this chapter was to investigate adherence to the CATs quantitatively using a multidisciplinary set of variables. Do adhering young dancers differ from their dropout counterparts? Can adherence to a talent scheme be predicted by certain physical and/or psychological characteristics?

3.3 Context of Studies

The majority of the research took place at the eight CATs around England. All of the quantitative data was collected at each of the CATs as part of their scheduled timetables; similarly, all of the interviews with committed students were conducted at the relevant CAT within their schedules. Interviews took place in a quiet room without interruption. Interviews with dropout students were conducted at a variety of locations depending on what was most convenient for the participants (i.e. they were not pre-designated by the thesis author). On two occasions this was in the public spaces of the participants' former CAT, but otherwise interviews were conducted in the participants' local area, for example in a café, or on one occasion at the participant's home. There were advantages and disadvantages to each meeting location; for example, meeting in a café ensured that participants were in a safe public space, but it is possible that others in the environment listened to their responses. Where possible, interviews that took place in cafés were conducted in a quiet corner. Meeting a participant at home ensured safety as her family were in the same environment, but could have been perceived as an invasion of privacy. However, the participants were asked to decide where they would prefer to meet which may have safeguarded against such disadvantages. Furthermore, for younger students, parents were consulted regarding the meetings and, where possible, remained in the near vicinity for the duration of the interview. Both committed and dropout participants were informed that they could request the

presence of an impartial observer during the interviews, although all declined to do so.

3.4 Sample Recruitment and Descriptives

For the quantitative data, participants were recruited as part of the larger talent development project. Data collection was scheduled into the CATs' timetables twice per year, although students were not required to take part in the research and could only do so once they had provided informed consent. For the qualitative research, all participants volunteered to be part of the study. Committed participants were recruited via an informal talk delivered by the thesis author explaining the aims and objectives of the research, after which interested students signed up to take part. Given that the thesis author could not directly contact dropout students, as it would have been inappropriate to access their personal details without permission, recruitment for the dropout interviews was conducted via the CATs (as detailed in Chapter 7). Information packs, provided by the thesis author, were sent out by CAT managers to students who had recently withdrawn from the scheme. The packs contained an information sheet and consent form (see Appendix 4). Interested participants returned the signed consent form together with their details and were then contacted directly by the thesis author to arrange the interview. All participants were assured of their anonymity.

General characteristics of the sample taking part in the larger research project as a whole across the two years are displayed in Table 3.1 (below). Specific sample descriptives for each of the PhD studies can be found in Chapters 5-8.

Table 3.1. Descriptive statistics of the sample as a whole.

	Sample size	Mean age	Female (%)	Male (%)
Winter 2008	337	14.43 ± 2.10	75.4	24.6
Summer 2009	332	15.07 ± 1.91	63.0	37.0
Winter 2009	394	14.20 ± 1.92	73.4	26.6
Summer 2010	345	14.13 ± 2.15	63.3	36.7
Winter 2010	445	14.08 ± 1.98	73.3	26.7

3.5 Ethical Concerns

Ethical approval for the research was gained from the Trinity Laban Research Ethics Committee, and, because the participants were minors, the thesis author obtained a new Enhanced Criminal Records Bureau check prior to data collection taking place. Given that children and young people are potentially vulnerable, a risk assessment document was written by the thesis author outlining the importance of safe practice and fair and equal treatment of participants. Researchers outside of the core research team were required to read the document before assisting with data collection; the general principles of the document applied to all researchers involved (see Appendix 8).

The aims and objectives of the research, the procedures, the potential harm and benefits of taking part, and the outcomes of the research were explained to participants both verbally and in writing (Thomas & Nelson, 2001; see Appendices 1, 3 and 4 for Information Sheets). It was made clear to the young dancers that their participation was voluntary and that they could stop participating at any time. Issues of anonymity and confidentiality were also fully explained throughout the data collection. For example, participants were assured of their anonymity and that only the researchers would have access to the data, with the exception of circumstances in which the researchers deemed the participant might be at risk of an eating disorder. Informed consent was required of all participants to take part in any aspects of the research; for participants under the age of 16 years parental consent

was also required in order to safeguard the young person's interests (Kelly & Halford, 2007; Morrow & Richards, 1996). Access to the graduate destinations spreadsheet used in Chapter 7 was gained only once permission to use the data had been granted by the Policy Manager of the Music and Dance Scheme. Specific ethical considerations concerning each type of data collection method are outlined below.

Regarding the questionnaires, participants were asked to answer honestly, were assured that there were no right or wrong answers, that they could choose not to answer certain questions if they felt uncomfortable, and that they could ask the researchers questions at any time (Morrow, 2008). Researchers were on-hand throughout questionnaire completion, and encouragement was offered to students who repeatedly asked questions. Participants who wanted help with reading had questionnaire items read to them by a researcher in a corner of the studio space. Questionnaire data were gathered in studio environments where participants were asked to spread out in the space rather than sit together, and were asked to complete the questionnaires in silence rather than discuss their answers with one another. Some of the questionnaire items may have been difficult to understand for younger participants; where possible, questionnaires that had been validated for use with young people were used, such as the Sport Anxiety Scale-2 (Smith et al., 2006). Furthermore, all questionnaires were piloted prior to any data being collected, resulting in the addition of synonyms or short descriptions to some of the questionnaire items to enhance understanding. It is possible that participants gave socially desirable responses during questionnaire completion (and indeed during the interviews), but the risk of this happening was mitigated as far as possible by giving participants anonymous ID codes. It has been suggested that such a method can not only increase participation rates but can also enhance the accuracy or truthfulness of responses (Kelly & Halford, 2007). In addition, teachers were not typically in the studio space during questionnaire completion to further minimise socially desirable responding among students who may have been concerned about teachers reading their item responses (the exception to this was in the case of students who needed help with reading; teaching assistants were available to help if necessary). Finally, some questions around disordered eating were of a sensitive nature, but previous research indicates that completing questionnaires on the topic of eating does not put participants at further risk of developing harmful behaviour (Celio, Brysen, Killen & Taylor, 2003).

With regard to the physical tests, it was unlikely that physical harm would arise from participation but participants were informed of the potential risks of taking part in the Dance Aerobic Fitness Test (e.g. faintness, tiredness). It was stated that if at any point participants felt uncomfortable, ill or upset they should immediately inform a researcher and could withdraw from the test. Furthermore, participants were asked to disclose any injuries or illnesses that might be exacerbated by taking part in some of the tests. Throughout all physical tests the researchers actively looked for signs that participants were unwell. The researchers explained to participants that comparing their results with one another would not be beneficial as factors such as age (not just ability) could impact upon the results. Participants were instead asked to compare their own individual results over time which would give a more helpful and accurate indication of their progress. To aid with this, many of the CATs encouraged students to keep their results in a file so that they could monitor their progress over time. Participants did, nevertheless, in some cases compare their results with one another but it was hoped that the explanation given by the researchers would prevent such comparisons from affecting the participants' self-perceptions.

Specific ethical considerations were also relevant for the qualitative components of the research. Participants were assured that there were no right or wrong answers, that their responses would be treated confidentially, that they could be honest about their experiences, that they could ask questions throughout the interview if they were uncertain about a particular question or topic, and that they could choose not to answer certain questions if they felt uncomfortable (although at no point in any of the interviews did participants decline to answer a question). It is possible that the dropout participants felt that they should answer in a certain way because they were given an incentive to participate (clothing, music or cinema vouchers). Offering an incentive was crucial in recruiting dropout participants as they were difficult to reach, but it was clearly stated that the aim of the interview was to uncover the participants' experiences of the CATs and dance in general, and honesty was encouraged. Participants were also assured that their responses would not be given directly back to the CAT at which they had studied, and again that there were no right or wrong answers. While it is impossible to rule out that interview participants, committed or dropout, may have given socially desirable responses, it appeared from the interviews that participants were honest; for example, dropout students were not hesitant to explain particular aspects of the CAT programme that they had not enjoyed.

Another potential ethical concern in the qualitative components of the research is that the young people may have felt intimidated during the interviews by the presence of an older researcher; however, Punch (1994) suggests that relatively young researchers, as was the case with the thesis author, may be perceived as non-threatening to participants. Moreover, “children are not used to being asked their opinions and relate their experiences to unknown adults, and probably need to have some familiarity with the researcher” (Morrow & Richards, 1996, p.101). Positively, the majority of the participants had some familiarity with the thesis author from previous data collections as part of the larger research project, which likely engendered trust. Indeed, participants would have been unlikely to volunteer for participation if they had had an unsatisfactory experience with the researcher at a previous time. The thesis author also strove to put participants at ease during the interviews; for example by explaining her dance background as a means of demonstrating her understanding of the dance context, terminology and experiences. By assuring participants that the researcher was familiar with the dance training environment, trust may have been created resulting in greater depth and honesty of responses.

3.6 Rationale for Choice of Variables

As the breadth of the literature review has shown, there are a wealth of potential variables that could be investigated in relation to commitment, adherence and dropout, including some which to date have received little research attention in dance. Given the large range of variables that have been investigated in previous studies, it was not possible to investigate each factor outlined in the review; however, the studies reviewed provide evidence of the importance of investigating several factors due to the complexity of commitment, adherence and dropout. This is especially important given that artistic, psychological and physical factors may influence participation decisions and behaviour. As such, multidisciplinary factors were investigated in Chapters 5 and 8 in order to provide a broad descriptive picture of talented young dancers and their participation behaviour. Variables were chosen based on previous research in commitment, adherence and dropout, as well as talent development research and the identified gaps in the literature. It is important to note that several variables had already been selected for the larger talent development project which limited to an extent the variables that could be analysed for the PhD studies. A rationale for these variables is below; further rationale is also provided within each specific chapter.

3.6.1 Psychological variables

Given the anecdotal accounts suggesting that passion is necessary in order to achieve a successful dance career (e.g. Bussell, 1998), and indications from research that passion may be essential in committing to a talent activity (e.g. Mageau et al., 2009) it is surprising that to date the passion model (Vallerand et al., 2003) has not been employed specifically in relation to adherence and dropout. The PhD studies began to address this gap in the literature. Furthermore, the types of passion within this model have been related to performance achievement in previous studies (Bonneville-Roussy et al., 2010; Vallerand et al., 2007, 2008), suggesting that passion may be important in relation to both commitment *and* achievement (e.g. physical competence), making the study of passion particularly relevant in a talent development setting.

In recognition of the role social agents can play, and due to the consistent sport findings regarding motivational climates and participation behaviour (Boiché & Sarrazin, 2009; Le Bars et al., 2009; Ntoumanis et al., 2007; Pelletier et al., 2001; Sarrazin et al., 2002; Vazou et al., 2006), participants completed measures relating to the extent to which they perceived their motivational climate to be task- and ego-involving. In this way, the young dancers' perceptions of the CAT talent development environment were gathered.

A third psychological variable not typically investigated in adherence and dropout research was disordered eating characteristics. This was included within the PhD studies as a result of Hamilton et al.'s (1997) finding that dropout dancers had more disordered eating attitudes than adhering dancers. There is a relatively high prevalence of disordered eating in dance (see Robson, 2002, for a review), the consequences of which can include fatigue, sleep problems and injury (Nordin-Bates, Walker & Redding, 2011; Robson, 2002). Given that such consequences may affect a dancer's ability to participate in regular dance activity, disordered eating attitudes could contribute to dropout from dance. However, the only study to date that investigated the relationship between disordered eating and dropout was in ballet (Hamilton et al., 1997), which typically places greater importance on physique-related factors than styles such as contemporary dance. Further study of disordered eating attitudes among CAT dancers will shed light on whether disordered eating attitudes affect the participation behaviour of young people engaged in a range of dance styles. Furthermore, disordered eating attitudes emerged as an area of interest in the larger talent development research project,

with approximately 7% of the whole cohort being symptomatic of an eating disorder (Redding et al., 2011). Based on this foundation, it appeared that disordered eating attitudes could form a valuable part of analyses exploring adherence and dropout in the PhD.

Self-esteem (global perceptions of the self; Rosenberg, 1965) and trait anxiety also appeared relevant to the PhD research. Currently there is disagreement in the literature regarding dancers' self-esteem and self-confidence; some authors have argued that dancers have low levels of both of these constructs (Bakker, 1991; Buckroyd, 2000; Laws, 2005; Neumärker, Bettle, Neumärker & Bettle, 2000), while others suggest the opposite (Nordin-Bates et al., 2011; Quested & Duda, 2009). Therefore, it was of interest to examine young dancers' self-esteem and the extent to which it relates to adherence and dropout. Differences have been found in self-esteem between committed and dropout artists (Dudek et al., 1991), and Pickard and Bailey (2009) suggested that self-esteem may be necessary for dancers when faced with difficult training. Moreover, given the associations between perceived competence and participation behaviour reported in previous research (e.g. Boiché, & Sarrazin, 2009; Burton & Martens, 1986; Ommundsen & Vaglum, 1997), the influence of global self-perceptions on adherence and dropout was of interest. In addition, a sport study found that dropouts reported greater anxiety than their continuing counterparts (Bussman, 2004). Dancers are said to experience high levels of performance anxiety (e.g. Walker & Nordin-Bates, 2010) yet little is known about anxiety levels in everyday studio environments (i.e. trait anxiety). Trait anxiety is more relevant to young dancers in training than measures of performance anxiety as student dancers perform infrequently compared to professionals, instead spending more time in the studio honing their skills. Highly trait anxious ballet dancers have been shown to employ more maladaptive coping strategies than dancers with low anxiety intensity (Barrell & Terry, 2003). As such, highly trait anxious dancers may find it difficult to cope with anxiety in the studio and over time be discouraged by its negative effects such as poor concentration and worry (Smith, Smoll, Cumming & Grossbard, 2006). Further rationale for investigating self-esteem and anxiety comes from recommendations that these variables be tracked over time in relation to adherence and dropout (Musch & Grondin, 2001).

3.6.2 Physical variables

The majority of the physical variables pertained to characteristics associated with dance performance. Because the participants were talented youth whose physical

characteristics were involved in their development as dancers, and due to some previous findings regarding the role of actual competence in adherence and dropout (Figueiredo et al., 2009; Hamilton et al., 1997; Ommundsen & Vaglum, 1997), measures relating to physical competence were collected. For the purposes of this PhD research, physical competence was defined as components of physical fitness that relate to dance performance. Physical competence may be important because possessing superior values for fitness, strength and flexibility could lead to improved performance and subsequently advancement in the course and/or enhanced perceived competence and confidence, potentially increasing the likelihood of the student continuing with his or her training. It is important to note that dance talent in and of itself was not assessed: dance talent is notoriously difficult to define and measure, partly because notions of talent change according to cultural and aesthetic preferences (Schmidt, Jarvis & Slayford, 2005), and no current valid methods exist for assessing talent.

Physical competence variables were chosen that pertain to aspects of dance performance: vertical jump height because of the use of jumps and elevation in the technique and choreography of several dance styles (Wyon, Allen, Angioi, Nevill & Twitchett, 2006); upper body handgrip strength due to the use of floor-work, throwing and catching particularly prevalent in contemporary dance (Koutedakis, Stavropoulos-Kalinoglou & Metsios, 2005; Phillips, 1999); hamstring flexibility and external hip rotation because of the importance placed on flexibility and large ranges of motion in many dance styles (Deighan, 2005); and aerobic fitness given the role that endurance can play in sustaining performance levels (e.g. Koutedakis, Pacy, Sharp & Dick, 1996; Wyon & Redding, 2005). Interestingly, preliminary evidence using the Aesthetic Competence Tool (a tool created to assess skill-based aspects of dance; Angioi, Metsios, Twitchett, Koutedakis & Wyon, 2009) suggested that components of physical fitness – vertical jump height and upper body muscular strength – were related to artistic competency in pre-professional and professional contemporary dancers (Angioi et al., 2009), indicating that physical competence was indeed relevant for the PhD studies.

Due to previous findings in dance regarding maturation – specifically, that early maturing ballet dancers were more likely to drop out than their late maturing counterparts (Hamilton et al., 1997) – female participants were asked to indicate the age at which menarche had commenced, if at all. Unfortunately no equivalent self-report measure of maturation exists for males, who made up approximately 25% of

the study population, so the maturity measure was employed with female dancers only. Finally, as a result of previous findings in both dance (Hamilton et al., 1997) and sport (Baxter-Jones, Maffulli & Helms, 1993; Bennie & O'Connor, 2006; Butcher et al., 2002; Klint & Weiss, 1986; Koukouris, 1991; Maffulli et al., 2005) that have associated injury with dropout, participants were asked to indicate whether they were currently injured. This data was used prospectively to examine whether a difference in injury status emerged between adhering students and those who later dropped out.

In addition to the multidisciplinary quantitative measures, qualitative research was conducted in the form of interviews with committed and dropout dancers using semi-structured interview guides. This was deemed important because interviews can not only 'flesh out' quantitative findings, but can also provide a depth and richness of information that cannot be yielded from questionnaires (Guba & Lincoln, 1994; Moran-Ellis et al., 2006). In this way, a broader range of factors than those listed above could potentially emerge inductively. Further specific detail on methodology and rationale can be found in the studies themselves (Chapters 4-8).

3.7 Preparing the Data File

Details of specific analyses can be found in Chapters 5-8, but some general background to the preparation of the data file provided here.

3.7.1 Data cleaning and screening

All data was cleaned and screened before any analyses were conducted, either for the PhD studies or for studies within the larger research project. The initial step was to check for errors in the data file, which was done firstly by examining the minimum and maximum values and the number of valid and missing cases for each variable. Frequencies and mean scores were also examined for categorical and continuous variables respectively. Where errors were detected, the relevant value or response was corrected by looking at the original paper copy of the data. The second step in checking for errors was to conduct random 'spot checking'. At each time point, a random sample of 10 paper copy questionnaires, surveys and physical data sheets from each CAT were checked against the inputted values. Although rare, when several errors were found in the same type of data, the entire set was re-checked and corrected where necessary.

Another important part of data cleaning and screening was normality checking of continuous variables. The mean and 5% trimmed mean for each variable were examined to ensure that the two values were similar. Skewness and kurtosis values were examined as a means of assessing the distribution of scores, although according to Tabachnick and Fidell (2007), skewness and kurtosis should not have a large influence on analyses when the sample size is substantial (over 200 cases). Histograms were examined visually for the shape of distribution. The physiological variables were normally distributed although some of the demographic and psychological variables were not. This was typically due to the construct being measured; for example, scores on the Eating Attitudes Test-26 (Garner, Olmsted, Bohr & Garfinkel, 1982) were positively skewed because most of the participants reported healthy eating attitudes. This is normal for tests of a clinical nature. At times it was appropriate to transform these variables for further analyses; details of this can be found in Chapter 8. Boxplots were also checked for extreme scores; where outliers appeared to influence the mean (assessed via the difference between the mean and the 5% trimmed mean) they were removed from the data file. Finally, internal reliabilities of questionnaires and their subscales were examined using Cronbach's alphas; the details of these can be found in Chapters 5 and 8.

3.7.2 Missing data

In Chapter 5, missing data was handled by using the exclude cases pairwise option in SPSS. Pairwise deletion is recommended for large sample sizes and entails the case being excluded only if required data is missing for specific analyses, meaning that the case may still be included in other analyses where the necessary information exists. This method is recommended rather than listwise deletion as it does not affect the sample size as severely and uses all available data (Pallant, 2007; Tabachnick & Fidell, 2007).

In Chapter 8, a different method was used in order to meet sample size requirements, which was particularly important for the dropout participants of whom there were fewer than adhering participants. Specifically, an imputation method was used for questionnaires where one item was missing on a short scale (10 items or less), or two items on a longer scale (more than 10 items). Within each subscale, completed item means were substituted for missing responses; when additional items were missing no values were imputed and the case was discarded for that particular variable. Although mean substitution can result in reduced variance of the

variable, the advantage of this method is that the missing value is not substituted using guesswork, and that it results in a conservative rather than liberal estimate (Tabachnick & Fidell, 2007).

More sophisticated techniques exist for handling missing data, such as maximum likelihood and multiple imputation, yet these are not without problems. Specifically, maximum likelihood requires specialised software that was not available to the thesis author, while multiple imputation produces different results each time it is used, which may result in uncertainty or confusion (Allison, 2009; Donders et al., 2006). Furthermore, according to Tabachnick and Fidell (2007, p.72), multiple imputation "does not provide the full richness of output that is typical with other methods". As such, the methods for handling missing data described above were deemed most suitable for the PhD studies.

3.7.3 Verifying assumptions

Prior to conducting statistical analyses, assumptions were checked for each test according to Pallant (2007) and Tabachnick and Fidell (2007). For the MANOVA and MANCOVA analyses in Chapter 5 this included sample size: according to Pallant (2007) there should be more cases in each cell than dependent variables. Multivariate normality was assessed by means of Mahalanobis distances and as a result one outlier was removed for the analysis of physical variables while three outliers were removed for analysis of the psychological variables. Homogeneity of variance-covariance matrices was assured by checking that the *p* value for Box's M was greater than .001. In the physical MANCOVA, one violation on Levene's assumption in the arm strength variable occurred among the female group, so the more robust Pillai's trace was used in interpretation of the multivariate tests (Tabachnick & Fidell, 2007).

Assumptions for the ANOVA used in Chapter 7 and independent and paired samples t-tests in Chapter 8 included normal distribution of variables (detailed above), and homogeneity of variance (the *p* value for the Levene tests was greater than .05). Although Type 1 and Type 2 errors are possible in statistical tests that compare groups, the large sample size and appropriate alpha levels (.05 or lower when using Bonferroni adjustment) should have helped to minimise such errors (Pallant, 2007). A chi-square test for independence was also used in Chapter 7; the main assumption being that each participant contributed data to only one cell, which

was assured as each dropout reason was assessed in relation to the sex of the participants.

Finally, assumptions for the logistic regression employed in Chapter 8 include appropriate sample size which was assured using the formula by Peduzzi and colleagues (1996): N = 10k/p where k is the number of independent variables and p is the smallest proportion of negative or positive cases in the population. Correlations were run to ensure that the dependent variables were not strongly correlated (i.e. Pearson value being .8 or higher; Tabachnick & Fidell, 2007). As a result of the active and passive hamstring variables being highly correlated, $r = .85$, $p < .01$, a merged hamstring flexibility variable was created to avoid multicollinearity. Correlation tables for Chapter 8 using the merged hamstring flexibility variable can be found in Appendix 7. Outliers were also removed, which was performed during the data cleaning and screening as detailed above.

3.8 Validity, Reliability and Bias

In terms of validity, existing validated field tests and questionnaires were used where possible. For example, all questionnaires used had published validity and reliability information elsewhere (see Chapters 5 and 8); furthermore, internal reliabilities were computed for all questionnaires and were found to be satisfactory (specific details are reported in Chapters 5 and 8). With regards to the qualitative data, interview guides were initially piloted to ensure that the questions and wording were appropriate. Trustworthiness guidelines were followed in the collection and analysis of qualitative data, as detailed in Chapters 6 and 7. Briefly this included peer de-briefing, assurance of participants' anonymity, the use of probe questions, clear description of methods and analysis in the write-up, and the use of quotes in the text (e.g. Guba & Lincoln, 1994; Patton, 2002; Sparkes, 1998).

The larger research project was partially funded by the Department for Children, Schools and Families (DCSF, now the Department of Education), a government department that funds the CATs, which may have influenced or biased the study design or findings (Punch, 1994). However, this is unlikely to have occurred. Neither the project as a whole nor the PhD set out to 'prove' that the CATs were a successful talent development programme or that they had a 'good' retention rate. For example, adhering and dropout students were asked to describe their experiences on the CATs, which yielded both positive and negative responses. At no point did the funding bodies (the DCSF and The Leverhulme Trust) stipulate how the research should be conducted, that changes should be made to protocols in any

way, or that findings should be interpreted or communicated in a particular manner. The only interaction between funders and researchers was via annual reports, and by the provision of funds which were not contingent on particular outputs.

This PhD was part of a larger research project, which entailed advantages and disadvantages. The main disadvantage was that the variables had already been chosen prior to the commencement of the PhD, meaning that the variables investigated were not necessarily theoretically sound in relation to commitment, adherence and dropout because the PhD research questions and studies were designed afterwards. This also meant that adding or changing variables was not possible because the data gathered across the two years of the project had to be consistent. Despite this, the variables employed in the thesis studies were still highly relevant to the subject area (rationales are provided in section 3.1); furthermore, the exploratory approach adopted meant that the variables under investigation did not have to conform to particular theoretical approaches. Triangulating the qualitative data with the quantitative data also meant that a broader range of factors could emerge and be considered than those chosen for the larger research project alone. Importantly, there were a greater number of advantages to being part of a larger research project than disadvantages. In particular, the sample size was much larger than would have been possible to recruit by one independent researcher; also, there was a wealth of data available because a team of researchers had been involved with its collection (including the thesis author). Therefore the PhD research was strengthened by being part of the larger research project.

3.9 Summary

Previous research has revealed a wealth of findings in the area of commitment, adherence and dropout, but more research is needed in the challenging and rewarding domain of dance. The difficulties of achieving a successful performing career, and the stresses of such a career even if it is achieved, raise questions as to why some young people commit to a domain in which the eventual outcome is so uncertain. On the other hand, why do some young people withdraw from an activity that can be intrinsically highly enjoyable? Anecdotal accounts give insight into some of the answers to these questions, yet to date research has not attempted to comprehensively address why some young dancers commit to training while others withdraw. Therefore, the aim of this PhD research was to investigate commitment, adherence and dropout among young talented dancers from quantitative and qualitative perspectives in order to move existing research forward and produce

practically applicable findings. This aim was achieved by conducting five scientific studies which took into account factors relating to talent development as well as commitment, adherence and dropout. Findings may be used to help educators enhance retention rates in talent settings and potentially beyond. For example, the results may reveal factors associated with commitment and adherence that educators can somehow enhance or improve as part of their training programmes. In this way, young dancers can be offered optimal opportunities to develop their talents in a dance programme designed to enhance not only learning and skill development but also enjoyment, well-being and commitment.

Chapter 4

Talent Identification and Development in Dance

This manuscript is published with the following reference:

Walker, I.J., Nordin-Bates, S.M., & Redding, E. (2010).

Talent identification and development in dance: A review of the literature.

Research in Dance Education, 11(3), 167-191.

4.1 Abstract

Talent identification and development processes are important components of many dance programmes, yet talent is notoriously difficult to define and its identification may rely on intuitive judgements. Taking a systematic approach to the study of dance talent could enable researchers and educators to better determine what talent actually *is*, the multi-faceted components that exist within talent and subsequently how best it can be optimised. The aim of this paper is to review existing literature relating to aspects of dance talent. While not attempting to define talent nor provide a guide for identification, the review reports on existing relevant literature that describes the characteristics associated with talent in the hope that it will be valuable to educators and researchers. Further research into the characteristics of talented dancers may enable teachers to prepare their students optimally for the exciting opportunities that dance can offer.

4.2 Introduction

The identification and development of talent is a burgeoning field of enquiry in sport, academia and music. However, talent remains notoriously difficult to define. While it is generally accepted that talent is comprised of both innate / genetic components and learned / practiced skills, there is little agreement as to which factors dominate over others (Lidor, Côté & Hackfort, 2009; Schmidt, Jarvis & Slayford, 2005). There has been a shift in the definition of talent in children and young people as a result of UK government initiatives. Those who "*have one or more abilities developed to a level significantly ahead of their year group (or with the potential to develop those abilities)*" are now considered 'gifted and talented' (Department for Children, Schools, and Families, DCSF, 2008). This means that dancers are to be evaluated on future potential as opposed to existing skills alone, thus allowing for the identification of untrained but potentially gifted students (Knott, 2005). The difference between "raw talent" (potential) and acquired skill is difficult to recognise, but imperative in ensuring that schools do not select only those students who have been fortunate enough to receive good quality early training.

Talent identification refers to recognising an individual's abilities or potential within a specific domain; talent development is the provision of quality learning and practice conditions that facilitate the fulfilment of potential (Williams & Reilly, 2000). The Department for Education's general assessment criteria for Dance in the Music and Dance Scheme cover both performance and creative skill. Furthering this, Sanders (2006) argues that talent identification in dance can be based on one of three areas: performing, creating, and appreciating. Talent is not required in all areas and being talented in one element does not guarantee talent in another. Sanders (2006) explains that a sustained interest in dance, enthusiasm and motivation may relate to talent.

While talent identification and development tend to be conducted separately, many argue that they should be considered together, or that development be emphasised before identification, to allow for the effects of maturation (such as changes in flexibility and coordination) and to avoid discrimination against those with potential but no prior training (Abbott & Collins, 2004; Durand-Bush & Salmela, 2001; Martindale, Collins & Daubney, 2005). Talent development requires an interaction between abilities, individual and social factors in order to fulfil potential (Howe, Davidson & Sloboda, 1998; Williams & Reilly, 2000). Therefore, factors beyond

physical and artistic skill in dance should be considered, such as family influence, teacher expertise, and early specialisation.

Overall, considerations of talent in dance should incorporate psychological and social factors alongside physical and artistic aspects. This is particularly important as talent usually develops over time and at varying rates for different individuals. This review will examine the existing evidence regarding talent identification and development in dance, comparing it where appropriate to research in other related domains such as sport and music. The first part of the review will cover factors associated primarily with the individual: physical and psychological factors. The second part will consider interpersonal factors: those that interact with the individual including deliberate practice and social influences. Existing talent models will also be examined. It is important to note that throughout the review, the length of each section is primarily related to the quantity of existing evidence, not the relative importance of each potential talent criterion. Furthermore, the review is an examination of existing knowledge, rather than a list of recommendations for talent identification and development criteria. Further dance-specific research in the area of talent is certainly warranted.

4.3 Part 1: Individual Factors

The first part of the review will begin with those aspects that are most commonly associated with dance: namely, physical factors.

Physical Factors

Dance is an art form that involves the expression and communication of artistic intention through movements of the body. A person's physicality and technical ability are vital considerations in the study of dance talent. Research in sport has found that certain anthropometric and physiologic factors differentiate between players of different abilities in football (Cometti et al., 2001; Reilly et al., 2000), hockey (Elferink-Gemser et al., 2004) and rugby (Pienaar, Spamer & Steyn, 1998), suggesting it would be of value to explore such considerations in dance empirically. For this review, the physical factors have been divided into stable (heritable) characteristics, such as body type, and unstable characteristics that may be altered through training, such as cardiovascular fitness.

Stable factors: heritable factors relevant to talent identification

Genetic factors have been shown to contribute significantly to health and fitness parameters (e.g. Bouchard et al., 1999). In dance, the impact of genetic factors on body type and hypermobility appear most relevant to talent identification.

Anthropometry

Dance, or at least ballet, is associated with physical requirements that tend to favour lean, long-limbed bodies (Haight, 1998; Singer & Janelle, 1999), and dancers are consistently found to be leaner than age-matched controls (Kadel et al., 2005; Padfield et al., 1993; White et al., 2004). A recent review reported that professional dancers tend to be leaner than pre-professional dancers, and that soloists maintain less body fat than *corps de ballet* members (Wilmerding et al., 2005). This indicates that certain body types are selected for certain roles, or that soloists perform movements of greater intensity than *corps de ballet* members.

Selection criteria for young dancers at audition for selective schools, especially ballet schools, often include a bias towards late maturers with a pre-pubescent physique (Pickard, 2007a). Hamilton et al. (1997) found that late maturing dancers were more likely to be selected for ballet companies. However, consideration must be given to the fact that physical maturation can impact upon talent and its development (Abbott & Collins, 2004; Durand-Bush & Salmela, 2001). If talent identification procedures are put in place too early (before maturation occurs) or favour only pre-pubescent body types, some talented individuals may be excluded from the start, while others who mature later may find that they no longer “fit” the restrictive criteria of the domain in which they have spent years developing their talent. Positively, styles such as contemporary and hip hop typically have less restrictive attitudes towards body type (Hamilton, 1998).

Hypermobility

A second aesthetic preference and selection criterion in dance is hypermobility, an inherited characteristic related to the connective tissues where the body can achieve extreme ranges of motion (Desfor, 2003; McCormack et al., 2004). Research has shown that significantly more ballet dancers are hypermobile than non-dancers (Grahame & Jenkins, 1972; Klemp & Learmonth, 1984; McCormack et al., 2004). While generalised joint hypermobility may be an asset to career progression in dance (Grahame & Jenkins, 1972), Joint Hypermobility Syndrome (JHS) is a condition whereby hypermobile individuals present additional symptoms

such as arthralgia (Desfor, 2003). One study found that the prevalence of JHS in ballet dancers declined from both students to professional and from *corps de ballet* members to principal dancers (McCormack et al., 2004). It was suggested that JHS may cause dancers to drop out due to career-jeopardising injuries or chronic pain when dancing. Thus, assessing extreme ranges of motion as part of talent identification has shortcomings. Identifying individuals with JHS early on may assist teachers and physiotherapists in designing individual programmes for such dancers in order to optimise their training and reduce the risk of injuries.

Overall, of the heritable factors, a lean, hypermobile physique appears to be an important selection factor in dance. However, the evidence is largely limited to classical ballet indicating that research into other dance forms is needed.

Unstable factors: trainable factors relevant to talent identification and development

Many trainable physical characteristics are associated with elite performance in dance. Fundamental movement skills such as balance are important; research suggests that advanced dancers can perform balance tasks significantly better than beginner students indicating that balance performance can classify dancers in terms of ability (Shick, Stoner & Jette, 1983). Proprioception, a system which provides information regarding the body's position and orientation in space (Carter, 1998), is intuitively important but research to date has not reached a consensus on the presence nor value of this 'sixth sense' in dance. Regarding perceptual skills, elite dancers encode movements and develop memory for choreographic structure more efficiently than novices or non-dancers (Smyth & Pendleton, 1994; Starkes et al., 1990; Starkes et al., 1987). However, despite the importance of such skill-related factors, little empirical research in this area exists that could inform talent identification and development programmes. Instead, more research is available regarding components of physical fitness such as aerobic fitness, flexibility and muscular strength and their relative contribution to dance training and education. Therefore, this section will examine the evidence regarding these trainable factors and how they might be important in the identification and development of dance talent.

Aerobic and anaerobic fitness

Dance is generally described as high-intensity intermittent exercise (Cohen, Segal & McArdle, 1982; Rimmer, Jay & Ploughman, 1994; Wyon et al., 2003). Due to the

intermittent nature of dance, traditional training techniques do not effectively develop cardiovascular endurance in ballet and contemporary dancers as the cardiovascular demands of performance are greater than those of regular class (Angioi et al., 2009; Wyon et al., 2004; Wyon & Redding, 2005). However, fitter dancers may be at an advantage when compared to dancers with lower aerobic capacities as they will be able to perform for longer at submaximal levels, cope with long rehearsals, be better protected from injury and recover more rapidly from intense practice (Koutedakis et al., 1996; Twitchett et al., 2010; Wyon & Redding, 2005).

Dancers of varying styles and levels have greater aerobic and anaerobic capacities than sedentary individuals, but lower capacities than trained endurance athletes (Baldari & Guidetti, 2001; Mittleman, Keegan & Collins, 1992; Padfield et al., 1993; Rimmer, Jay & Plowman, 1994; White et al., 2004). In terms of how fit dancers actually are, discrepant findings exist: Chmelar et al. (1988) reported that professional ballet dancers were less aerobically and anaerobically fit than student ballet and modern dancers; Schantz and Åstrand (1984) found that *corps de ballet* dancers had lower VO_2max values (maximal oxygen uptake) than soloists; recent research reported that *corps de ballet* and principal dancers had significantly greater aerobic power than soloists (Wyon et al., 2007). More research is needed to clarify these findings, although general values will be difficult to establish, given the variety and ever-changing natures of choreographic demands, companies, and dance styles.

Training and performance can impact upon aerobic capacities as measured via the maximal oxygen uptake test (VO_2max; Dahlström et al., 1996; Kirkendall & Calabrese, 1983; Wyon & Redding, 2005), indicating that fitness is more a product of talent development than a consideration for identification. However, dance training-induced increases in VO_2max are only moderate and supplementary training may be required to optimise a dancer's potential.

Flexibility

Flexibility is an important physical characteristic in dance and one which most distinguishes dancers from non-dancers. Aesthetic value is placed upon dancers with large joint ranges of motion (Deighan, 2005). Dancers from several styles are more flexible than non-dancers particularly in the lower body and feet (Hamilton et al., 1992; Kadel et al., 2005; Khan et al., 1997; Micheli et al., 1999; Padfield et al.,

1993; Steinberg et al., 2006). Professional dancers and advanced students have demonstrated greater flexibility than control or beginner counterparts (Crookshanks, 2007; Kadel et al., 2005; Micheli, et al., 1999; Steinberg et al., 2006). It appears that flexibility can be both a selected and trainable characteristic, although genetics contribute towards the extent to which flexibility can improve (Deighan, 2005).

One important aspect of flexibility in classical ballet is external hip rotation (turnout). Significant differences in external hip rotation have been observed between young ballet dancers and controls (Kadel et al., 2005), but not between young novice ballet dancers and controls (Bennell et al., 1999). There is some evidence that external hip rotation can improve over a 12-month period in both novice dancers aged 8-11 years (Bennell et al., 2001) and those in professional training aged 16-18 years (Khan et al., 2000). However, increases in the older students were small, suggesting that while strength training and adaptive responses can improve external hip rotation to a certain extent (Bennell et al., 2001; Gupta et al., 2004), large increases are unlikely after the age of 11 years due to the anatomy of the hip joint (Clippinger, 2005).

In ballet, external hip rotation is an important talent indicator, and one which is difficult to improve greatly through training. However, it would be inappropriate to draw conclusions regarding external hip rotation for other dance styles, given the limited research in this area to date. Flexibility in other areas (e.g. the hamstrings) may be enhanced through training (Steinberg et al., 2006) and as such may be more relevant to talent development than identification.

Strength

Dance consists of a combination of static, isometric and dynamic movements at varying intensities (Cohen et al., 1982). Strength training can enhance performance, as greater muscular strength makes tasks such as jumping and lifting easier to perform (Koutedakis, Stavropoulos-Kalinoglou & Metsios, 2005; Phillips, 1999). Contemporary dancers tend to be stronger than ballet dancers (Koutedakis & Jamurtas, 2004) while ballet dancers have been found to be stronger than ballet students (Chmelar et al., 1988). This suggests that muscular strength may be an indicator of dance talent, but that different styles may require different levels of strength. Although some research has shown that dancers have lower levels of muscular strength than athletes (Kirkendall & Calabrese, 1983; Koutedakis & Sharp, 1999), dance training can result in hip strength gains (Bennell et al., 2001).

Furthermore, jump height values have been related to calf and thigh circumference in professional ballet dancers. Although jump height is an indirect measure of strength, it can be hypothesised that dance-specific skills are related to a particular musculature (Wyon et al., 2006, 2007). In terms of talent, strength may be considered a criterion for identification, but most importantly as a factor that can be developed through training.

Summary: physical factors

Dance talent identification appears to rely, in part, on aesthetic aspects such as body type and hypermobility. Other indicators include cardiorespiratory fitness, flexibility and muscular strength, although the utility of assessing these factors in one-off audition situations is questionable given that measures taken pre- or during adolescence cannot accurately capture characteristics affected by maturation (Abbott & Collins, 2004). Abbott and Collins (2002) provide evidence for this argument by finding low test-retest correlations between ten fitness and anthropometry measures in young people taken over a one-year period. Furthermore, fitness, flexibility and strength can be enhanced through training and as such are perhaps most relevant to consider in relation to talent development.

As yet, the relative contribution of stable and unstable / trainable factors to talent development in dance is unclear. Success in dance is unlikely to be attributable to one factor alone. Overall, the physical attributes outlined above appear important in the consideration of dance talent however they must be considered alongside several other factors. The next section explores the role of some of the many artistic factors associated with elite performance.

Expressive Ability

Expressive ability is an important talent criterion in the arts (Critien & Ollis, 2006; Haroutounian, 2000; Kogan, 2002; Sanders, 2006; Sloboda, 2000), to the extent that it is generally felt that technical expertise without expressive ability is insufficient to reach elite performance levels (Haroutounian, 2000; Noice & Noice, 2002; Sloboda, 2000). Expressive ability employs both physical and psychological capacities: movement dynamics and effort are physically executed following the dancer's or choreographer's intention.

In music, Sloboda (2000) notes that expression cannot be communicated to an audience without an amount of technical expertise because expressive

interpretation relies on the musician's ability to manipulate aspects such as pitch, timbre and rhythm. Dancers can employ similar strategies from their learned technical skills, for example by creating variations in suspension and falling, gesture and phrasing (Camurri et al., 2004; Schnitt & Schnitt, 1987). Expressive ability can also involve calling upon past life experiences to communicate emotional responses, and using imagery to elicit movement qualities (Critien & Ollis, 2006; Hanrahan & Vergeer, 2000; Noice & Noice, 2002; Nordin & Cumming, 2005; Schnitt & Schnitt, 1987).

Overall, it appears that both technical skill and life experience are essential components of expressive ability, indicating that expressive ability may only be suitable for talent identification in older students or experienced dancers. However, it can clearly be part of talent development for all dancers. As with the physical factors, expressive ability is only one component of dance talent. The next section examines the role of psychological factors in more depth.

Psychological Factors

In sport, the physiques of high-achieving elite athletes can show little variation in the top tiers of competitions, and subsequently psychological characteristics may better distinguish between athletes at this level (Wolstencroft, 2002). This section considers the importance of psychological attributes in the identification and development of talent in dance. As with the physical factors, the characteristics reviewed here are not an exhaustive list but were chosen based on their relevance to dance talent and the availability of existing literature. Stable factors, or traits, will be considered first, before exploring more adaptable characteristics.

Stable factors: psychological traits

Psychological traits are dispositional aspects of a personality which are assumed to remain stable under various circumstances, a classic example being introversion and extraversion (Lloyd et al., 1999). Studies attempting to characterise elite athletes according to traits yield little consistent data as successful athletes in the same sport can have very different personalities (Abbott & Collins, 2004). Furthermore, the approach has been criticised as individuals do not behave in the same way in varying circumstances; rather, a combination of personality traits and states form one's character and thus research with athletes using personality trait assessments is methodologically limited (Lloyd et al., 1999; Martens, 1975).

Therefore, assessment of personality traits in talent identification is not recommended.

Despite this, one personality trait that seems worthy of discussion is perfectionism. Anecdotally it has been suggested that elite dancers are perfectionists (Hamilton, 1998) and aspects of perfectionism have been associated with elite athletes and dance students in empirical studies (e.g. Gould, Diffenbach & Moffet, 2002; Nordin-Bates, Cumming, Aways & Sharp,2011). Maladaptive perfectionism is associated with unrealistic personal standards and criticism of mistakes, whereas adaptive perfectionism is associated with high standards and acceptance of mistakes or limitations (Stoeber & Otto, 2006). However, Flett and Hewitt (2006) argue that even the adaptive form of perfectionism may originate in fear of failure. Supporting this, Nordin-Bates al. (2012) found that even moderate levels of perfectionism were associated with anxiety, lower self-confidence and debilitative imagery among dancers. Therefore, setting excessively high standards and being overly self-critical may undermine an individual's attempts to reach elite status. It may also be that exhibiting only some perfectionistic strivings (e.g. high goals and motivation) are not enough to warrant the label "perfectionist". As such, goals and motivation are further explored below. Perfectionism is clearly a complex construct that requires further research before conclusions may be drawn.

Unstable factors: psychological characteristics relevant to talent identification and development

Rather than investigating traits, many researchers focus on psychological characteristics which can be trained and adapted according to various situations. Such research has proved fruitful in highlighting differences between elite and non-elite athletes (Morris, 2000). The identification and nurture of particular characteristics and skills may be of much relevance for talent development.

Motivation

Motivation has been cited as an important factor in committing to dance or sport and is thus essential in the development of talent (Abbott & Collins, 2004; Elferink-Gemser et al., 2004; Mahoney, Gabriel & Perkins, 1987; Nieuwenhuis, Spamer & Van Rossum, 2002; Pickard & Bailey, 2009; Sanders, 2006). Nicholls (1984, 1989) posited that individuals in achievement settings are motivated by a desire to demonstrate competence, which can be self- or other-referenced. Task-involved goals involve self-referenced judgements, valuing mastery and achievement; ego-

involved goals involve other-referenced criteria and value superior performance, or equal performance with less effort, compared to others. Individuals may have high or low levels of both types of goals. Task goals are associated with more positive outcomes than ego goals, such as greater enjoyment, satisfaction and intrinsic motivation (Duda et al., 1995; Ntoumanis & Biddle, 1999). However, elite athletes may benefit from a high task *and* ego goals (Harwood, Spray & Keegan, 2008; Hodge & Petlichkoff, 2000) because in highly competitive sports perceived competence is not typically problematic so other-referenced criteria can be usefully applied (Duda, 2001). Although contentious, this suggests that talented individuals may use a range of criteria to judge their own competence and desire to continue developing their talents.

Much motivation research is based on self-determination theory (SDT; Deci & Ryan, 1985, 2000; Ryan & Deci, 2000) which posits that the satisfaction of three basic needs is essential for optimal development and functioning. These needs are competence, autonomy, and relatedness and represent an individual's desire to feel effective, act and think freely, and be connected to others (Deci & Ryan, 1985, 2000). Within SDT, a continuum of motivation was created, with the general categories of extrinsic and intrinsic motivation being the most relevant to this review. Individuals are intrinsically motivated when they participate in an activity for the satisfaction or pleasure derived from the activity itself. In contrast, individuals who are extrinsically motivated participate in an activity for reasons external to the activity, such as rewards or pressure (Deci & Ryan, 1985). Intrinsic motivation is a more self-determined form of motivation and is associated with a range of positive outcomes such as adherence, effort, positive affect, and concentration (for a review, see Weiss & Amorose, 2008). Although individuals tend to be motivated by both intrinsic and extrinsic sources, research with academically and artistically talented youth has found them to be primarily intrinsically motivated (Csikszentmihalyi, Rathunde & Whalen, 1993; Oreck, Baum & McCartney, 2000; Phillips & Lindsay, 2006; Pickard, 2007b).

Overall, motivation appears important in the consideration of dance talent. Dancers who are intrinsically motivated and adopt task goals but are able to judge their performance according to a range of criteria may be most likely to exert effort and concentration, and subsequently optimise their talents. Therefore, motivation may represent an important factor for both talent identification and development.

Passion

Some authors refer not only to motivation but also to passion: an inner drive which may represent a deeper commitment to, and love for, an activity (Gagné, 2007; Robson, 2001). This relatively new area in the literature makes use of a dualistic model of passion (Vallerand et al., 2003). An individual is considered passionate about an activity if he or she likes the activity, spends a lot of time doing it, and values it highly. The activity then becomes internalised in the individual's identity (Vallerand et al., 2003). *Harmonious passion* (HP) is present when an activity is internalised autonomously, so that individuals participate in the activity freely while allowing time for other activities. Individuals can forego participation in the face of negative outcomes. Conversely, *obsessive passion* (OP) is present when the activity is internalised in a controlled way, when individuals feel under pressure (from themselves or others) to partake in the activity either because of an uncontrollable urge, or because self-esteem or feelings of social acceptance are attached to it. Obsessive passion may lead individuals to display rigid persistence even in the face of negative outcomes (Rip, Fortin & Vallerand, 2006; Vallerand et al., 2003).

A recent cross-sectional study suggested that passion is essential in developing talent: 100% of musicians deemed to be in the highest talent development stage (the Later Years of Bloom's 1985 model, reviewed in the Talent Models section) were found to be passionate about their activity, compared to only 36% of music students in the earliest talent stage (i.e. those that had recently begun to learn their instruments; Mageau et al., 2009). However, to date it is unknown which type of passion best predicts successful performance. Both types of passion have been associated with sustained practice and subsequent performance improvements (Vallerand et al., 2007, 2008), yet it appears that OP could lead individuals to attempt to achieve success by any means, even when such means are ineffective or unhealthy (Vallerand et al., 2008).

Passion may represent a talent identification criterion (Sanders, 2006), but can be enhanced through the learning environment (Fredricks, Alfeld & Eccles, 2010; Mageau et al., 2009), thereby also rendering it suitable for talent development. More research specific to dance in this area is warranted.

Feelings about the self

Sport research indicates that athletes require high self-esteem and high self-confidence in order to achieve elite-level performance (Fox & Wilson, 2008; Orlick, 1992). Research into self-esteem, self-confidence, self-concept and body image in dance has produced mixed findings. Some authors state that dancers have low levels of these constructs (Bakker, 1991; Neumärker et al., 2000; Laws, 2005), whereas recent studies present a more favourable view (Nordin-Bates et al.,2012; Quested & Duda, 2009). Further research is required with dancers of different ages, styles and levels to clarify these discrepancies, and to establish the potential contribution of favourable feelings about the self to achieving elite dance status. However, since dance often relies on external judgements, high self-esteem should enable dancers to believe in themselves and thus continue dancing and auditioning (Pickard & Bailey, 2009). Confident dancers may also take more creative risks and be more expressive (Watson, 2009). Feelings about the self may be of greater relevance in terms of talent development than identification in dance because previous research has shown that certain learning environments can have a positive impact upon self-esteem and related concepts (Duda, 2001; Quested & Duda, 2009).

Psychological skills

Psychological skills are those abilities that can be taught and include goal-setting, imagery, self-talk and relaxation (Hanrahan, 2005). Psychological skills can differentiate between athletes of different ability levels (Morris, 2000). For example, research into the psychological skills of elite athletes has demonstrated the importance of imagery (Cumming & Hall, 2002; Gregg, Hall & Nederhof, 2005), goal-setting (Shoenfelt, 1996; Tenebaum et al., 1991), and anxiety management (Gould et al., 2002; Mellalieu, Hanton & O'Brien, 2004). These skills can be developed through psychological skills training as well as general nurture through healthy social interactions.

In dance, elite performers have been shown to use more psychological skills than their lower level counterparts (Brassington & Adam, 2004), although most of the available evidence is restricted to imagery (Nordin & Cumming, 2006b, 2006c, 2007, 2008). Research in dance and music demonstrated that, in both structured and unstructured environments, psychological skills can develop intuitively (Kamin, Richards & Collins, 2007; MacNamara, Holmes & Collins, 2008; Nordin & Cumming, 2006a, 2006b). However, psychological skills would logically be better developed

formally. As an illustration, Noh, Morris and Andersen (2007) demonstrated that dancers who were taught a combination of relaxation training, imagery and self-talk did not only learn to cope better with pressure and adversity, but also spent less time injured than a control group.

Taken together, psychological skills can differentiate between athletes and dancers of different abilities. Because they are amenable to training, such skills should form part of talent development rather than identification.

Summary: psychological factors

Previous research suggests that motivation, passion, self-esteem and psychological skills are important in the acquisition of expert performance. Many of these may be essential in maintaining levels of practice, surviving in a competitive profession, and coping with setbacks such as injury. As many of the psychological factors can be enhanced through training, they may not represent appropriate talent identification criteria with the exception of motivation and passion. Instead, psychological factors are of most relevance to talent development. Other factors most relevant to talent development will next be reviewed.

4.4 Part 2: Interpersonal Factors

Interpersonal factors are those that interact with the individual, namely deliberate practice and the social environment. As such these are most relevant to consider in terms of talent development.

Deliberate Practice

Simon and Chase (1973) found that the attainment of chess expertise requires at least ten years of intense practice. This “10-year rule” has since been shown to hold true in other domains including music (Sosniak, 1985), mathematics (Gustin, 1985) and tennis (Monsaas, 1985). In support of the “10-year rule”, Ericsson, Krampe and Tesch-Römer (1993) argued against the idea that talent is innate and instead used a framework to show that expert performance in music is a result of *deliberate practice* maintained over a period of at least ten years, equating to approximately 10,000 hours of practice. Deliberate practice is defined as structured practice aimed at improving a specific skill, which is appropriate to the individual’s ability, specific to the eventual performance outcomes, and constantly evaluated via feedback and updated as the individual progresses (Ericsson et al., 1993). According to Ericsson et al. (1993), deliberate practice is not necessarily enjoyable because it involves

cognitive, motivational, effort and resource constraints (such as financial investments). The framework posits that physiological characteristics that may advantage an individual in a particular domain are largely a result of adaptations following deliberate practice (Ericsson & Charness, 1994). Even savants, whose extraordinary abilities appear to be a product of genetics, spend considerable amounts of time on one activity (Howe et al., 1998). Famous examples of "genius-level talent", such as Tiger Woods, have similarly been shown to have made extraordinary investments in terms of practice time (Londino, 2006; Woods & McDaniel, 1997).

The original deliberate practice framework was, in part, created from evidence that differences in elite musical ability were accounted for by the amount of hours individuals had spent practicing (Ericsson et al., 1993). Further support for the framework came from research with young musicians (Sloboda et al., 1996), dancers (Ureña, 2004), and athletes (e.g. Baker, Côté & Abernethy, 2003; Helsen, Starkes & Hodges, 1998). However, while most researchers agree that large amounts of deliberate practice are necessary to attain expert performance, a number of problems with the framework have been identified.

A key problem with deliberate practice research is that it tends to examine quantity rather than quality (Singer & Janelle, 1999). For example, in Sloboda et al.'s (1996) study with young musicians, the highest achieving group spent more time on technical exercises and less time on fun playing activities than the lowest achieving group, indicating that the elite player's practice *content* was largely geared toward improvement. The 10,000 hour 'rule' has been refuted by research examining, for example, Olympic swimmers (Johnson, Tenenbaum & Edmonds, 2006) and elite ice hockey players (Soberlak & Côté, 2003), leading some authors to argue that expertise development is highly idiosyncratic (Johnson et al., 2008) and that content or quality is more influential than quantity. Authors have also argued that the deliberate practice framework does not take into account causality (individuals may simply spend more time on something they are good at) and problems regarding the reliability of retrospective recall (Baker et al., 2003; Baker & Horton, 2004; Howe et al., 1998; Singer & Janelle, 1999; Winner, 2006).

A further consideration with the framework is the discrepancy between the original tenet that deliberate practice is not inherently enjoyable, and the importance of enjoyment in maintaining commitment to an activity (e.g. Scanlan et al., 1993a). In

sport, athletes have attested to their enjoyment of activities such as team practice (Helsen et al., 1998), whereas the original research with musicians found deliberate practice not to be enjoyable (Ericsson et al., 1993). It may be that the definition of deliberate practice differs according to the domain: music practice tends to be undertaken on an individual basis whereas sport and dance practice generally occurs in group settings which may involve enjoyable peer interactions. Of course, it is likely that certain aspects of practice are more enjoyable than others; for instance, rehearsals may be seen as more enjoyable than technique classes.

Finally, the deliberate practice framework implies that, in order to accumulate the necessary number of hours required to attain expert performance, early specialisation in a domain would allow the most direct path to expertise. Although activities where peak performances are at relatively young ages require early specialisation (e.g. gymnastics), many authors argue that early diversification (sampling a range of activities during early development) is beneficial in terms of transferable skills, increasing intrinsic motivation and preventing dropout (Baker, 2003; Baker, Côté & Deakin, 2005; Carlson, 1988; Soberlak & Côté, 2003; Wall & Côté, 2007; Wiersma, 2000). However, little research into deliberate practice and early specialisation or diversification in dance has been conducted and is as such encouraged.

Summary: practice-related factors

Research appears to refute the idea that expertise is the result of genetic factors alone. Clear relationships have been established between deliberate practice and the development of expertise. However, the quality of practice and the benefits of early specialisation versus early diversification warrant further investigation. While important, deliberate practice is not the only contributor to the attainment of expertise. For instance, support from 'significant others' plays a crucial role; the next section will review the importance of social factors in an individual dancer's talent environment.

Social Factors

Talent in an activity can only be developed if the activity is valued by its society (Csikszentmihalyi et al., 1993) and success in a domain may depend upon its age and status (Baker & Horton, 2004). Furthermore, societal views on child-rearing and talent can influence parent and teacher behaviour regarding a gifted student (Subotnik, Olszewski-Kubilius & Arnold, 2003). Therefore, wider cultural values

provide an important context for considerations of talent identification and development. Within societal values, key social relationships can facilitate the development of talent. Similar to the areas considered above, the labels *stable* and *unstable* have been applied to social relationships. Parent support aspects have been considered relatively stable, given that most young people will interact with the same one or two parents or guardians over several years; teacher and peer relationships are often more transient and have been considered unstable.

Stable factors: parental support aspects relevant to talent development

The importance of family relationships has been highlighted previously in providing emotional and logistical (the investment of time and finances) support, and encouraging practice (Bloom, 1985; Côté, 1999; Davidson et al., 1996; Ferreira & Armstrong, 2002; Gould et al., 2006; Holt & Dunn, 2004; Howe et al., 1998; Oreck et al., 2000; Wolfenden & Holt, 2005). Young dancers have acknowledged the importance of family support not only in terms of finances and travel, but also in regulating other factors such as sleep and diet (Pickard, 2006).

Csikszentmihalyi et al. (1993) suggested that talented youth tend to come from 'complex families': those which both challenged and supported their children. The researchers argued that such families helped their children to both enjoy work, and to work more productively. However, family dynamics can vary: high levels of involvement can be perceived as pressure by children even when parents believe their behaviour to be supportive (Kanters, Bocarro & Casper, 2008; Wolfenden & Holt, 2005). Carlson (1988) found that successful tennis players were less pressured by their parents than their sub-elite counterparts. Therefore, while parental support is essential, the nature of this support is worthy of research in dance.

Socioeconomic status

Parents must often pay for training, uniforms or equipment, and travel to and from training (Côté, 1999; Ferreira & Armstrong, 2002), and so inadequate family finances can present a barrier to talent development (Ambrose, 2003; Oreck et al., 2000). Coming from a middle or upper class family may also mean that better quality training facilities are available in the child's area; however, some talented individuals without financial support are able to overcome such problems and succeed in their talent activity regardless (Gagné, 2007). The roles of family

support, class and culture in dance talent development are interesting areas for future research.

Unstable factors: peer and teacher aspects relevant to talent development

Peers

Peer relationships take on great importance during adolescence, often more so than relationships with educators or parents (Horn & Amorose, 1998; Horn & Weiss, 1991). It is perhaps unsurprising that peers can play a pivotal role regarding adolescents' decisions to participate in training (Fredricks et al., 2002; Kamin et al., 2007; Patrick et al., 1999; Van Rossum, 2001). As such, students should be encouraged to form and maintain friendships amongst their peers, and to cooperate rather than compete with each other to ensure they continue training and developing their talents (Quested & Duda, 2009; Shapiro et al., 2009).

Leadership

Teachers and coaches can have a profound impact on the lives of young dancers and athletes (Lee, 2001; Pummell & Lavallee, 2009). Improvements in abilities have been attributed to the quality of instruction, the amount of time spent with an instructor and the instructor's experience in sport and dance studies (Baker & Horton, 2004; Minton & McGill, 1998; Rutt-Leas & Chi, 1993). However, student perceptions of teaching efficacy can vary. Rafferty and Wyon (2006) found that vocational dance students prefer more democratic behaviour, positive feedback, and training and instruction behaviour than they receive. Interestingly, these students felt that authoritarian behaviour was important when learning new skills, and did not feel that social support was relevant in the context of technique classes. In contrast, talented younger dancers appear to value both discipline and approachability (Pickard, 2006). Van Rossum (2001) reported that dance classes moved from being playful and 'cosy' to being more disciplined, structured and geared toward improvement over time with a focus on working for oneself. Teachers were perceived to become more critical and disciplined, yet were continually motivating and inspiring, indicating that although classes became more difficult and focused on deliberate practice, certain elements remained consistent over time and maintained students' interest and commitment. Clearly, teachers have a highly influential role and can be responsible for skill acquisition and development. A research area related to leadership is the learning environment (the motivational climate).

The motivational climate

The perceived psychological atmosphere within a dance studio, known as the motivational climate, is an important social consideration. Two types of motivational climate have been identified in the literature (Ames, 1992). The first, a task-involving climate, focuses on self-improvement, learning, accomplishment and mastery of tasks, and emphasises effort and personal progression. The second, an ego-involving climate, selectively praises more able students, encourages competition, and tends to punish mistakes (Ames, 1992).

The benefits of perceived task-involving climates have been documented in sport and dance and include enhanced enjoyment, self-esteem, commitment, perceived competence, autonomy when learning, and feelings of acceptance (Duda, 2001; Ntoumanis, Vazou & Duda, 2007; Quested & Duda, 2009; O'Donoghue & Jones, 2007). In sport, successful teams are more likely to perceive a task-involving climate than unsuccessful teams (Ntoumanis et al., 2007), and elite athletes benefit from task-involving aspects (Pensgaard & Roberts, 2002). In contrast, perceptions of ego-involving climates have been associated with emotional and physical exhaustion, negative affect, anxiety and neurotic perfectionism (Carr & Wyon, 2003; Quested & Duda, 2009; Smith, Smoll & Cumming, 2007). It is noteworthy that while the motivational climate is predominantly created by teachers, it can also be created by peers. Benefits of task-involving peer-created climates include enhanced self-esteem, enjoyment, commitment and positive relationships (Shapiro et al., 2009; Vazou et al., 2006). Therefore, the creation of task-involving motivational climates is universally recommended to enable students to optimise their talents.

Summary: social factors

Parental, peer and teacher relationships play important roles in the development of young dancer talent. A task-involving motivational climate, in addition to parental support and positive peer relationships, appears to enhance enjoyment, well-being, and adherence to dance. Consideration must be given to teacher expertise and behaviour, the quality of training facilities, as well as socioeconomic status, which can be limiting factors. Talent development programmes would do well to implement a wide range of support mechanisms alongside technical instruction.

Overall, the literature proposes that a combination of physical, psychological, practice-related and social factors is influential in talent identification and

development. The next section will consider talent models that have attempted to put these wide-ranging factors together.

Talent Models

In various domains, models have been created that attempt to understand elite performance in terms of talent identification (using cross-sectional designs) or talent development (using retrospective designs).

Relevant talent models include Gardner's multiple intelligences (1983) and Gagné's differentiated model of giftedness and talent (DMGT, 1985), yet these are limited by a lack of supporting experimental research, rendering them difficult for dance educators to apply practically. Sport talent identification models use empirical research to profile elite athletes. Such models tend to be inter or multidisciplinary, incorporating a range of characteristics, which authors recommend to practitioners as a way to avoid excluding the potentially talented (Lidor et al., 2009). For example, one talent study investigated anthropometrical, fitness-related, psychological and skill-related measures in elite and sub-elite football players. The elite players were leaner, had greater speed, agility, anticipation skill and aerobic power than sub-elite players and also had a greater ego orientation (Reilly et al., 2000). While such studies are valuable in providing profiles of elite compared with sub- or non-elite athletes in different sports, they do not explain how athletes developed these skills. Furthermore, talent research often does not use the same measures with similar participant groups, nor are follow-up studies conducted. Until talent research utilises the same methods, the key talent characteristics for various sports cannot be established (Lidor et al., 2009).

One study in dance that addressed these problems used a talent identification instrument (TII) during a multi-session audition (seven weekly classes) combining various techniques with students from urban schools and low socioeconomic backgrounds (Baum, Owen & Oreck, 1996). Based on Renzulli's (1978) three-ring conception of giftedness where above average ability, creativity and task commitment interact, criteria in the TII included physical skills, creativity and motivation. The TII was later developed into the talent assessment process (TAP), based on multiple sessions and the same criteria (Oreck, Owen & Baum, 2004). Raters score students on the criteria in addition to awarding them an overall score to allow for intuitive impressions; these scores are then discussed between raters after each session. The TAP has been shown to be valid and reliable and enables

students without prior experience to be selected in an authentic setting (Oreck, 2005). Although to date the TAP has only been used in North America and with school-aged students, it appears to hold promise for dance educators in other countries with the potential to be adapted for various student populations.

In the UK, the government-funded Centres for Advanced Training (CATs) in dance use talent criteria during auditions that cover varying characteristics that bear similarities to those used in the TAP (Oreck et al., 2004). Compiled by dance experts, these criteria include physical and technical skills (e.g. coordination, movement memory), performance qualities (e.g. expressiveness, concentration), creativity, and a focused, engaged and open approach to working in dance. Although not research-based, these criteria are unique not only because they reflect many recommendations of talent researchers (e.g. Oreck et al., 2004; Sanders, 2006), but also because they are used to assess those with prior training and those with exceptional potential. Future research could usefully empirically investigate these criteria in relation to motivational and performance outcomes.

In terms of developmental studies, Bloom (1985) described three stages through which talented individuals in a range of domains progressed on their journey toward elite status. The first stage is the early years, where children participate in one or more activities. Often, teachers or parents notice a child has a particular aptitude in one activity and may encourage the child to continue participating in that activity. During the middle years, children select one activity and demonstrate greater commitment with larger amounts of time dedicated to practice. The later years are those in which the individual is fully committed to their talent activity and works toward elite status.

Côté (1999) developed a model which draws parallels with Bloom's (1985) but is specific to young people in sport. Three stages were also identified: the sampling years (6-13 years), characterised predominantly by playful involvement in a range of activities; the specialising years (13-15 years) which involve a combination of play and deliberate practice in more specialised activities; and the investment years (from 15 years onwards) which involve greater amounts of deliberate practice in one chosen activity. Côté's (1999) work was developed into the developmental model of sport participation (DMSP; Côté, 1999; Côté & Hay, 2002; Côté, Baker & Abernethy, 2003) which has received empirical support (Baker et al., 2003; Baker et al., 2005; Soberlak & Côté 2003). Such models are valuable in demonstrating elite athletic

development in terms of activity participation, but do not provide information on specific talent characteristics necessary in a given sport.

In dance, Van Rossum (2001) provided support for Bloom's (1985) work and also supported the notion that playful activities are replaced by deliberate practice as dancers progress through training (Côté, 1999). Critien and Ollis (2006) investigated talented dancers and found that continued learning activities were required even once an individual had reached elite status. Specifically, deliberate practice, deliberate experience (performance experience) and transfer of skills (previous performing and life experiences) were noted as being important in the preparation and performance of an artistic work. However, the results did not detail the dancers' backgrounds and training histories, despite such factors being part of the interview. Such information could have demonstrated how professional dancers develop both technically and artistically over time.

Summary: talent models

Authors from a variety of domains support the need for multiple means of talent identification (Baum et al., 1996; Warburton, 2002; Williams & Reilly, 2000; Wolstencroft, 2002). Although talent models typically adopt either a cross-sectional (identification) or developmental perspective, Abbot and Collins (2004) argue that identification and development be considered together to allow for the effects of maturation. Ideally, both types of model should be combined to demonstrate how talent criteria could be adapted at different stages of development. However, talent models will always be limited as success cannot be guaranteed even when an optimal combination of factors exist (Baker & Horton, 2004), and timing or chance often play important roles in success (Gagné, 2007; Wolstencroft, 2002). Moreover, the progression of dance as an art form means that the talented dancers of tomorrow may be difficult to identify today (Schmidt et al., 2005).

4.5 Conclusion

The concept of talent is multidimensional. The dancer must be considered as a whole person rather than simply a moving body. As Sanders (2006) posits, individuals can also be talented in creative, analytic or appreciative ways. Even solely considering the dancer as a performer, a range of physical, psychological, and expressive factors coupled with deliberate practice appear to be important predictors of success in dance. The significance of parental support, peer

relationships, teacher quality, and the motivational climate should not be underestimated.

At present, dance (ballet in particular) often selects individuals based predominantly on their physical and technical abilities at pre-pubescent ages. Selection procedures that include meaningful interviews and / or psychological profiling could avoid excluding students whose weaker physical potential could be developed through their dedication, determination and passion for dance. While psychological attributes can differentiate between elite and non-elite participants later on, most can be developed through training and should not be used to exclude the potentially talented. Indeed, many of the factors associated with elite performance may be developed through training, thus the case for multiple means of assessment over time appears particularly strong.

As a conclusion to this review it is apparent that talent must be considered from a multidisciplinary perspective. This is due to at least six main reasons: (1) no single factor alone (e.g. body type) can predict nor truly indicate talent; (2) weaknesses in some areas may be compensated for by strengths in others; (3) criteria may need to be age-appropriate and maturation must be taken into account; (4) there is no guarantee that what may have predicted talent in the past and in a specific dance genre (e.g. a lean physique in ballet) will be similarly valued in the future; (5) talent identification and development should be considered together, rather than as separate processes, to allow for the selection of potentially gifted but untrained students, as well as accounting for the effects of maturation; and (6) the requirements of a career in dance may encompass many different roles, including performing, teaching and choreographing. By further researching those characteristics that talented dancers share, alongside the aesthetic changes that the art form undergoes, teachers may be better able to prepare their students optimally for the exciting opportunities that lie ahead.

Chapter 5

Characteristics of Talented Dancers and Age Group Differences

This manuscript is published with the following reference:

Walker, I.J., Nordin-Bates, S. M., & Redding, E. (2011). Characteristics of talented dancers and age group differences: Findings from the UK Centres for Advanced Training. *High Ability Studies, 22*(1), 43-60.

5.1 Abstract

This study investigated differences in the characteristics of talented dancers in relation to age. Physical (handgrip muscular strength, leg muscular power, hamstring flexibility and external hip rotation), psychological (passion, self-esteem and anxiety) and social (the motivational climate) characteristics were assessed in 334 students enrolled on a talented scheme. The male late adolescence group (16-18 years) had greater jump height than the early (10-12 years) and mid-adolescence groups (13-15 years). For both sexes, the early adolescence group exhibited the lowest and the late adolescence group the greatest grip strength values. The late adolescence group reported lower self-esteem than the two younger groups, and the two older groups reported greater perceptions of ego-involving motivational climates than the early adolescence group. Results suggest that, as some characteristics of talented dancers differ across the adolescent years, talent identification and development criteria could be adapted according to age.

5.2 Introduction

The plethora of talent research in sport has highlighted the interdisciplinary nature of talent identification and development (Baker & Horton, 2004; Durand-Bush & Salmela, 2001; Wolstencroft, 2002). Talent studies tend to either investigate developmental factors (e.g. Bloom, 1985) or a range of inter- or multidisciplinary characteristics in cross-sectional designs (e.g. Elferink-Gemser, Visscher, Lemmink & Mulder, 2004). While valuable, cross-sectional investigations do not typically differentiate between participants of different ages. Studies that have made such distinctions reported age-related differences. For example, speed and technique were found to differentiate elite from non-elite footballers under the ages of 13 and 14 years, whereas aerobic endurance better differentiated elite footballers from their non-elite peers in 15 and 16 year olds (Vaeyens et al., 2006). Measures of speed, strength and power accounted for 100% of the variance in the performance of gymnasts under the age of 12 years, but in 20 year olds, other factors such as perceptual awareness and anxiety became important (Régnier & Salmela, 1987). These findings support suggestions that age-related factors such as maturation can have an effect upon talent measures, indicating that talent criteria could be adapted according to age (Abbott & Collins, 2004; Durand-Bush & Salmela, 2001). Therefore, investigations of talented young people should take account of age differences.

Little is known about the characteristics of young talented dancers, nor whether these characteristics differ according to age. Although sport science literature has emphasised the importance of inter- and multidisciplinary research in the talent domain (e.g. Wolstencroft, 2002), no such studies exist in dance. The aim of this study was to investigate potential differences in physical, psychological and social characteristics among young talented dancers in relation to age groupings. Participants represented three age groups: early adolescence (10-12 years), mid-adolescence (13-15 years) and late adolescence (16-18 years; Robson, 2001). Variables under investigation were chosen based on an extensive review of the talent literature (Walker, Nordin-Bates & Redding, 2010) and the recommendations of expert dance educators working with the participants. The variables also relate to the audition criteria used to select young dancers for the training programme involved in the current study.

Physical Variables

Muscular strength, power and flexibility are important for the execution of skilled dance movements such as jumps, floor work, and static poses (Deighan, 2005; Koutedakis, Stavropoulos-Kalinoglou & Metsios, 2005; Wyon, Head, Sharp & Redding, 2003). As such these represent important variables to investigate in young talented dancers.

Muscular strength

Muscular strength is important in dance given that most dance styles comprise a combination of static positions and dynamic movements at varying intensities (Cohen, Segal & McArdle, 1982). Dancers utilise their muscular strength to perform movements such as lifts and floorwork (Koutedakis et al., 2005; Phillips, 1999). Growth contributes to strength development in children (Mersch & Stoboy, 1989), but dance training can also result in strength increases. For example, muscular strength around the hip complex was evaluated in 53 young female novice dancers and controls. After a 12-month period, significant increases in hip muscle strength were observed in all participants, but the dancers' strength increases were greater than the controls' in three out of the five muscle groups tested (Bennell, Khan, Matthews & Singleton, 2001). In support of this, ballet professionals have been found to be stronger than ballet students (Chmelar, Schultz & Ruhling, 1988), suggesting that muscular strength is associated with dance talent or at least dance training. However, no research to date has investigated muscular strength in young dancers of different ages. Furthermore, upper body strength has received little research attention yet is becomingly increasingly important in modern choreography as dancers are expected to perform more and more weight-bearing movements particularly using the upper body. Therefore, the current study investigated upper body strength in young dancers of different ages.

Muscular power

Jumps are an integral part of many performances with choreographies often incorporating impressive elevations (Wyon et al., 2006). Jump height relies on lower body muscular power (Koutedakis et al., 2005) and improves with age (Klausen, Schibye, Jespersen and Jensen, 1989). While certain types of training such as plyometrics may impact upon jump height, dance training alone may be insufficient to elicit significant improvements (Brown, Wells, Schade, Smith & Fehling, 2007). Moreover, research has demonstrated that soloists and first artists have greater jump height than principal or *corps de ballet* dancers (Wyon et al., 2006), which

could indicate that there is not a linear relationship between training and jump height. These findings seem to suggest that dance training is not tailored towards specific physiological improvement; rather, the varying demands of performance may influence dancers' jump height over and above standardised training. To date no studies have investigated jump height in young dancers of different ages.

Flexibility

Flexibility has often been regarded as the most important physical characteristic in dance due to the aesthetic value placed on large ranges of motion. It is also the characteristic which most distinguishes dancers from non-dancers (Deighan, 2005; Hamilton, 1997; Kadel, Donaldson-Fletcher, Gerberg & Micheli, 2005). Although little is known about the impact of maturation on dancers' flexibility, flexibility may be an indicator of experience, as professional and advanced student dancers have demonstrated significantly greater flexibility than beginner dancers; dancers also display significantly greater flexibility than controls (Crookshanks, 2007; Gupta et al., 2004; Hamilton, Hamilton, Marshall & Molnar, 1992; Kadel et al., 2005; Khan et al., 1997; Padfield, Eisenmann, Luetkemeier & Fitt, 1993; Steinberg et al., 2006). External hip rotation, commonly known in dance as turnout, is an indicator of dance talent in ballet (Walker et al., 2010). Examinations of young dancers have found that external hip rotation values peaked at 12 years (Crookshanks, 2007) and 13-14 years (Steinberg et al., 2006). Taken together, evidence suggests that either training has an effect on dancers' flexibility, or that more flexible dancers are selected for training. The current study will provide further data regarding flexibility in dancers of different ages.

Overall, it appears that the physical variables of interest in the current study can be improved through both age (maturation) and certain types of training. The current study investigated age-related differences in young talented dancers by controlling for demographic factors such as years in training.

Psychological Variables

Research suggests that elite performers in a range of domains require passion, high self-esteem and effective anxiety management in order to succeed (Fox & Wilson, 2008; Mageau et al., 2009; Neil, Fletcher, Hanton & Mellalieu, 2007). Existing findings will be extended by examining these factors among young talented dancers.

Passion

A recent model (Vallerand et al., 2003) posits that two types of passion exist. Harmonious passion is associated with flexible activity involvement and autonomous internalisation of the passionate activity into an individual's identity; obsessive passion is associated with rigid persistence and controlled internalisation. Passion may be important in talent development: anecdotally, dancers frequently refer to the importance of passion in the pursuit of the art form (e.g. Bussell, 1998). Both types of passion have been associated with performance improvements in diverse areas such as psychology, sport and the dramatic arts (Vallerand et al., 2007, 2008), suggesting that passion for an activity is important in relation to talent development. Moreover, a recent study indicated that 100% of expert musicians are passionate about their art, whereas only 36% of novice musicians are equally passionate, indicating that passion for an activity increases through expertise development, or that only passionate musicians progress into the profession (Mageau et al., 2009). These authors also found a relationship between autonomy support and harmonious passion, suggesting that passion for an activity could be influenced through training (Mageau et al., 2009). However, little is known about potential changes in passion in young people. This study will be the first to investigate age differences in passion for dance.

Self-esteem

Dance is an art form that relies to a large extent on external judgements, with a dancer's technique, artistry and physique being subject to scrutiny. Therefore, favourable self-esteem may be an important consideration in the development of young dancers. Certainly, research indicates that athletes require high self-esteem in order to achieve elite-level performance (e.g. Fox & Wilson, 2008), and Pickard and Bailey (2009) suggest that high self-esteem in dancers may fuel the motivation to attend training and auditions. Self-esteem tends to decrease between the ages of eight and 12-14 years, but then steadily increases from around 14 years until adulthood (Block & Robins, 1983; Fox, 1998; Marsh, 1989). A recent study found that a mixed sample of dancers reported relatively high self-esteem (Nordin-Bates et al., 2011), yet no data exists regarding potential changes in dancers' self-esteem through adolescence. However, it has been suggested that self-esteem can be developed through supportive behaviours from significant others (Buckroyd, 2000; Duda, 2001), indicating that training could have an impact on self-esteem. The present study will investigate levels of self-esteem in young dancers of different ages.

Anxiety

Anxiety management is an important aspect of talent development because research in sport has shown that anxiety can affect performance (Neil, Fletcher, Hanton & Mellalieu, 2007). Anxiety appears to increase with age in musicians (Kenny & Osborne, 2006) and sport participants (Smith, Smoll, Cumming & Grossbard, 2006); it has also been suggested from retrospective accounts that anxiety increases with age for some dancers (Walker & Nordin-Bates, 2010). However, this study will be the first to examine the anxiety of young dancers of different ages and in everyday studio environments. Evidence suggests that anxiety is common in dance as several personal and interpersonal factors common to dancers can cause anxiety (e.g. Barrell & Terry, 2003; Walker & Nordin-Bates, 2010). In fact, previous research has demonstrated that anxiety can be affected by training environments (Carr & Wyon, 2003). Taken together, therefore, evidence suggests that age and training may be impact upon anxiety. The current study will be the first to examine anxiety in young dancers of different ages.

Of the psychological variables, it appears that there is less consistent data regarding age differences compared to the physiological variables. However, there is some evidence that these factors could be related to both age and dance training.

Social Variable

The motivational climate

The perceived motivational climate can be created by teachers and peers. Of interest in the current study is the teacher-created motivational climate. Research has revealed that two motivational climates exist: task-involving, which focuses on self-improvement, task mastery and effort; and ego-involving, which emphasises other-referenced learning, punishes mistakes and encourages competition (Ames, 1992). Perceptions of task-involving climates have been associated with positive indicators of well-being while the opposite is true of ego-involving climates (Ntoumanis & Biddle, 1999), and even elite athletes have been shown to benefit from task-involving elements (Pensgaard & Roberts 2002). Additionally, perceptions of task-involving climates have been associated with adherence to physical activity (Boiché & Sarrazin, 2009; Le Bars, Gernigon & Ninot, 2009) while perceptions of ego-involving climates have been associated with dropout (Sarrazin et al., 2002). Therefore motivational climates seem to be closely linked to talent development. Interestingly, dance students in Van Rossum's (2001) study reported that dance classes became more disciplined and structured over time, and student judoka

perceived the motivational climate to become more ego-involving over time (Le Bars et al., 2009). Therefore, training environments may differ according to age, and the present study will be the first to examine age differences in dance motivational climate perceptions.

In summary, the aim of this study was to investigate multidisciplinary characteristics of young talented dancers. Age group differences were examined because age-related factors such as maturation can have an impact upon talent measures (e.g. Régnier & Salmela, 1987).

5.3 Method

Participants

This study is part of a longitudinal interdisciplinary talent development research project. The project aims to better understand the physiological and psychological characteristics of talented young dancers and how these might best be developed. The current study formed one of the first investigations of this talented sample.

In total, 334 young dancers participated in the current study. They were recruited from the Centres for Advanced Training (CATs), UK government-funded centres offering high quality part-time dance training across England for young people with "exceptional potential". Dancers are required to audition to secure a place at one of the CATs, thus the participants in the current study are assumed to possess some talent in dance. Audition criteria, which are assessed through observation, include physical skills such as strength and flexibility, psychological factors such as tenacity and high levels of engagement with dance, and artistic skills such as musicality and imagination. Most CATs offer training in contemporary dance as a primary style, but each centre also provides classes in other styles, including creative sessions and ballet (Table 5.1 contains details on styles). Of the participants, 75.4% were female and 24.6% were male. The majority (75.1%) considered themselves White British, with 5% Black British, 5% Asian British and the remainder of mixed or other ethnic backgrounds. Students had been dancing for an average of 8.12 years (*SD* = 3.76) and spent 7.89 hours (*SD* = 3.29) per week training at the CAT, with an additional 4.88 hours (*SD* = 5.01) per week training at other dance schools.

Table 5.1. Descriptions of different dance styles.

Contemporary	Umbrella term for a collection of modern styles that typically focus on dynamics and movement quality (e.g. fluid; sharp), and expressive use of movement.
Ballet	Classical style that uses vertical postures and exact placement, focusing on grace and effortless movement.
Hip hop	Umbrella term for energetic urban styles that use floorwork, weight bearing work and movements with strong impact and rhythmic gesture.
Creative	Improvisatory style that emphasises finding new ways of moving which are not typically technique-based.

Once ethical approval was granted, participants were given information sheets and completed consent forms; participants under the age of 16 years additionally provided parental consent. Data collection took place over one to three days at each CAT.

Materials

Demographics

Participants detailed their age, sex, the age at which they had begun dance training and the number of hours per week they (a) danced in different styles (contemporary, ballet, hip hop, creative); and (b) partook in non-dance physical activity (e.g. sport).

Physical measures

Muscular strength

Handgrip strength was assessed as an indicator of global upper body strength as previous research has demonstrated a relationship between handgrip strength and other measures of upper body muscular strength (Milliken et al., 2008; Tong & Wood, 1997). To make the test dance-specific, participants were instructed to grip the handgrip dynamometer (Takei Scientific Instruments, Tokyo, Japan) maximally while moving it from a raised position above their heads to the lateral side of the body (through the sagittal plane) with the elbow extended. The average score across two trials for each arm was computed.

Muscular power

A vertical jump height (VJH) procedure (Probotics Inc., Huntsville, AL) measured lower body muscular power. Participants performed their highest possible vertical jump on the mat twice, with a 30 second rest period between trials. Participants were instructed to jump from a plié (knee flexed) position and to use their arms to help them achieve height, and not to be concerned with technique. The highest score was used for analyses.

Flexibility

The flexibility tests assessed hamstring flexibility and external hip rotation. Hamstring flexibility was measured with a straight leg raise assessment (SLR). This assessment has been used in previous investigations of dancers' flexibility (e.g. Crookshanks, 2007) as it is a functional test that represents the ability to achieve certain ranges of motion in some codified dance positions. Participants lay supine on a mat and were directed to lift one leg up and towards the chest as far as possible while keeping both hips on the mat and knees extended. Active and passive SLR measurements (with the researcher moving the leg until resistance was felt for the latter) were taken for both legs in degrees at the hip joint using a large custom-made protractor. Active and passive variables were computed by averaging the results from both legs.

Functional Footprint® rotator discs (Balanced Body, Sacramento, CA) measured total external rotation from both the hip and lower leg. This method represents a functional measure of active external hip rotation which is considered appropriate for dance research (Grossman, 2003). Participants stood on the rotator discs in correct anatomical alignment, and then outwardly rotated their hips, keeping the knees extended. Measurements were taken in degrees and the average of three trials across both legs was computed. Due to the nature of large-scale field tests, there was insufficient time to conduct a warm-up prior to the test, and participants had been engaged in different study measures (e.g. VJH test; completing psychological questionnaires) prior to attempting the flexibility tests.

Psychological measures

Passion

The Passion Scale (Vallerand et al., 2003) is a 14-item questionnaire assessing whether the participant is passionate about an activity, and, if so, the degree of harmonious and obsessive passion. First, dancers completed the sentence: "My

favourite activity is_____". Those that wrote something related to dance *and* scored ≥ 4 on four additional criterion questions were classified as "passionate"; those who wrote something other than dance, or scored < 4 on criterion questions, were classified as "not passionate". Criterion questions pertain to liking, feeling passionate about, spending a lot of time on, and valuing the activity. Remaining questions focus on obsessive or harmonious passion. Questions were scored on a scale ranging from 1 (*Do not agree at all*) to 7 (*Very strongly agree*). Internal reliability was good for both harmonious (α = .80) and obsessive passion subscales (α = .83). The Passion Scale has been shown to be valid and reliable (Vallerand et al., 2003).

Self-esteem

The Self-Esteem Scale (Rosenberg, 1965) comprises ten items relating to an individual's feelings towards themselves. Questions are scored on a scale ranging from 1 (*Strongly disagree*) to 4 (*Strongly agree*). The scale demonstrated good internal reliability (α = .82) and has published reliability and validity information (Blascovich & Tomaka, 1991).

Anxiety

The Sport Anxiety Scale-2 (SAS-2; Smith et al., 2006) was used to capture the dancers' trait anxiety during dance class. The SAS-2 is a 15-item questionnaire with five questions in each of three subscales: Worry, Concentration Disruption and Somatic Anxiety. Participants scored questions using a scale ranging from 1 (*Strongly disagree*) to 4 (*Strongly agree*). Cronbach's alphas for the SAS-2 were acceptable (α = .65 - .88). An alpha of α = .65 was accepted for the Somatic subscale as item deletion did not improve reliability. The SAS-2 has published validity and reliability information (Smith et al., 2006).

Social measure: the motivational climate

The teacher-created motivational climate was captured with the Perceptions of Motivational Climate in Sport Scale-2 (PMCSQ-2; Newton, Duda & Yin, 2000), modified for use in dance to comprise 24 items (Quested & Duda, 2010). Subscales tap ego and task-involving elements. Questions were scored using a scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Internal reliability was acceptable for all subscales (α = .72 - .89) with the exception of *Punishment for Mistakes* (α = .66). The removal of one item ("Dancers are afraid to make mistakes") improved

reliability (α = .74). The scale has published validity and reliability information (Newton et al., 2000; Quested & Duda, 2010).

Statistical Analyses

Preliminary MANOVAs were performed to assess sex-related differences in the measures. After applying a Bonferroni adjusted alpha of .017 (.05/3), significant differences were observed only for the physical variables, Wilks' lambda = .63, $F(5, 272) = 31.41$, $p < .017$. Subsequent analyses of the physical variables were performed for each sex separately while analyses of the psychological and social variables were conducted for the whole sample.

To assess age group differences among outcome variables, the sample was split into three groups representing early adolescence (10-12 years, N = 72), mid-adolescence (13-15 years, N = 142) and late adolescence (16-18 years, N = 120). Three MANCOVAs were then performed. Age group served as the independent variable, with the physical, psychological or social variables as the dependent variables. Recognising that demographic variables (hours per week in different dance styles and non-dance physical activity; years in dance) may have accounted for age differences in the variables, preliminary bivariate correlations were used to identify appropriate covariates.[2]

5.4 Results

Descriptive statistics for each of the variables are reported in Table 5.2.

[2] Due to space limitations, correlations were not presented in the published manuscript but are found in Appendix 2.

Table 5.2. Means and standard deviations for all variables.

	Early adolescence	Mid-adolescence	Late adolescence
Weekly dance (h)	11.07 ± 3.73	12.60 ± 4.26	14.00 ± 6.66
Contemporary (h)	1.75 ± 1.61	3.09 ± 2.12	4.33 ± 2.86
Ballet (h)	4.36 ± 3.79	4.06 ± 4.05	3.22 ± 4.12
Hip hop (h)	.30 ± 1.23	.70 ± 1.34	.43 ± .96
Creative (h)	1.00 ± .96	1.38 ± 1.45	2.50 ± 1.94
Non-dance physical activity (h)	4.32 ± 3.51	4.24 ± 2.49	2.72 ± 2.96
Total years in dance	5.61 ± 2.55	7.99 ± 3.17	9.79 ± 4.14
VJH (cm)	41.40 ± 5.94	43.93 ± 6.71	45.37 ± 7.28
Arm strength (kg)	16.56 ± 3.71	22.33 ± 4.35	25.70 ± 6.32
Active SLR (°)	89.01 ± 9.10	94.95 ± 8.81	95.96 ± 9.82
Passive SLR (°)	102.60 ± 13.93	108.28 ± 12.35	108.88 ± 11.75
Hip ER (°)	54.09 ± 7.32	54.87 ± 8.32	52.15 ± 8.99
Harmonious passion	5.91 ± .80	5.97 ± .820	5.89 ± .75
Obsessive passion	4.40 ± 1.52	4.49 ± 1.40	4.12 ± 1.53
Self-esteem	32.53 ± 3.59	31.12 ± 3.64	29.84 ± 3.14
Anxiety	20.96 ± 4.96	23.10 ± 5.14	23.46 ± 5.13
Task perceptions	4.38 ± .47	4.27 ± .45	4.35 ± .47
Ego perceptions	1.66 ± .64	2.02 ± .74	2.07 ± .68

Note: VJH denotes vertical jump height; SLR denotes straight leg raise; Hip ER denotes hip external rotation.

Physical Variables

The MANCOVA covariates for the physical variables were hours in contemporary, ballet, creative dance, and hip hop, total years in dance, and hours in non-dance physical activity.

Females

A significant multivariate effect was found for age, Pillai's trace = .26, $F(10, 356) = 5.40$, $p < .01$, $\eta^2 = .13$. Results from tests of between-subject effects using a

Bonferroni adjusted alpha level of .01 (.05/5) are reported in Table 5.3. When covariate effects were removed, significant age differences were observed for handgrip strength, $F(2, 181) = 28.19$, $p < .01$, $\eta^2 = .24$. Post-hoc tests (all $p < .05$) revealed significant differences between each group in handgrip strength, with the late adolescence group (16-18 years) exhibiting the highest values and the early adolescence group (10-12 years) the lowest.

Males

A significant multivariate effect was found for age, Wilks' lambda = .44, $F(10, 74) = 3.11$, $p < .01$, $\eta^2 = .30$. Results from tests of between subject effects, using a Bonferroni adjusted alpha level of .01 (.05/5), are reported in Table 5.4. When covariate effects were removed, age was significant for VJH, $F(2, 40) = 9.82$, $p < .01$, $\eta^2 = .33$, and handgrip strength, $F(2, 40) = 16.18$, $p < .01$, $\eta^2 = .45$. Post-hoc tests (all $p < .05$) showed that the late adolescence group jumped significantly higher than the other two groups. There were significant differences between each group for handgrip strength with the late adolescence group exhibiting the highest values and the early adolescence group the lowest.

Psychological Variables

Hours in contemporary dance was used as a covariate in the MANCOVA for the psychological variables. There was a significant multivariate effect for age, Wilks' lambda = .90, $F(8, 324) = 2.19$, $p < .05$, $\eta^2 = .05$. Tests of between-subject effects (reported in Table 5.5) using a Bonferroni adjusted alpha level of .0125 (.05/4) revealed significant age differences for self-esteem, $F(2, 165) = 5.70$, $p < .01$, $\eta^2 = .004$ when covariate effects were removed. Post-hoc tests showed that the early and mid-adolescence (13-15 years) groups had significantly greater self-esteem than the late adolescence group ($p < .05$).

Social Variable

Hours in ballet and hours in creative dance were covariates in the MANCOVA for the social variable. A significant multivariate effect was found for age, Wilks' lambda = .92, $F(4, 480) = 5.23$, $p < 0.01$, $\eta^2 = .04$. A Bonferroni adjusted alpha level of .025 (.05/2) was applied for tests of between-subject effects (reported in Table 5.5). When covariate effects were removed, significant age differences remained on the ego-climate perception variable, $F(2, 240) = 4.64$, $p < .01$, $\eta^2 = .08$. Post-hoc tests revealed that the mid and late adolescence groups perceived their climates to be significantly more ego-involving than the early adolescence group ($p < .05$).

Table 5.3. Results from MANCOVA tests of between-subject effects for physical variables (females).

	VJH		Hand-grip		Hip ER		Active SLR		Passive SLR	
	F-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value
Contemporary (h)	3.48	.06	13.78	< .001*	3.38	.07	5.95	.02	.79	.38
Ballet (h)	6.71	.01*	.04	.84	4.55	.03	9.76	.002*	14.01	< .001*
Creative (h)	.23	.63	.002	.97	32.35	.001*	.52	.47	4.94	.03
Hip hop (h)	8.02	.005*	3.00	.09	.93	.34	.93	.34	1.15	.29
Years in dance	.56	.46	.22	.64	5.28	.02	.49	.50	.02	.89
Non-dance physical activity (h)	.06	.81	.04	.85	1.15	.29	4.08	.05	10.80	.001*
Age	2.66	.07	28.19	.001*	1.71	.18	1.53	.22	.59	.55

* Denotes significance at the .01 level.

Note: VJH denotes vertical jump height; SLR denotes straight leg raise; Hip ER denotes hip external rotation.

Table 5.4. Results from MANCOVA tests of between-subject effects for physical variables (males).

	VJH		Hand-grip		Hip ER		Active SLR		Passive SLR	
	F-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value
Contemporary (h)	2.78	.11	7.91	.008*	.25	.62	.01	.92	.02	.90
Ballet (h)	.06	.81	3.07	.09	6.55	.014	2.60	.11	5.95	.02
Creative (h)	9.07	.004*	4.94	.03	1.84	.18	.59	.45	.35	.56
Hip hop (h)	.36	.55	.64	.43	1.81	.19	.01	.94	.01	.95
Years in dance	2.76	.11	.36	.55	.74	.39	.61	.44	.91	.35
Non-dance physical activity (h)	1.08	.31	.00	.98	1.14	.29	.17	.69	.02	.90
Age	9.82	< .001*	16.18	< .001*	.56	.57	3.32	.05	1.86	.17

* Denotes significance at the .01 level.

Note: VJH denotes vertical jump height; SLR denotes straight leg raise; Hip ER denotes hip external rotation.

Table 5.5. Tests of between-subject effects results for psychological and social variables.

	Self-esteem		Anxiety		HP		OP		Task		Ego	
	F-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value	*F*-value	*p*-value
Contemporary (h)	.09	.76	.01	.92	.00	.996	.18	.67				
Ballet (h)									.03	.87	9.08	.003*
Creative (h)									3.65	.06	2.85	.09
Age	5.70	.004*	2.10	.13	.19	.83	1.25	.30	1.25	.29	10.03	<. 001*

Note: HP denotes harmonious passion; OP denotes obsessive passion.

* Denotes significance at the .0125 (psychological variables) or .025 (social variables) level.

5.5 Discussion

The aim of this study was to investigate multidisciplinary characteristics of talented dancers in relation to age groupings. Regarding the physical variables, the oldest students exhibited the greatest values for handgrip strength (both sexes) and vertical jump height (males only), and the early adolescence group the lowest. This supports previous research into age effects on muscular strength and power (Klausens et al., 1989; Mersch & Stoboy, 1989). Because some demographics were related to these measures (e.g. hours in contemporary dance and handgrip strength), it appears that both training and age-related factors such as maturation can impact upon such variables. Longitudinal research with the same cohort will further investigate these relationships. No differences were found on the flexibility measures, indicating that training is more influential than age in terms of joint range of motion.

Of the psychological characteristics examined, significant differences were observed only in self-esteem. Both the early and mid-adolescence groups reported significantly higher self-esteem than the late adolescence group. This is in contrast to childhood and adolescence research which demonstrated increases in self-esteem after the age of 14 years (Block & Robins, 1983; Fox, 1998; Marsh, 1989), suggesting that further research is required to examine whether this finding generalises to other dance samples or is specific to this population. Positively, self-esteem scores were still relatively high, supporting a previous study (Nordin-Bates et al., 2012). No group differences were found for anxiety or passion scores.

In terms of the motivational climate, the late and mid-adolescence groups reported significantly greater ego-involving climate perceptions than the early adolescence group. This indicates that older students perceive a different learning environment to their younger peers, which supports previous findings demonstrating changes in the motivational climate over time (Le Bars et al., 2009; Van Rossum, 2001). Taken together, it appears that as students progress through training, learning environments become more likely to promote unequal recognition and punishment of mistakes. Positively, however, students generally perceived their climates to be more task-involving than ego-involving and older students did not perceive fewer task-involving features than their younger counterparts.

Implications for Training

The results of this study suggest that some characteristics of talented dancers differ across the adolescent years. Age-related factors may be important to consider in terms of both talent identification and development because physical maturation and psychological development could impact upon identification procedures and development programmes (Abbott & Collins, 2004; Durand-Bush & Salmela, 2001). For example, a young dancer might not display high levels of muscular strength and power at selection processes such as auditions, but may have the potential to develop these through growth and training. Therefore, to avoid excluding the potentially talented during auditions, educators should be aware that some characteristics of young dancers will change over time. An alternative possibility would be to consider adapting selection criteria according to age.

Regarding talent development, the finding that age group differences exist in vertical jump height (males only) and handgrip strength could have implications in terms of expectations and demands placed upon students. For example, more can be expected in terms of upper body strength from older students and thus teachers may consider challenging older students with more weight-bearing work compared to younger students. In terms of flexibility, however, it appears that similar expectations with regards to range of motion can be placed on students of all ages. Additionally, these findings may have negative implications for fast-tracking. As an illustration, a young student who is highly artistically talented may be placed in a group with older students, but may struggle physiologically with certain movement tasks that involve muscular strength and power. Therefore teachers should consider ability groupings not only in terms of technique and artistry, but also physiological development.

In terms of the self-esteem and motivational climate findings, it could be suggested that even when students are older, committed and progressing through training, they still need support, nurture and care from significant others. Positive behaviours such as praise and constructive feedback, combined with a task-involving motivational climate, may help to enhance self-esteem (Buckroyd, 2000; Duda, 2001). It is important to note that a task-involving motivational climate can be disciplined and involve high expectations, but does not include the negative features characteristic of an ego-involving climate such as punishment of mistakes or peer comparison. Based on these findings and previous research, task-involving climates

should form an important part of talent development programmes (Ntoumanis & Biddle, 1999; Pensgaard & Roberts 2002; Quested & Duda, 2010).

Overall, some characteristics of talented dancers appear to differ across the adolescent years. Dance educators should be aware of such differences in relation to both talent identification and development processes. This would help to ensure that the potentially talented are not excluded due to age-related factors such as physical maturation and psychological development.

Limitations

Cross-sectional designs cannot assess causality; therefore longitudinal work with the same cohort will help to establish the reported relationships. Effect sizes were generally small indicating that factors other than age or the demographic covariates may be influential. The characteristics measured in this study also only represent a sample of some of the previously suggested dance talent criteria (e.g. Sanders, 2006). However, the study has not attempted to create a dance talent model: it has reported what *is* rather than try to suggest what *should be* in the characteristics of young talented dancers.

5.6 Conclusion

The aim of this study was to investigate differences in the characteristics of young talented dancers in relation to age. Older students demonstrated greater handgrip strength and leg muscular power (males only) than younger students, while the oldest students reported lower self-esteem than the younger students. The oldest students also reported the greatest perceptions of an ego-involving motivational climate. Certain characteristics of talented dancers appear to differ across the adolescent years, indicating that talent criteria in terms of both identification and development could be adapted according to age.

Chapter 6

A Qualitative Investigation of Commitment to Dance

This manuscript has been submitted for publication with the following reference: Aujla, I.J., Nordin-Bates, S. M., & Redding, E. (under review). A qualitative investigation of commitment to dance: Findings from the UK Centres for Advanced Training. *Gifted Child Quarterly*

6.1 Abstract

The aim of this study was to investigate the factors that facilitate young people's commitment to a dance talent scheme. Semi-structured interviews were conducted with nineteen committed dancers and transcripts were content analysed. Enjoyment was the most important factor relating to commitment, and stemmed from several sources such as self-expression, movement sensations and feelings associated with performing. Relationships with dance peers and teachers, parental support and the opportunities available on the scheme also enhanced commitment. While some potential barriers to participation were identified, such as worries about injury, these appeared insufficient to affect the participants' commitment. Findings suggest that reasons for committing to dance training are similar to those identified in sport commitment and adherence research. Further research is now recommended to assess the applicability of sport theories to dance contexts.

6.2 Introduction

Due to the numerous benefits that physical activity can provide, researchers have long been interested in understanding adherence and dropout from sport in order to maximise participation. Youth sport has typically been the focus of studies as adolescence is a key period for dropping out of physical activity (Hedstrom & Gould, 2004). A range of studies in youth sport have consistently found social relationships, perceived competence and, in particular, enjoyment, to be associated with adherence (e.g. Gould, Feltz & Weiss, 1985; Klint & Weiss, 1986; Ryska, Hohensee, Cooley & Jones, 2002; Salguero, González-Boto, Tuero & Márquez, 2003). Given the importance of enjoyment to adherence, researchers aimed to better understand *why* physical activities are enjoyable. Across a range of sports, ages and ethnic backgrounds, common sources of enjoyment include the excitement of the game, challenge, positive social interactions, perceived competence, effort, mastery, goal attainment and movement sensations (Scanlan, Carpenter, Lobel & Simons, 1993a; Scanlan & Lewthwaite, 1986; Scanlan, Stein & Ravizza, 1989; Stein & Scanlan, 1992; Wankel & Kreisel, 1985; Wankel & Sefton, 1989). Intrinsic motives for participating in physical activity tend to be afforded more importance by participants than extrinsic motives (Ryska et al., 2002), which suggests that young people are 'pulled' toward participation rather than 'pushed' into activities.

Studies of aesthetic physical activities have reported similar enjoyment sources and participation motives to those of non-aesthetic physical activities, but additional artistic factors have been cited. These include self-expression, creativity and performing in figure skating (Ryba, 2007; Scanlan et al., 1989) and self-expression, movement sensations, performing, an escape from daily life, and creativity in dance (Alter, 1997; Nieminen, 1998; Pickard, 2006; Stinson, 1997). Interestingly, Scanlan and colleagues (1989) suggested that aesthetic physical activities provide more sources of enjoyment than non-aesthetic physical activities due to the additional artistic component. However, the impact that artistic factors may have on commitment or adherence has yet to be addressed.

Following on from descriptive studies, sport researchers began to adopt or develop theories in order to understand the psychological mechanisms underlying commitment and adherence to physical activity. Commitment is conceptualised as a psychological construct reflecting "the desire or resolve to continue sport participation" (Scanlan, Carpenter, Schmidt, Simons & Keeler 1993b, p.1);

adherence is the behavioural outcome of commitment. The sport commitment model (SCM; Scanlan et al., 1993b) is one of the most prominent models used to investigate commitment in sport contexts. According to this model, sport commitment is predicted by greater enjoyment, involvement opportunities, personal investments and social constraints, and fewer attractive alternatives. Research with youth engaged in a range of sports has found enjoyment and involvement opportunities in particular to predict commitment (Carpenter, Scanlan, Simons & Lobel, 1993; Carpenter & Coleman, 1998; Scanlan et al., 1993b; Weiss & Weiss, 2006). However, some problems with the personal investments and social constraints factors of the model have been reported (Carpenter et al., 1993; Carpenter & Scanlan, 1998; Scanlan et al., 1993b; Sousa, Torregrosa, Viladrich & Cruz, 2007; Weiss, Kimmel & Smith, 2001). For example, some young people may not understand the concept of personal investments given that it is parents who typically fund sport involvement (Scanlan, Simons, Carpenter, Schmidt & Keeler, 1993c). Researchers have added additional potential antecedents such as recognition opportunities and negative affect (Carpenter & Coleman, 1998), and perceived competence and behavioural commitment (Weiss, Weiss & Amorose, 2010), but to date only social support has received sufficient empirical support to warrant inclusion in the model (Scanlan, Russell, Beals & Scanlan, 2003; Scanlan, Russell, Magyar & Scanlan, 2009; Weiss & Weiss, 2007). Furthermore, Weiss and Weiss (2006) noted that because enjoyment and commitment tend to be highly correlated, this might have a suppression effect on the other antecedents. As such, further empirical research has been recommended to test the model and its antecedents (Sousa et al., 2007). Even so, it is important to note that the various complex factors involved in commitment are not necessarily explained in their entirety by this theory. In particular, environmental factors (such as teacher behaviour) and developmental factors are not taken into account.

Social relationships both within and outside of the activity can have an impact upon commitment and adherence. Within the environment, teacher behaviour can influence participation behaviour: perceptions of a task-involving motivational climate (a psychological atmosphere which emphasises task mastery and self-referenced learning; Ames, 1992) have been associated with adherence to sport (Boiché & Sarrazin, 2009; Le Bars, Gernigon & Ninot, 2009; Vazou, Ntoumanis & Duda, 2006). In addition, relationships with likeminded peers have been associated with commitment in qualitative studies of young talented athletes and artists (Fraser-Thomas, Côté & Deakin, 2008a; Fredricks et al., 2002; Patrick et al., 1999). Outside

of the activity, family support is crucial in long-term activity involvement, for example by providing advice, encouragement and logistical support (Bloom, 1985; Côté, 1999; Csikszentmihalyi, Rathunde & Whalen, 1993; Pickard, 2006).

Finally, a developmental approach to understanding talent development has indicated that the opportunity to sample a range of activities during early development, followed by commitment to one specialised activity during the mid-teens, is associated with both continued participation and the attainment of elite status (Bloom, 1985; Carlson, 1988; Côté, 1999; Côté, Lidor & Hackfort, 2009; Fraser-Thomas et al., 2008a; Fraser-Thomas, Côté & Deakin, 2008b; Hill, 1993). Overall therefore, factors related to commitment appear broader than the antecedents of the SCM, including components of the activity itself as well as social agents in and beyond the learning environment.

Despite the research developments in sport adherence and commitment, little research into commitment has been undertaken in dance. Dancers dedicate many hours to their art; according to one study, professional dancers began training at a young age (often around six years) and spent on average eight hours per week in technique training and an additional 17 hours per week rehearsing dance works (Weiss, Shah & Burchette, 2008). For young dancers, commitment to training must be made alongside school work and social activities. To date there is no research examining *why* dancers make this commitment. Studies on participation motives have provided useful information (Alter, 1997; Nieminen, 1998; Pickard, 2006; Stinson, 1997), yet participation motives may change over time and do not explain long-term activity involvement. Thus, investigations that go beyond participation motives are required. The aim of this study was to better understand factors that facilitate commitment to dance training. Such an understanding may enable educators to enhance retention rates and thus encourage young people to develop their talents as well as accrue the benefits associated with physical activity. From a greater understanding of the factors involved in young people's commitment to dance, intervention studies could be designed to test practical recommendations, and learning environments that optimise commitment, success and well-being could be promoted.

Given the diverse factors related to commitment in previous studies, and the paucity of available dance research in the area, an exploratory, qualitative approach was adopted. In this way, a broad understanding of various factors that might affect

participants' commitment to dance could emerge inductively. Qualitative designs allow researchers to explore and understand a phenomenon from participants' perspectives rather than from an a priori conceptualisation (Krauss, 2005). A broad range of factors (individual, artistic, developmental, environmental) that potentially influence dance commitment were considered in order to obtain a comprehensive view. Rich description yielded from such a qualitative approach may then be used to determine whether sport theories apply to this domain or whether dance-specific theory is necessary.

6.3 Method

Participants

This study was part of a larger longitudinal project investigating talent development in young dancers. Participants were recruited from the Centres for Advanced Training (CATs), UK government-funded talent schemes that offer high-quality part-time dance training to young people between the ages of 10-18 years. Dance classes run at weekends and after school to enable students to continue attending their mainstream schools and, if they choose, other extracurricular activities.

Nineteen students were recruited from three CATs that focus on contemporary dance (centres are referred to as either A, B, or C in the Results), although students also took classes in other styles including ballet, creative dance and professional workshops. Of the participants, 12 were female and seven were male, ranging in age from 11-17 years (M = 15.21 ± 2.02). They trained at their CAT for an average of 6.80 hours (± 1.10) per week, with an additional 6.96 hours (± 5.17) per week training at other dance schools. Students who had been attending their CAT for at least three months were selected for the study because they would be training for significant hours each week at their CAT and thus were likely to give a rich account of their experiences in, and commitment to, dance (Patton, 2002).

Procedure

The study was granted approval by a Higher Education institutional research ethics committee and informed consent was given by all participants. For participants under 16 years of age, parental consent was also obtained. Participants were given information sheets prior to the interviews to enable them to familiarise themselves with the procedure and aims of the study.

Semi-structured interviews were conducted using an interview guide that was created with considerations of existing research and gaps in the literature[3]. The guide was structured into four sections: (1) introductory questions and dance training history (e.g. Can you describe when you first started dancing?); (2) feelings about dance, reasons for dancing and future ambitions (e.g. Could you describe what your main reasons for dancing are? What is it about dance that you enjoy the most?); (3) potential changes in feelings about dance, participation and training over time (e.g. Can you describe how your dance involvement has changed over time? Would you say that you are you still dancing for the same reason as when you started?); and (4) the role of significant others (e.g. Can you describe what sort of role your parents play in your dance involvement?). The guide was concise in order to minimise disruption to the students' busy timetables. Participants were encouraged to ask questions where necessary, and probe questions were used when further clarification and elaboration was required in order to reach data saturation (Patton, 2002).

Pilot interviews were conducted with four dancers (three trained dancers; the fourth a CAT graduate now undertaking vocational dance training) in order to assess the utility of the questions. As a result, some probe questions were added and some of the questions were re-worded. Interviews were conducted at a mutually convenient time and space within the dancers' training, and lasted approximately 30 minutes. The first author conducted all of the interviews.

Analysis

The interviews were transcribed verbatim and uploaded into NVivo qualitative analysis software. All text was read thoroughly and relevant meaning units extracted and labelled. Meaning units were inductively organised into continuously created and merged categories (themes). From these, a hierarchy emerged that represented relationships between lower- and higher-order themes, and the research question (Patton, 2002).

Several steps were taken to enhance trustworthiness. Participants were assured of anonymity and data confidentiality, encouraging them to speak freely. The first author has a dance background and understands dance concepts and experiences, enabling her to empathise with participants and use appropriate probes. After each

[3] The interview guide can be found in Appendix 5.

interview, the first author wrote a summary of the important themes that had emerged, and noted non-verbal forms of communication such as impressions of mood. During analysis, the second author separately coded 10% of the transcripts to ensure agreement on coding density (i.e. percentage of transcript coded). The second author then independently categorised all meaning units. The two versions of the hierarchy were continuously compared and debated until agreement was reached (Patton, 2002). Finally, quotations are included in the Results to allow readers to form their own interpretations (Sparkes, 1998). Interviews followed the same schedule and generally lasted for similar durations; thus the number of times a theme was mentioned by participants is included in the Results to indicate its importance to the entire sample. However, it is important to note that a theme may be important even if it is only mentioned by a small number of participants (Krane, Andersen & Strean, 1997); therefore, all themes relevant to the research question are reported below.

6.4 Results

Four higher-order themes emerged to create the overall hierarchy of commitment: Developmental factors; Experiences in CAT; Important background factors; and Life balance. Figure 6.1 shows these themes together with the lower-order themes from which they were created. Each theme will next be presented in detail.

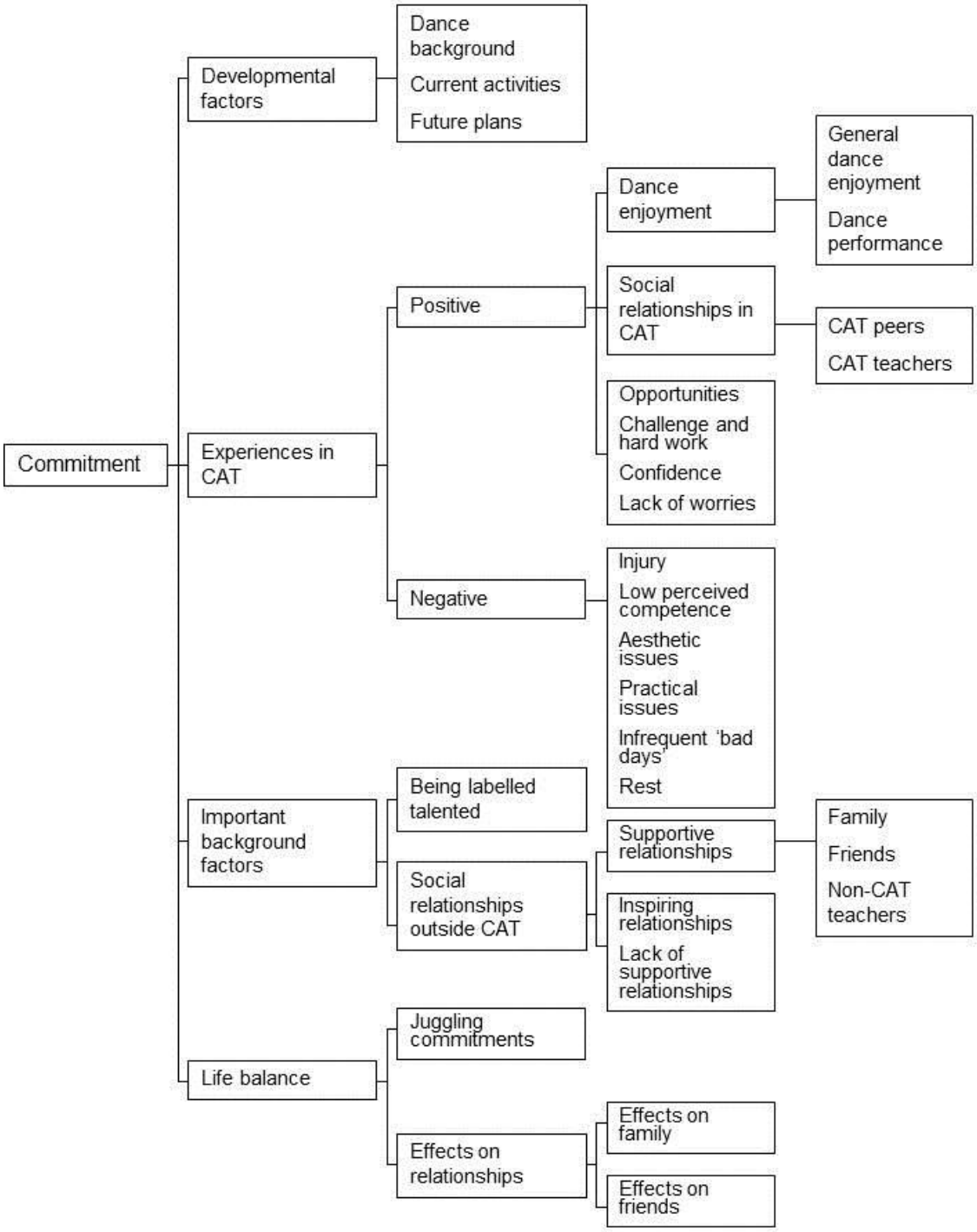

Figure 6.1. Hierarchical representation of results.

Developmental Factors

This theme explored the dancers' backgrounds, current activities and future plans. In terms of backgrounds, nine students began dancing at an early age (four or five years old). Four began dancing around the age of 10 years, while the remainder came to dance later during their mid-teens, often through school projects. Five participants recalled being sent to dance classes by parents, while six initiated training themselves. For example one participant explained: "...I think I begged my mum to take me to a dance class!" (C1). Other influences included school teacher and friend recommendations. Sixteen participants reported that they now train for a greater number of hours per week than when they first started dancing and the majority (18) felt that their dance training had become more difficult over time. Fifteen students noted that their motivation for dance had also altered over time, with dance changing from being a hobby to becoming a passion and something that they were considering as a career: "I think back when I first started I didn't realise, like, what was going to happen, and now I just kind of realised that this is exactly what I want to do" (B1). Four participants felt that there was no change in motivation over time and that they were still dancing for the same reason as when they started, for example: "I started because I was intrigued by it and I want to, I don't know, explore it more" (C2).

Regarding current activities, 14 participants were training at other dance schools in addition to the CAT, often partaking in several other weekly classes. For example, one participant described his additional dance training as: "...three hours of ballet on a Monday night...a two-hour club on a Tuesday which is break-dance...and I have my technique lessons for A Level" (A3). Thirteen students participated in at least one other extracurricular activity, relating to music, the dramatic arts, sport or visual art, for example: "I play the flute and I sing, and I go to a lady to do musical theatre and drama exams" (C4). Finally, 15 participants planned to pursue a dance career. Although some had worries about the nature of the profession, six students had explicitly positive outlooks. As one explained: "I'm quite realistic as in, I know it's not gonna be easy and you're not always gonna have jobs and stuff, but I'm prepared for that, like, I'm not in it for the money anyway!" (A5). Four participants were considering dance as part of their career alongside other options.

Experiences in CAT

This theme was created from lower-order themes relating to positive and negative experiences in the dance talent scheme. Demonstrating the importance and

prevalence of positive experiences, 229 meaning units were generated for this theme (96 of which related to enjoyment), compared to only 42 meaning units generated for negative experiences.

Positive

Positive experiences included dance enjoyment, social relationships in the CAT, opportunities, challenge and hard work, confidence, and a lack of worries. These abundant positive experiences had a favourable impact on the participants' commitment.

Dance enjoyment

Students described numerous sources of dance enjoyment and appeared to recognise that enjoyment was important in order to continue training. For example, one participant explained: "…there's a lot more commitment [at CAT], so I really have to feel like I enjoy it to come, and I do" (A3). Several of these enjoyment sources generalised across various dance settings (e.g. technique class; creative workshops), while some were specific to performance contexts.

General dance enjoyment. In terms of general sources of dance enjoyment, self-expression was mentioned by nine of the participants, for example: "I just think dancing is such a beautiful way of expressing yourself and feelings" (B2). The physical experience of dancing was in itself highly enjoyable; movement sensations were described by seven participants, apparent in the following quote: "I just love the whole, like, rush of it all...trying to fly across the room" (B1). Task mastery was cited by six participants as an enjoyable part of dance training, as students understood that hard work enabled them to reach their technical goals. As one explained: "It seems like you keep working at it, and it does work, you do get a lot better" (B6). One participant described the satisfaction from the physical signs of having worked hard: "If I ache the next day I know I've done good. It might be hurting me but [laughs] I don't know, it makes me feel good 'cause I've worked really, really hard" (C3). Five students explained that dance could be a form of emotional release, for example:

> … if I've had a really bad day at school or something then I can go dancing and just forget about it all, and it feels like me, it feels really natural, like what I should do. It's kind of, like, my escape from everything else (B3).

Three students reported that creativity was an enjoyable part of their dance experience: "I like creating stuff. Here, when we're performing a piece together,

when we're part of the creative process, I like that" (C4). Finally, one student mentioned the importance of music: "…I love the guitar and just hearing the layers and everything, you just, like, get lost and it makes me smile so much" (A5).

Dance performance. Although many of the already-mentioned themes could relate to both classes and performances, most (17) students found performing to be particularly enjoyable, as one described: "I think the adrenalin rush, it's everything that's put towards that performance, it's all, there's so much pressure on you but it's your time to shine. It's really good!" (C3). As nine participants identified, performing facilitated an enjoyable adrenalin rush or 'buzz' as the following quote illustrates: "… you kind of forget about everything, you're in front of an audience and it's like an adrenalin rush." (C1). Performing also provided participants with opportunities for task mastery, as six students explained how performance was a means of justifying the hard work that had gone into training and rehearsing: "…the realisation that all that training has come to something" (C4).

Interpersonal aspects of performing were mentioned in relation to audiences, with the majority of the group enjoying performing in front of others on stage and receiving cheers, feedback and appreciation, for example: "Seeing the audience and knowing that they're here to watch you dance, and then once you've finished and they're all clapping and then you take your bow, it's just a really good feeling." (C1). Performing was also viewed by four participants as an opportunity to give others pleasure. One participant took this notion further by explaining: "…if you have that kind of passion and you show it, and then the audience receives it, I think you can really, like, change someone's life" (A6).

Social relationships in the CAT

Social relationships emerged strongly as a positive aspect of dance training and was related to the participants' commitment to the scheme. This theme comprises the categories CAT peers and CAT teachers.

CAT peers. According to 14 participants, CAT peers were important in terms of friendship, support and, "…being around people who all had the same interests" (A5). Four participants also stated that students could have a motivational impact on each other, for example: "in the class we all spur each other on and give credit if we've done something well" (C2). Furthermore, the CAT cohort in general was perceived by participants as highly motivated, which was a motivating factor in itself.

One participant explained: "…they wouldn't bother if they didn't want to come, I mean it is a Saturday and I'm sure a lot of people have got stuff they could be doing all day, but they come here instead, from miles around" (A8). Seven participants stated that their peers worked together and were able to learn from each other. Performing as a group was also a positive experience, as one participant described: "…no-one's gonna let you down, 'cause everyone's working not just to make themselves look good but to make everyone look good in a way, to really prove yourself as a group" (A1).

CAT teachers. CAT teachers appeared to represent an important aspect of the social environment in two related ways: through their relationship with the students, and in their teaching style. Students appeared to have good relationships with their teachers, with six describing their teachers as approachable and helpful in giving advice about dance careers. For example, one participant explained: "I really trust them...not just with the steps they give us" (A6). Seven participants stated that teachers provided motivation and encouragement to work hard, as the following quote evidences: "[Teacher] in a way believes in me and spurs me on in what I can do" (C2). Encouragement was reinforced through positive feedback and constructive criticism. This appeared to be valued by the participants, as the following quote illustrates:

> …if I'm looking at it seriously as a career, then I'd much rather people just said, look that's OK but you should do it like this, I'd much rather that than people say 'yeah that's good', 'cause otherwise you wouldn't get any better (B3).

Teachers were also perceived to be important in terms of skill instruction and their professional credentials. One participant explained: "...they've had so much experience and, like, we just learn loads from them" (C1). Staff appeared to teach in a way that emphasised autonomy and equality. Two students explained that CAT teachers were less controlling than their teachers at other dance schools, while two participants explicitly stated that their teachers did not have favourites. Three participants described how the teachers treated them like adults, which served to enhance their autonomy and confidence: "...we're treated more as young dancers here, whereas there [other dance school] we're still children who are learning to dance" (B3). There appeared to be a mutual respect between dancers and teachers, who encouraged students to take responsibility for their learning. Evidence of taking such responsibility emerged, for example: "I'm kind of really

focusing on getting this move right so that next week I'll be able to show the teacher that I have practiced and that I have concentrated" (B2). Three participants also explained how they took responsibility for their own health, as the following quote demonstrates: "I've been taught mainly from CAT to take responsibility…you have to start analysing everything, as I said, what I eat, exercise, what training I get, how many hours I do, not damaging, you know, myself, injuring myself." A7).

Opportunities

Five participants stated that there were several exciting opportunities and experiences available at the CATs. As one explained: "I enjoy everything we do, especially performances and getting to work with different choreographers and stuff, it's really, really good" (B3). One participant mentioned that the talent scheme facilities were superior to those at other dance schools. Unlike most private studios, each CAT is associated with a professional company or theatre, usually sharing access to purpose-built dance facilities such as studios and performance spaces.

Challenge and hard work

Training was perceived to be focused and well-planned, involving plenty of challenge and hard work. Two participants reported that they were pushed more at the CAT than at their other dance schools.

Confidence

Two students felt that dance created confidence, as the following quote illustrates:

> I'm confident when I do it… it's the only thing that I think I'm really good at, like there's nothing else I love as much that I'm good at and can see myself doing for the rest of my life (A5).

Confidence was also created as students monitored their own progress and improvements.

Lack of worries

Four participants stated that they had no concerns regarding dance. Although they were aware of the difficulties of training and the dance profession, participants tended to have positive outlooks, such as: "I've got to work a little bit more and just keep on trying" (B6).

Negative

Participants described a small number of negative experiences related to their dance involvement which were worries relating to injury, perceived competence, aesthetic issues, practical issues, and infrequent 'bad days'.

Injury

Injury was a concern for six participants, for example: "The only worry would be that I got injured and I couldn't do it anymore, 'cause that can happen so easily" (B3).

Low perceived competence

Six participants cited worries regarding perceived competence and self-confidence, for example: "I think my flexibility is a big factor as well, I think it holds me back sometimes" (C2). Concerns about the future were also expressed, as one participant noted in relation to the competitive dance profession: "And there's so many good dancers as well, like, how do you know if you're good enough?" (C1). To prevent low perceived competence from affecting commitment, two students described employing self-initiated coping strategies, such as: "… at the end of every class or whenever I've done something good I always cheer or something like that" (C2).

Aesthetic issues

Two participants listed concerns related to aesthetics, such as: "I'm quite muscle-y sort of thing, I don't think I'm very elegant" (B5). Demonstrating awareness of the physical 'ideals' that exist in some dance forms, one participant explained concerns relating to body image: "I hope dance doesn't, like, make me become overly concerned about what I look like or my body" (B3).

Practical issues

Practical issues such as money and travel were discussed by two of the older students, as the dance profession has limited financial rewards and involves travelling when touring. However, as noted previously, participants had positive outlooks:

> ...it's such a hard industry to get into, it's not always a guaranteed job is it? So I suppose it might be hard with money and things. But I suppose – it's more a job that you love than a well-paid job isn't it, so you just have to do it! (C1).

Infrequent 'bad days'

Four participants described having 'bad days' which challenged their perceived competence, but these were infrequent. As one participant described: "Obviously there's been the bad days when I've come home going 'oh my God I'm crap, I'm a terrible dancer, they're all so much better than me', and that kind of thing, but they've been very, very rare" (A1).

Rest

Interestingly, one of the youngest participants (aged eleven years) worried about fatigue, saying: "it's very tiring, so I worry about getting less sleep than I should, less rest" (B2).

Important Background Factors

This theme represents factors that supported the young dancers' commitment to their training and is composed of being labelled talented and social relationships outside of CAT.

Being labelled talented

All but one student could recall a time when they had been told they were talented in dance, typically by parents, friends and/or teachers. One participant described how this made him feel: "Good I guess. If anyone tells you you're succeeding at something, you actually think, 'oh I'm gonna really go for it, push myself, try and achieve something'" (A6).

Social relationships outside of CAT

Social relationships outside of the talent scheme were generally supportive and appeared to facilitate students' commitment to training. Some relationships were inspiring, while others were unsupportive.

Supportive relationships

Supportive relationships were with family, friends, and non-CAT teachers.

Family. The majority of participants (16) felt that their parents were supportive of their dance involvement. Eight dancers described how parents offered advice, help and emotional support when needed. Parents provided encouragement to continue training, as the following quote demonstrates: "[Mum's] always said to me, 'follow your dreams, do what you want', saying 'you go to your class and you put in your

effort and you'll get out of it what you put in'…she's really been helpful" (C3). Parents also provided transportation to and from training, rehearsals and performances so that their child could continue to develop their talents. One student noted: "…without them I wouldn't be able to do it really" (A3).

Twelve participants reported that their siblings were supportive of their dance involvement. For example, the following quote demonstrates the support one participant received from his older brother: "...he's always telling his mates, 'that's my little brother, he does dance in London'...He's definitely proud of me, yeah, it's good" (A3). There was one mention of grandparents' support being important.

Friends. Fourteen participants described their non-dancing peers as being supportive, understanding the time commitments involved in dance training, and coming to watch performances.

Non-CAT teachers. A final source of social support came from teachers (non-CAT dance teachers or school teachers), mentioned by three of the participants.

Inspiring relationships

Seven students felt that watching professional dancers was inspiring, as one explained: "…when I first ever went to see a contemporary performance, I think that's when it really clicked, 'this is what I want to do'" (C3). Teachers were also inspiring, as illustrated in the following quote: "My teachers have played a massive role and they inspire me as well...I just go 'wow, I want to be like you, I want to get to where you've got to'" (A7). Two participants explained how watching their peers performing technical exercises in class could be inspiring. Finally, one student described a school work experience opportunity with children with disabilities, which helped him to appreciate and optimise his dancing.

Lack of supportive relationships

Three participants stated that their parents were not supportive of their dancing, as the following quote illustrates: "They don't care. Well, they think it's just a hobby" (A2). Five participants felt that their siblings were not supportive, usually because the sibling was too young to offer support, or was older and had left home.

One participant felt that her non-dancing friends were indifferent to her dancing, explaining: "…I don't really talk about dance much because they're not into it" (B4).

Four participants mentioned unfriendly teasing from non-dancing peers; for example, one male reported that he had occasionally endured negative comments regarding his sexuality. However, these students did not appear to be affected by negative comments, for example: "...I lost a lot of friends when I originally started, which was good in a way 'cause then it showed who were my true friends" (A8). Finally, one participant discussed how her boyfriend seemed to understand the time commitment required for demanding training, yet was not entirely supportive:

> …he understands that I dance and he accepts it, but…I don't see him as much and he got a bit like, 'oh you dance too much'…and it's like, 'oh I wanna do this, just let me do it, I'll still see you, isn't twice a week good enough?' (A5).

Life Balance

The theme of life balance, relating to balancing various activities alongside dance training, comprises juggling commitments and effects on relationships.

Juggling commitments

Fifteen students felt that they were juggling many commitments in their lives, and 12 participants believed that balancing these commitments had become more difficult over time: "...it has got more difficult...now we've started our GCSEs so there's a lot more homework given, and you're trying to do stuff and seeing friends has become less" (B4). However, on the whole this was manageable and for four dancers had resulted in improved time-management skills. Eleven participants reported that CAT took priority over other dance training and extracurricular activities, as one explained: "...when they said how often it was...I thought I'd better put everything into coming here" (C4). One dancer had been prioritising spending time with her boyfriend but was determined to stay committed to her training, explaining: "I think the main thing's having a boyfriend, it's been harder, 'cause it's like another thing I enjoy as much as dancing [laughs], but I still wanna [dance], it's just that I need to put more into it…" (A5). Finally, seven participants travelled long distances to attend training, yet this did not appear problematic and even provided an opportunity to catch up on school work. For example: "We need to get up about quarter to six 'cause our train's at seven, yeah, bit early. It's worth it though. I wouldn't do it if I didn't want to" (A3).

While most of the dancers felt that juggling their commitments was manageable and worthwhile, many questions had been raised for one participant. He explained: "Well

this has made me wonder if I'd rather go to school, options, spend time with my mates and do sports at school…and it is really thinking 'am I enjoying myself enough?…is this more important than that?'" (B6). For the time being, however, he had decided to remain in training.

Effects on relationships

Effects of the participants' commitment to dance training were acknowledged in terms of effects on family and friends.

Effects on family

Two participants reported that the family spent less time together because of their dance commitments. For example, one student whose parents were divorced explained, "Well I don't see my dad a lot…'cause I dance on Saturday, and I used to go see him on weekends, but it's kind of gone out the window now" (C2). Five participants described how their parents' own time was affected by transporting them to training, and three students acknowledged the financial impact of their training on the whole family. One participant described some tension between herself and her father as they disagreed on her priorities: "Sometimes it makes things very tense with dad 'cause he disagrees with a lot of stuff about the amount of time I spend dancing" (A7).

Effects on friendships

Eight participants noted that they saw their non-dancing friends less often due to their dance training. This was generally perceived as being negative, for example: "I can't see them, can't go to parties at all… I'm missing everything" (A2). Interestingly however, three dancers did not appear to be affected by seeing their friends less frequently, as one explained: "My friends at school, they're always like, 'you're dancing all the time, we never get to see you, we haven't had a proper chat in ages', but I don't mind [laughs], I'd rather be dancing!" (C3). Moreover, three participants perceived positive effects, such as a greater appreciation of the time that they were able to spend with these peers.

6.5 Discussion

The aim of this study was to investigate factors that facilitate young people's commitment to a dance talent scheme. Throughout the interviews it became clear that the participants were passionate about dance and highly dedicated to their

training. Overall, enjoyment and social relationships were the most frequently cited factors that influenced dance commitment; course content, developmental factors and additional themes such as juggling activities are also worthy of discussion.

In support of previous sport research (e.g. Gould et al., 1985; Klint & Weiss, 1986; Ryska et al., 2002; Salguero et al., 2003), enjoyment emerged as the most important factor associated with dance commitment. The enjoyment sources cited by the participants included many of those found in previous sport research including movement sensations, task mastery and emotional release (e.g. Scanlan et al., 1993a; Wankel & Kreisel, 1985). Additionally, several artistic factors were cited such as self-expression, creativity and performing, similar to enjoyment sources and participation motives reported in studies of dancers and figure skaters (Alter, 1997; Nieminen, 1998; Pickard, 2006; Ryba, 2007; Scanlan et al., 1989; Stinson, 1997). However, while these previous studies investigated enjoyment sources and participation motives, they did not consider artistic factors in relation to long-term involvement. This study is the first to demonstrate the link between artistic factors, as important sources of enjoyment, and dance commitment. Self-expression was the most frequently cited general dance enjoyment source, suggesting that a personal or emotional connection to the activity can have an impact upon an individual's desire to continue pursuing their art. Such a connection to dance bears resemblance to notions of passion, in which the activity becomes internalised into the individual's identity, becoming part of who they are (Vallerand et al., 2003).

Social relationships, both within and outside the dance environment, appeared essential to the participants' commitment. In the CATs, the young dancers described their peers as being important in terms of friendship, motivation and sharing common interests, which supports previous research regarding the importance of peer relationships in commitment to talent activities (Fraser-Thomas et al., 2008a; Fredricks et al., 2002; Patrick et al., 1999). Furthermore, socialising with likeminded peers may have had a positive impact upon the dancers' identity development (Eccles & Barber, 1999; Fredricks et al., 2002). Participants valued their peers artistically in terms of practicing, creating work, and performing together, suggesting that the importance of this social relationship operated across several dimensions.

In addition to peer relationships on the talent development scheme, participants valued their teachers as inspiring role models who encouraged and supported them.

There appeared to be a mutual respect between teachers and students, which reflects suggestions in sport that successful coach-athlete relationships are characterised by trust and dependability (Jowett & Poczwardowski, 2007). Moreover, teachers appeared to emphasise autonomy and equality which enhanced the dancers' confidence, motivation and commitment. This is a valuable finding that supports sport research regarding the role of autonomy support in both physical activity intentions (Almagro, Sáenz-López & Moreno, 2010) and adherence (Pelletier, Fortier, Vallerand & Brière, 2001). Teachers appeared to use several strategies that have been documented as contributing to positive psychosocial development in sport including technical instruction, praise and encouragement (Barnett, Smoll & Smith, 1992; Smoll, Smith, Barnett & Everett, 1993). On the whole, these elements are related conceptually to definitions of a task-involving motivational climate (Ames, 1992), which have been associated with adherence in sport (Boiché & Sarrazin, 2009; Le Bars et al., 2009; Vazou et al., 2006). As such, teacher behaviour in the studio appears to play an important role in nurturing dance commitment.

Outside of the talent scheme environment, parental support was an important factor in facilitating the young dancers' commitment to their training. Participants described receiving emotional, financial and logistical support from their parents, which supports other studies of talented youth (Bloom, 1985; Côté, 1999; Csikszentmihalyi et al., 1993). To a lesser extent, non-dancing peers played an additional supportive role. Although there is little in the literature on the role of peers outside the activity, Fraser-Thomas and colleagues (2008a) reported that persisting young swimmers were more likely to receive support from their school friends than dropouts. Taken together, the role of social agents both within and outside of the dance environment should not be underestimated during a young dancer's training.

Course content emerged as another important factor influencing the young dancers' commitment. Firstly, lesson content was perceived to be well-structured and challenging. Balancing challenge and skill level in talent settings is important for building motivation (Csikszentmihalyi et al., 1993; Fredricks et al., 2002; Oreck, Baum & McCartney, 2000) and can positively impact upon young people's development (Fraser-Thomas & Côté, 2009). Secondly, students were inspired and motivated by numerous opportunities to get a taste of the professional dance world via performances, theatre visits and workshops. This highlights the importance of enrichment opportunities in talent schemes that relate to participants' future

aspirations. The finding also supports the role of involvement opportunities as highlighted in the sport commitment model (SCM; Carpenter et al., 1993; Scanlan et al., 1993b; Scanlan et al., 2003). Indeed, the current study concurs with the enjoyment and social support antecedents of the SCM (Carpenter et al., 1993; Carpenter & Coleman, 1998; Scanlan et al., 1993b; Weiss & Weiss, 2006). However, although the current study did not attempt to test the SCM, it appears that this model may not encompass all of the factors that influence dance commitment. The other antecedents of the SCM (attractive alternatives, personal investments and social constraints) did not emerge inductively from the data, while additional factors outside of the SCM, such as environmental factors (specific teacher behaviour, peer relationships), did have an impact on dance commitment.

Regarding developmental factors, some sport researchers suggest that optimal developmental trajectories for commitment and elite performance exist (e.g. Côté et al., 2009). The current study neither supported nor contended this notion in dance. Participants reported varying backgrounds as well as diverse current levels of dance and extracurricular activity involvement. However, the majority of the young dancers reported participating in increasing hours of dance training over time, the content of which had become increasingly difficult, in accordance with most talent models and previous research (Bloom, 1985; Côté, 1999; Ericsson, Krampe & Tesch-Römer, 1993). Furthermore, most participants explained that their passion for dance had increased over time, with dance changing from a recreational activity to a potential future career. This supports previous suggestions in the arts that passion and drive develop over time (Mageau et al., 2009; Oreck et al., 2000), and demonstrates the influence that both emotional attachment to an activity and future goals can exert over participation decisions. Although the importance of passion in commitment is intuitive, this study was the first to highlight it, and further such research is recommended (Vallerand et al., 2006).

Three additional findings emerged from the current study which are relevant to the understanding of dance commitment. Firstly, all but one of the participants had been labelled talented at some point in their dance histories. Although being labelled talented can lead young people to feel that their abilities are outside of their control, resulting in poor persistence when confidence is low (Dweck, 1986), in the current study it boosted the dancers' confidence and motivation to pursue dance. It is possible that the participants already had high levels of confidence in their abilities and were thus positively affected by such labels (Dweck, 1986). Secondly, some

students were inspired by dance performances, teachers and peers to continue working hard or aim to become a professional dancer. Pickard and Bailey (2009) similarly noted the importance of such 'crystallising' experiences in increasing young dancers' motivation to pursue their art.

Finally, although some participants identified worries and concerns (e.g. injury), for passionate and intrinsically motivated dancers such potential barriers did not lessen commitment. However, some participants were aware of the impact their dance commitments had on other areas of their lives, in particular on their relationships with parents and non-dancing peers. For example, some dancers recognised the impact their training had on their parents, which supports previous findings in sport regarding the sacrifices that the families of talented children often make (Côté, 1999; Kay, 2000). For the most part, such factors did not have a lessening effect on commitment, with the exception of one participant's romantic relationship. Similar findings have been reported in youth sport (Coakley & White, 1992) and elite netball (Scanlan et al., 2009). More than relationships with family and friends, romantic relationships may have an impact upon adolescents' commitment to talent activities and are worthy of further research.

Overall, enjoyment underpinned commitment to dance, facilitated by social relationships and the opportunities available on the talent scheme. As such, aspects relating to dance commitment appear similar to those associated with sport commitment and adherence, suggesting that dance and sport are more similar than different in terms of factors underlying commitment. Future research should continue to explore dance commitment, and empirically test the SCM and other theories of adherence and commitment in dance contexts.

The results of this study suggest that educators could facilitate dance commitment by emphasising the intrinsic, enjoyable aspects of dance such as self-expression, movement sensations and creativity. Teaching styles that emphasise autonomy and provide a balance between challenge and support appear important. Furthermore, it has been shown in sport that adopting behaviours including informational and corrective instruction, praise, reinforcement, and encouragement after mistakes can enhance enjoyment and intention to continue playing (Smoll & Smith, 2002). In terms of peers, encouraging dancers to work toward collaborative goals, changing group leaders regularly and allowing shared group decision making can enhance peer relationships (Smith, 2007). Finally, dance institutions should aim to provide

students with various inspiring opportunities such as performances, workshops and theatre visits, while encouraging family support by inviting parents to shows and events.

Although the current study led to a range of valuable findings, some limitations must be acknowledged. Interviews were of short duration, typically lasting 30 minutes, in order to prevent the research from affecting the students' busy timetables. The CATs are a relatively new initiative, providing an intense yet non-residential training environment for young people, indicating that these findings are not necessarily applicable to other dance settings.

6.6 Conclusion

The current study was the first to investigate factors that facilitate commitment to dance training among young talented dancers. The experiences intrinsic to dance, such as self-expression and movement sensations, underpin the enjoyment that drives dance commitment, facilitated by social relationships and the opportunities that the CATs provide. Many of the young dancers had a genuine passion for dance and drive to succeed, which helped them to overcome potential barriers and maintain their commitment. This study has begun to address the gap in the literature around dance commitment, providing valuable findings and applications for practice.

Overall, the application of the findings may help educators to enhance their programme retention rates by creating learning environments that optimise enjoyment, commitment and well-being. By optimising commitment to talent development processes, educators may help to enable young dancers to reach their goals and become successful artists in the future.

Chapter 7

A Mixed Methods Investigation of Dropout among Young Talented Dancers

---

This manuscript has been published with the following reference: Walker, I.J., Nordin-Bates, S.M., & Redding, E. (2012). A mixed methods investigation of dropout among young talented dancers: Findings from the UK Centres for Advanced Training. *Journal of Dance Medicine and Science, 16*(2), 65-73.

7.1 Abstract

The aim of this study was to understand reasons for dropout from a dance talent programme in the UK, using a mixed methods design. In-depth interviews were conducted with ten dropout students to explore the influencing factors in their decision to leave the programme. In order to triangulate these findings, reasons for dropout were then examined from descriptive records of 147 young dancers who had withdrawn from the talent programme over a four-year period. Overall, the most frequently cited reasons for dropping out were conflicting demands, change in aspirations, course content, difficulty making friends, and lost passion. Injury, financial factors, low perceived competence, and teacher behaviour emerged as minor reasons. Intervention strategies that focus on changes in course content may be the easiest to implement and most effective means to enhance student retention.

7.2 Introduction

Adherence and dropout research has been conducted in the sport sciences for several decades and has focused on individual, environmental and developmental factors that influence participation decisions (Weiss & Amorose, 2008). Such research is essential to promote talent development, to ensure that training programmes meet the needs of the individuals involved (Molinero, Salguero, Alvarez, & Marquez, 2009), and to maximise the numerous physical and psychological benefits that can result from physical activity (Ortega, Ruiz, Castillo, & Sjöström, 2008; Penedo & Dahn, 2005). Levels of physical activity in Western societies are reportedly in decline, with sport dropout rates of approximately 35% among young people in America as an example (Gould & Petlichkoff, 1988). As such, the study of dropout during adolescence appears particularly important, as it constitutes an age at which dropping out is especially prevalent.

Descriptive research has indicated that young people drop out from sport for a variety of individual and environmental reasons, such as: training being too time-consuming; having other things to do; a lack of fun or enjoyment; low activity value; low perceived competence; low success expectancies; perceiving excessive pressure or controlling behaviour from coaches; disliking the coach; and a lack of team atmosphere (Burton, 1992; Burton & Martens, 1986; Gould, Feltz, Horn & Weiss, 1982; Molinero et al., 2009; Molinero, Salguero, Tuero, Alvarez, & Marquez, 2006; Pelletier, Fortier, Vallerand & Brière, 2001; Robinson & Carron, 1982; Ryska, Hohensee, Cooley & Jones, 2002; Salguero, Gonzalez-Boto, Tuero & Marquez, 2003). Consistent results from descriptive studies indicate that time conflicts and having other interests are the most frequently cited reasons for sport dropout (Weiss & Petlichkoff, 1989).

Building on descriptive findings, sport researchers have adopted numerous theoretical frameworks to help explain the motivational processes underlying adherence, commitment, and dropout. For example, using self-determination theory (Deci & Ryan, 1985) authors have found that dropouts report less self-determined motivation and lower autonomy, competence and relatedness than persisting athletes (Pelletier et al,. 2001; Sarrazin, Vallerand, Guillet, Pelletier & Cury, 2002). Expectancy-value theory (Eccles, Adler, Futterman, Goff, Kazcala, Meece & Midgley, 1983) tenets have been employed to demonstrate the relationship between task value, perceived competence, and dropout (Guillet, Sarrazin, Fontayne & Brustad, 2006). Authors using the sport commitment model (Scanlan, Carpenter,

Schmidt, Simons & Keeler, 1993b) have reported that greater attractive alternatives and perceived costs, in addition to lower enjoyment, involvement opportunities, perceived benefits and social support, are associated with lower commitment (Carpenter & Scanlan, 1998; Guillet, Sarrazin, Carpenter, Trouilloud & Cury, 2002; Scanlan, Russell, Magyar & Scanlan, 2009; Weiss & Weiss, 2006, 2007). Finally, research based on the developmental model of sport participation (Côté, 1999; Côté, Baker & Abernethy, 2007) suggests that early specialisation in one sport is associated with dropout (Wall & Côté, 2007). This finding may be particularly pertinent in relation to talent development programmes, which often involve intense training in one activity from an early age. Taken as a whole, the study of dropout has been well addressed in sport, although some inconsistencies exist due to the varying foci of theoretical studies. Perceived competence plays a key role in self-determination and expectancy-value theories, for example, while research using the sport commitment model has noted a lack of empirical support for the presence of perceived competence as a variable in the model (Scanlan et al., 2009; Weiss, Weiss & Amorose, 2010).

The large amount of adherence and dropout research conducted in sport has not been paralleled in the dance domain. Despite reports of physical activity decline in Western populations, the popularity of dance in the UK appears to be increasing (Dance UK, 2009). With recent research indicating that dance participation can result in physical and psychological benefits among young people (Blazy & Amstell, 2010; Connolly, Quin & Redding, 2011; Quin, Frazer & Redding, 2007) the UK government has promoted dance as a beneficial physical activity (Be Active, Be Healthy, 2009). Therefore, research into dropout specific to dance is required to ensure that young people accrue maximal benefits from their participation. Moreover, investigations of youth enrolled in talent development programmes could help educators to afford young dancers the opportunity to develop their talents optimally.

While some researchers have explored dance participation motives, only two studies to date have investigated dropout (Bakker, 1991; Hamilton et al., 1997). Although not a main aim of his study, Bakker (1991) compared the personalities of continuing and dropout student ballet dancers. He found that dropouts reported higher sensation-seeking but lower impulsivity than persisting dancers. Additionally, dropouts had significantly higher scores for attitudes towards their own physical abilities. This appears to contrast with sport research that shows low perceived

competence to be associated with dropout (Burton & Martens, 1986; Molinero et al,. 2006; Weiss & Petlichkoff, 1989). It further suggests that the particular dance environment in the study may have resulted in lowered ability perceptions over time among those who remained in training.

The second dance study followed 40 dancers enrolled in an elite ballet school, 55% of whom dropped out over four years (Hamilton et al., 1997). Dropout students were more likely to exhibit anatomical limitations that inhibited dance technique, disordered eating characteristics, an earlier age of menarche, and a greater incidence of injury than persisting dancers. These results suggest that in ballet only those who meet the stringent aesthetic and physical requirements remain in elite training. However, the requirements of ballet differ from those of contemporary techniques (which typically have less restrictive attitudes toward body shape), so the results of the cited dance studies may not generalise to other dance genres. The sample sizes in both studies were small, further calling into question the generalisability of the findings. Consequently there is a need for more research into dance dropout, especially from styles other than ballet. In order to address this gap in the literature, the current study aimed to investigate dropout from a dance talent scheme.

7.3 Methods

This study was part of a larger longitudinal investigation into the development of talented dance students. A mixed methods design was employed to better understand dropout among these talented young dancers as such designs are thought to offer the best opportunity to answer research questions by capturing a combination of depth and breadth (Johnson & Onwuegbuzie, 2004). This is particularly true in under-researched subject areas. Moreover, a purely descriptive approach was adopted to provide a broader view than would be gained by employing a pre-determined theoretical perspective. As qualitative research can be used to explore complex phenomena via rich description (Krauss, 2005), dropout students were interviewed in order to understand dropout reasons from the dancers' own words. Descriptive data on dropout reasons from a large sample of former dance students was then analysed as a means of triangulating the qualitative findings (Moran-Ellis et al., 2006).

Participants were from seven UK Centres for Advanced Training (CATs) in dance, nationwide programmes that offer high quality part-time training to talented young

dancers and those with exceptional potential. Students typically attend two auditions to secure a place at one of the CATs; thus the study participants have been selected from a larger group of young people because of the level of talent or potential they already possess. Training takes place on weekend days and weekday evenings (CAT students continue to attend mainstream schools during the week), with intensive courses running during school holidays. The CATs are government-funded and are able to offer financial assistance to those students who need it, following a means-testing process. The curriculum of five of the CATs is based in contemporary dance, with some classes offered in additional styles (e.g. ballet, creative dance). A sixth CAT focuses on ballet, while the seventh has both contemporary and urban dance (e.g. Hip-hop) strands.

7.4 Qualitative Method

In-depth interviews were conducted with ten students (eight females, two males) who had dropped out from three of the CATs, all of which focused on contemporary dance. Participants were recruited using information packs designed by the lead author and sent out by CAT managers to students who had recently left the programme. A small incentive was offered as a token of appreciation for participating in the study (clothing, cinema or music vouchers to the value of £10). Interested potential participants returned a signed consent form and were then contacted directly by the lead author. For those under the age of 16 years, parental consent was also obtained. Interviews were arranged at times and places convenient to the participants. Participants were aged between 12 and 18 years (M = 15.40 ± 2.17), had been dancing for an average of 9.15 ± 3.83 years, and had been in attendance at one of the CATs for an average of 1.69 ± 0.79 years.

A semi-structured interview guide was created for the study, organised into four sections: introductory questions and training history; feelings about dance and main reasons for leaving training; changes over time in training, feelings about dance, other commitments and social relationships; and the role of significant others in withdrawal from the CATs[4]. Interviews lasted between 17.32 and 45.06 minutes.

The interviews were transcribed verbatim and uploaded into NVivo software (QSR, Melbourne, Australia) for inductive analysis. Transcripts were read thoroughly and all relevant pieces of text were coded into meaning units, which were then placed

[4] The interview guide can be found in Appendix 6.

into logical categories (themes). Lower-order themes were arranged into higher-order themes, and this hierarchy was constantly updated and refined as part of the analysis process (Patton, 2002).

Trustworthiness was established in several ways. The first author assured participants of their anonymity and ability to speak freely during the interviews, and explained her dance background, indicating that she was able to empathise with their experiences. During analysis the second author independently coded 30% of the interview transcripts to ensure agreement on coding density, and also independently created categories from the meaning units. The two versions of the analysis hierarchy were debated and ameliorated into a final version that was coherent in terms of perspectives from both the data and existing literature (Patton, 2002). Finally, quotations from the interviews are included in the text presented here so that readers can create their own interpretations (Sparkes, 1998). Quotations are coded according to the order in which the participants were interviewed (i.e. P1, P2, P3, etc.).

7.5 Quantitative Method

The CATs keep records of graduate destinations (e.g. professional training or companies) and reasons for student withdrawal in order to inform the development of their programmes. Records detailing information on graduate and dropout students, together with a range of demographic information from the years 2005-2009, were collected from seven of the CATs for the purposes of this study. During this time 135 students graduated while 155 dropped out. The records contained data pertaining to the participants' age, gender, ethnicity, length of time in the programme, grant status (level of financial assistance), and their main reason for leaving. Overall, the demographic backgrounds of dropout students reflected those of the students who successfully graduated from the programme. For example, 79.4% of graduates and 71.9% of dropouts were female; 47.4% of graduates and 44.8% of dropouts had received a full grant for their training. Hence, many of those data were relevant to this study only insofar as they indicated that no particular demographic "type" of student was more likely than any other to drop out.

The CAT students' dropout reasons were gathered during one-to-one, open-ended conversations between students and Centre managers. Seven records were incomplete; thus, a total of 147 were used for analysis. Once student names had been deleted, frequencies, percentages and means were calculated for all relevant

variables. Withdrawal reasons were grouped into four general categories – change in aspirations, other commitments, CAT-related, and external reasons (see Table 7.1 in Results) – to be used for analysis in relation to age at dropout, number of years in a CAT, and gender. These categories comprised of similar dropout reasons so that, for example, “other performing arts” and “academic route” became part of the “change in aspirations” category.

7.6 Qualitative Results

The ten interviews revealed a wealth of information pertaining to the dropout experience, which was organised into two higher-order themes: “past and present,” and “dropout”.

Past and Present

The participants had mixed dance backgrounds, having begun training at varying ages. Interestingly, for four participants CAT was the first intense training they had experienced. The volume of training was challenging for these participants: “In my school I used to do one hour fifteen minutes, and then CAT I think it was about four hours of dance, on Wednesday and Saturday, and that was a big step, and it was really hard” (P10). At some point in their dance histories, eight of the participants had had ambitions for a future career in dance, while two had never held such ambitions. While attending one of the CATs, seven of the participants were involved in other extracurricular activities. Despite having dropped out of a CAT, four participants continued to dance recreationally, while another four still envisioned a dance career and continued training elsewhere. Only two participants had completely withdrawn from dance activity.

Dropout

Throughout the interviews it became clear that dropping out was a process that stemmed from various reasons that had repercussions following withdrawal. As such, this section is divided into reasons and process. While many positive experiences at CAT were cited (e.g. learning new skills, performing in various venues, supportive and knowledgeable teachers), these are not relevant to discuss in the current study.

Reasons

Below, the major dropout reasons and factors influencing dropout are presented. These included personal, CAT-related, and external reasons.

Personal

Personal reasons for dropout included conflicting demands, a change in aspirations, lost passion, and low perceived competence.

Conflicting demands. CAT training involves a large time commitment: students often attend their CAT on one weekend day, one or two weekday evenings as well as attending intensives during school holidays. Consequently, conflicting demands was an important factor in seven participants' decisions. As one explained: "I had to focus on all my college stuff, and then my [youth dance] company stuff, and then at that time I had a few kind of like family kind of issues…. It all just got a bit much!" (P4). There was a general perception that balancing commitments had become more difficult over time. Four interviewees noted that their schoolwork had been negatively affected as a result of their busy schedules. For example, one stated: "I remember doing a test on Monday and I was just falling asleep on my desk, I really couldn't do it" (P6).

CAT involvement also had an impact on the amount of time participants spent with their families. This affected their siblings, some of whom were unable to take part in extracurricular activities themselves due to the participants' time commitments to CAT. One participant with two young sisters explained: "It wasn't fair on my sisters…. My sisters, like, have hobbies as well, and it was all based around me" (P5). Six participants found meeting up with friends difficult, which was felt keenly: "I kinda left CAT because on Saturdays and Sundays my friends were going cinema and doing stuff and I felt left out" (P10). Indeed, several comments similar to the following emerged: "It was quite hard to have a social life when you went to CAT" (P6). This was also reflected in three participants' comments that their friends had not understood their dance commitments. Incidents of friends becoming annoyed because the dancers were unable to spend time with them were reported, and one participant recalled: "I did, like, miss them, and in the end they stopped calling me" (P5). Finally, one participant had recently changed schools and was struggling to form meaningful peer relationships. She felt that she needed more free time in order to maintain friendships with peers from her previous school, and consequently decided to leave her CAT.

Change in aspirations. Change in aspirations, cited by four participants, related either to simply realising that a dance career was no longer an ambition, or concerns over the difficulty of securing a job in the field and consequent lack of

financial security: “Just the fact that it’s very competitive and the numbers of people auditioning for one job” (P1). Success expectancies played a role as participants considered other potential future paths; for example: “I needed to decide what I wanted to do, and whether I was going to be able to succeed” (P8). Such realisations had developed over time, with participants becoming more critical of their reasons for engaging in dance as they grew older and more independent. Alongside these considerations, four participants realised that they were not as serious about dance as their fellow trainees: “I saw all these people who were, like, really working to get somewhere, and it got to the point where over time… I was thinking ‘I don’t have what’s driving them’” (P2). For some participants, such realisations were accompanied by feelings of guilt that they were taking the place of a potential student who could gain more benefits from the programme. Additionally, one participant realised that towards the end of his time at CAT he was attending for social reasons rather than to develop his dance talent. Furthermore, changes in aspirations made training less important and relevant than it had been previously. For example, one participant, having decided against pursuing a career in dance, began to consider the utility of continuing attendance at his CAT: “The question was, will it benefit me when I’m older?” (P10).

Lost passion. Three participants explained that, over time, they had lost their passion for dance, as the following quotation illustrates:

> I think the main [reason] was my own personal kind of drive and ambition and passion for dance had just burned out. I think I’d been doing it since such a young age that I just totally lost the kind of drive (P1).

Perceived causes of this loss of passion were a lack of challenge during classes, a critical evaluation of dance engagement, and, for one participant, early intense involvement in dance.

Low perceived competence. Low perceived competence was a direct reason for dropping out for one participant, who had been the youngest and smallest in her CAT. She described feeling “quite untalented and getting just so tired and feeling quite weak” (P6). Although not cited directly as a reason for dropout, four additional participants described having low perceived competence, suggesting that this may have influenced their decision. Such concerns were exacerbated by interpersonal comparisons with other dancers in the class: “When you see someone better than you then you start to put yourself down” (P5).

CAT-related

Three factors directly related to the programme were cited as causes of dropout: course content, the social environment, and travel.

Content. The focus on the technical aspects of dance was described by two participants as making the programme less enjoyable; for example:

> It just kind of made it feel like a chore, kind of. You had to do the technique and you had to get it right, but there was never like a dance routine that you learned that was fun or made up your own little dances (P9).

Two participants reported that there was a lack of challenge in classes. This was related to four interviewees' perceptions that there was too much repetition in the curriculum; for example: "When, like, the second year came up I felt like I went back to the beginning a bit and we kept doing, like, stuff from the beginning" (P5). In addition, one participant who had previously trained at vocational training found the ballet classes too easy, while another described how it had become easier to predict what teachers wanted over time. On the other hand, three interviewees had found the training too intense and tiring. One participant explained that there were few performance opportunities to work toward.

Social environment. Three participants described the effects of low levels of individual feedback from teachers on their motivation and perceptions of competence; for example: "I felt like I wasn't improving and that, that I was doing worse in class, which made me feel like an under-achiever" (P10). This was sometimes due to the employment of guest teachers and choreographers in the CATs, which, although providing a valuable artistic opportunity, entailed less individual feedback. One participant believed that CAT teachers were stricter than those at her other dance school, and had favourites in the class. She explained: "they always used to talk to the people who I thought were, like, better than me, and I used to think they used to have their favourites if you get me, so I used to be at the back hiding" (P5).

With regard to peers in the programme, half of the participants reported difficulty making friends. This was explained in terms of insufficient time to forge bonds, competition or rivalry with others, and unequal contributions during group work. As one participant noted: "It's not the same sort of friendship when you're in that sort of intense environment" (P2). Difficulties making friends were compounded by age: one participant had been the oldest at her CAT and felt out of place among the

younger students; two others felt that being the youngest made friendships difficult and recalled “tagging along” (P6) with their older peers.

Travel. Travel to training was a minor contributing factor for four of the former students. Some participants had made three-hour round trips to attend training, which had not been perceived as problematic initially; however: “When you don’t want to do it, it becomes more of an issue, so you’ve got to get up at 6 o’clock to get all the way up there to do something that you don’t actually want to do” (P2).

External reasons

Three external reasons were identified that directly influenced the participants’ decisions. Firstly, half of the participants cited financial issues. While the CATs are means-tested to offer training to young people from a variety of socioeconomic backgrounds, the programme is expensive, and some middle-class parents with several children may struggle to pay the fees. For example, one participant explained that once having decided against a career in dance the cost of attending training was difficult to justify:

> I was thinking if I’m not going to take a career in it, then we’re paying the money out that we could be using for other stuff, to send my brother to football training, give my sisters to go and do whatever they wanted (P8).

The second external reason was injury, mentioned by three participants: “It wasn’t a big influence, but it was sort of ingrained in the back of my head, the fact that I get injured really easily” (P8). Finally, one participant’s parents had decided to relocate, meaning that she had to move too far away from her local CAT to continue attending.

Process

Withdrawing from the training programme required careful consideration as well as social support. Eight of the participants explained that their decision to leave their CAT was difficult and gradual rather than sudden, because they wanted to consider all possible options to ensure an informed choice. For example, descriptions of cost-benefit analyses and research into the prospects of achieving a successful dance career were described.

Most participants found their CAT peers and teachers helpful and supportive during the withdrawal process, although two participants reported indifference or disappointment from some of the staff on withdrawal, for example: “…there was a

slight disappoint I think in giving up, you know, they'd given so much time and effort, and I have as well, to sort of just go" (P1). All participants had described receiving support from their parents throughout their dance involvement, for example: "My parents were very kind of devoted to my dancing and helping me, you know, just trying to give me the best really" (P1). Such support continued as participants considered leaving the CATs. Eight of the former dancers found discussions with their parents to be helpful when making their decision, although there were two instances of parents expressing regret that their children were "wasting a good talent" (P8). For example, one participant explained that she perceived some disappointment from her father in having withdrawn, which may have been exacerbated by the fact that her parents had devoted much time and energy to her dancing, moving around the country to support her training. Three participants explained that their non-dancing friends were supportive and even pleased at their decision to withdraw. For example, one stated:

> my best friend did say to me about two months after, she was like, 'I'm so glad you left the CAT, you seem so much better'…a lot of my friends did see such a big difference because I wasn't, like, tired all the time, which I was, and I wasn't ill, and I wasn't, like, crippled (P2).

Other positive consequences of withdrawal included having more free time, cited by four participants, and feelings of happiness and freedom which were mentioned by three participants, with one claiming she had moved on from dance to "join the 'real world.'" (P1). Further positive effects included the healing of recurrent injuries, being able to spend more time with family, and an improvement in both friendships and schoolwork. Positively, none of the participants regretted their decision, although eight were sad to leave the programme and missed the friends, teachers, training and opportunities they had experienced, for example:

> I knew it was the right decision but I was just so upset 'cause I knew it was just such a big part of my life for two years and I met some really nice people, and I learned a lot, and had really nice opportunities (P3).

7.7 Quantitative Results

The most common category of reasons for dropping out of the CATs was external reasons, followed by change in aspirations, CAT-related, and other commitments (Table 7.1). As to the sub-categories of specific reasons for dropping out, those with the greatest number of responses were "pursuit of other dance pathways" (22), "training was not right" (18), "participant was assessed off course" (17), and "academic pressure" (12).

Table 7.1. Categories of reasons for dropout based on descriptive data (frequencies are shown in brackets).

Categories	Reasons
Change in aspirations (43)	• Other dance pathway; e.g. recreational dance class, dance teacher training (22) • Other performing arts route; e.g. musical theatre, dramatic arts (6) • Academic route; e.g. greater focus on school studies (5) • Sport pathway; e.g. gymnastics, cheerleading (5) • No longer viewed dance as a career; e.g. change of interest, unsure of future in dance (5)
Other commitments (26)	• Academic pressure (12) • Too much alongside other commitments, e.g. other hobbies, school work, part-time work (8) • Lack of commitment; i.e. could not commit to the time requirements, but no specific reason given (6)
CAT-related (30)	• Training was not right for him/her (reasons not specified; 18) • Not enjoying the course (4) • Feeling out of depth (2) • Could not cope with travel (6)
External reasons (48)	• Assessed off course; e.g. insufficient progress, disruptive behaviour (17) • Financial reasons; i.e. fees too high (9) • Injury (8) • Domestic problems (reasons not specified; 7) • Illness (3) • Lack of family support (2) • Moved away (2)

Two ANOVAs were conducted to assess potential differences in age at dropout and number of years at a CAT between dropout reason categories (Table 7.1). There was a significant difference between categories for age at dropout, $F(3, 142) = 6.17$, $p < .01$, as illustrated in Figure 7.1. Post hoc comparisons using Tukey's HSD test revealed that those who dropped out for CAT-related reasons were significantly younger than those who dropped out for any other reason (change in aspirations, other commitments, or external reasons). There was also a significant difference between the categories according to number of years in CAT, $F(3, 141) = 3.23$, $p < .05$ (see Figure 7.2). Post hoc tests revealed that those who dropped out for CAT-related reasons had been attending the CAT for significantly less time than those who dropped out due to change in aspirations. Chi-square tests for independence were conducted to assess differences between dropout reasons according to gender, but no significant result was found, X_2 (1, $N = 147$) = 1.20, $p > .05$, phi = .09.

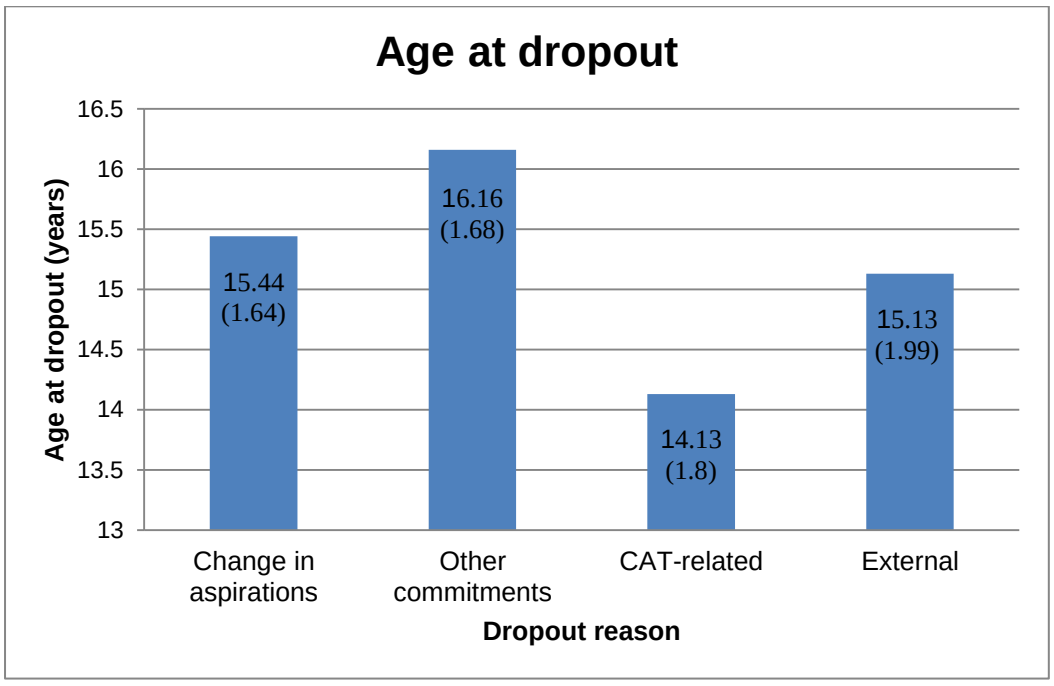

Figure 7.1. Comparison of reasons by age at dropout. Numbers show mean age with standard deviation in brackets for each reason.

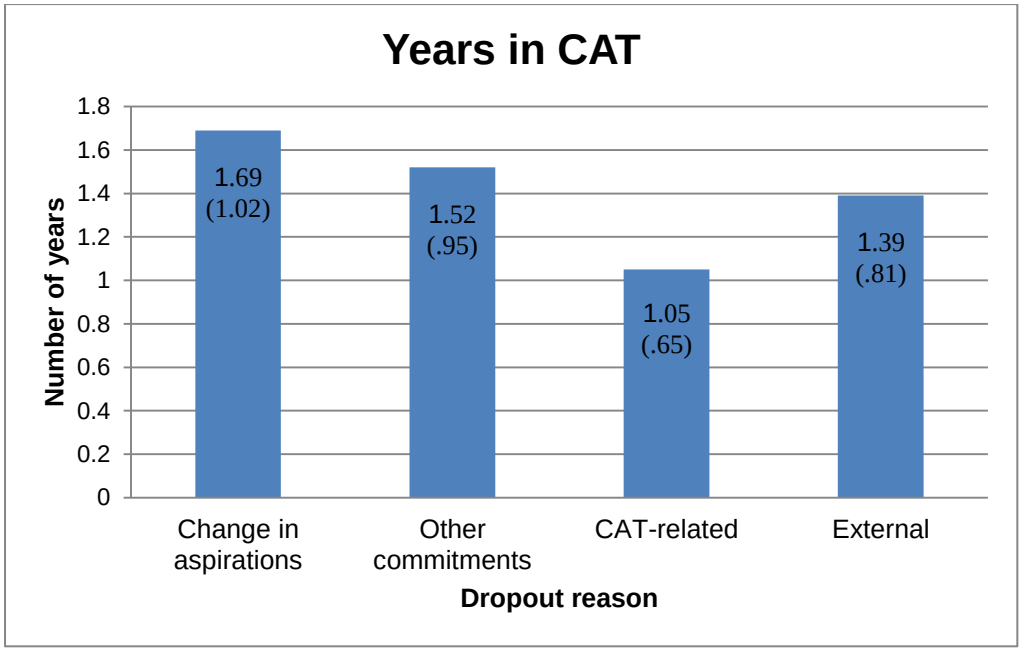

Figure 7.2. Comparison of reasons by number of years in CAT. Numbers show mean number of years with standard deviation in brackets for each reason.

7.8 Discussion

The aim of this study was to understand reasons for dropout from a dance talent programme. A mixed-methods approach was employed to gain a combination of depth and breadth (Johnson & Onwuegbuzie, 2004; Moran-Ellis et al., 2006). There was much consistency between the qualitative and quantitative results, with similar categories of dropout reasons found. For example, the importance of other commitments/conflicting demands and change in aspirations emerged in both types of data. However, the exploratory nature of qualitative research (Krauss, 2005) naturally resulted in greater depth and detail around participants' experiences. Background and developmental findings will first be summarised before discussing dropout reasons and briefly outlining the dropout process.

On the whole, background factors such as years in dance and grant status did not appear influential in terms of dropout. However, for four interviewees CAT was the first intense training they had experienced. The sudden increase in training hours and technical demands compared to their previous dance involvement appeared difficult to manage. Similarly, one participant discussed how her passion for dance had "burned out" due to having trained intensively from a young age (before CAT). Sport research has also revealed an association between intense early involvement and dropout (Wall & Côté, 2007; Fraser-Thomas, Côté & Deakin, 2008a); thus, it appears that intense training should only be undertaken when a young person is

physically, psychologically and emotionally ready. Further research is required to establish what this means in practical terms for dance training.

Interestingly, most of the dropouts continued to dance at a different level after withdrawal, indicating that they had changed their participation to meet their current needs. This is similar to sport studies in which dropouts were still engaged in, or planned to re-enter, their sport at a different level (Gould et al., 1982; Klint & Weiss, 1986). These findings emphasise that the term “dropout” should be specific to the study context (of interest in the current study dropout was from a specific training programme, not from dance in general). Finally, although the focus of the current study was on dropout, it is important to note that several positive experiences during CAT were cited by the participants. Therefore, educators and researchers must bear in mind that while maximising retention rates is important, enhancing the quality of the experience should be the goal, so that benefits are gained from training regardless of the eventual outcome (Martens, 1996). Indeed, continuing intense training may not be in some young people’s best interest, and their leaving does not necessarily represent “failure” on behalf of either the individual or the training programme.

In terms of major reasons for dropout, both personal and environmental (CAT-related) factors emerged. With regard to the former, conflicting demands was the most frequently cited personal reason according to the interviews, and other commitments was an important category in the quantitative data. Participants reported that attending their CAT limited the amount of time they could spend with family and friends, on schoolwork, and on other activities. Academic pressure emerged from the quantitative data as a dropout reason, which relates to the increased school demands young people face throughout adolescence. Missing out on time with friends appeared particularly pertinent, presumably due to the increased importance peer relationships assume during adolescence (Youniss & Smollar, 1985). This supports previous findings regarding time conflicts in sport dropout research (Gould et al., 1982; Johns, Lindner & Wolko, 1990; Molinero et al., 2009; Molinero et al., 2006; Salguero et al., 2003), particularly with regard to the role of peer relationships in withdrawal (Klint & Weiss, 1986; Johns et al., 1990; Patrick et al., 1999).

Change in aspirations was also an important dropout reason found in both types of data. This related to several factors, such as different interests and other potential

career options. Additionally, success expectancies and the uncertainties of a dance career were reflected in the participants' awareness of the competition that exists in the professional dance world, alongside the insecurity of temporary work contracts and often poor remuneration. A study of urban youth similarly reported that the practical realities of a career in the arts served as a barrier to participation (Oreck, Baum & McCartney, 2000).

The finding that some participants had lost their passion for dance is unique to the current study. Recently, authors have suggested that passion for an activity forms the motivation that underlies persistence (Bonneville-Roussy, Lavigne & Vallerand, 2011; Fredricks, Alfeld & Eccles, 2010); it could be that the absence of emotional attachment to an activity lessens commitment. A lack of challenge, critical evaluation of dance engagement, and early intense involvement appeared to cause a decline in passion for these participants, although more research is required to further understand this finding.

Regarding CAT-related factors, programme content emerged as a major dropout reason, with repetition in particular being cited. The emphasis on technical skill acquisition in high-level training naturally entails repetition and attention to correct technique; for some participants this was de-motivating. A lack of challenge was also reported by some interviewees, while in contrast others found the training too intense and tiring. These differences in perception of content highlight the importance of appropriate challenge on an individual level wherever possible. A study of talented persisting and dropout arts and athletics students demonstrated how activities that were too difficult were perceived as frustrating and lowered confidence, while those that were too easy were perceived as boring and de-motivating (Fredricks et al., 2002). Balancing challenge and skill is also fundamental to the experience of "flow," which has itself been cited as a reason why people do what they do (Csikszentmihalyi, 1990). Overall, it appears that, particularly in the context of talent development, repetition and challenge are crucial considerations with regard to student motivation and retention.

Given the importance of peer relationships during adolescence it is perhaps not surprising that half of the participants reported difficulties making friends in the CAT programmes as an influential factor, and indeed poor peer relationships have previously been associated with dropout in the arts and sport (Guillet et al., 2002; Patrick et al., 1999; Robinson & Carron, 1982). For participants who had not forged

strong relationships in the CAT, spending time with their non-dancing peers outside of school may have taken on even greater importance.

Minor dropout reasons included travel, injury, and financial factors. These were interpreted as minor because they typically only became an issue once commitment had begun to decrease. Despite the importance perceived competence has assumed in previous dropout studies and theories (e.g. Burton & Martens, 1986; Ommundsen & Vaglum, 1997), it was only cited by one participant as a dropout reason in the current study. While other participants mentioned low perceived competence, this was not reported as a direct reason for dropout, suggesting that other factors had greater influence on participation decisions. Finally, some indications of teacher favouritism and a lack of individual feedback emerged. Such factors have been reported in sport dropout research (Fraser-Thomas et al., 2008a; Pelletier et al., 2001; Robinson & Carron, 1982), but do not appear to be particularly characteristic either of typical teacher behaviour in the CATs (Nordin-Bates, Quested, Walker & Redding, 2012) or, like perceived competence, of dropout reasons in this cohort.

Some age-related differences emerged from both the qualitative and quantitative findings (see Figure 7.1). Change in aspirations and lost passion were characteristic only of older students (over 15 years). This may be because decisions regarding post-school options are of pivotal importance to this age group. A critical evaluation of dance, combined with changes in aspirations, could result in lost passion among the older students. For younger students (under 15 years), course content – specifically the focus on technique and repetition – appeared more influential. This supports research by Ryska and colleagues (2002), who reported that younger dropout gymnasts cited reasons related to the programme structure more often than their older counterparts. Although more research is needed to better understand age-differentiated dropout reasons, such findings suggest that talented younger dancers may struggle to cope with the demands of high-level training, and that career-related concerns in older students should be discussed in an open manner.

Regarding social support and dropout, in accordance with previous research (Walker, Nordin-Bates & Redding, 2010) family support was important throughout the participants' dance involvement, including the process of dropout. Only two examples of negative statements from parents emerged in relation to wasted talent or investment, and a lack of support was cited as a dropout reason by only 2 of the

147 participants in the quantitative component of the study. However it was interesting to note that for one participant, high levels of parental involvement had consequences even once she had ceased participating in the activity due to their investment in her training.

Non-dancing peers were generally supportive during the dropout process; some were even pleased when their friends dropped out, and an improvement in friendships resulted. Most participants experienced support from their CAT teachers and peers, although some perceptions of teacher disappointment were apparent in the interviews. This suggests that young people need social support throughout their dance engagement and beyond in order to validate their choices. While the withdrawal process tended to be lengthy, and some participants felt sad to leave their CAT, many positive consequences of dropping out were reported. In particular, having more time to spend with friends and family was emphasised.

Some limitations to the current study must be acknowledged. Firstly, interviews with ten former students from a large network of Centres may not be representative of the entire CAT cohort. However, qualitative research does not necessarily aim to produce generalisable results, but rather to explore potential explanations from individuals. Secondly, reasons for dropout in the CATs' records were based on one-to-one conversations between students and Centre managers, and it is possible that the students were to some extent providing socially acceptable responses. The use of a mixed methods design helped to triangulate the data, partly safeguarding against such limitations.

7.9 Conclusion

In summary, it appears that conflicting demands, change in aspirations, course content, difficulties making friends, and lost passion are major reasons for dropout from a dance talent programme. Minor reasons include injury, travel, low perceived competence and teacher behaviour. Older participants tended to cite change in aspirations and lost passion more frequently than younger ones, while younger participants cited course-related reasons more often than their older counterparts. Intervention strategies that focus on changes in course content may be the easiest to implement and most effective means of reducing dropout. This might include more individualised tuition and active attempts at helping students to make friends. However, it is important to note that while the word "dropout" tends to have negative connotations, it may simply be a normal part of adolescence, whereby young people

seek activities that best suit their developing identities (Burton & Martens, 1986). Thus, the focus of teachers should be on the *quality* of the dance experience, not simply the outcome (Martens, 1996).

Chapter 8

Multidisciplinary Predictors of Adherence to Dance

This manuscript is awaiting submission with the following reference:

Aujla, I.J., Nordin-Bates, S. M., & Redding, E. (in preparation). Multidisciplinary predictors of adherence to dance: Findings from the UK Centres for Advanced Training. *Research Quarterly for Exercise and Sport.*

8.1 Abstract

The aim of this study was to investigate adherence to a dance talent programme using a multidisciplinary set of variables. Physiological (vertical jump height, handgrip strength, hamstring flexibility, external hip rotation, aerobic fitness), maturation-related (age of menarche), injury-related, and psychological (passion, motivational climate perceptions, eating attitudes, self-esteem, anxiety) variables were gathered from female students enrolled on a dance talent programme at two time points approximately twelve months apart. Participation behaviour (adherence/dropout) was collected from the talent programme's records approximately two years after Time 1. Logistic regression analysis of 287 participants revealed that greater levels of harmonious passion predicted greater likelihood of adherence to the programme, and greater ego-involving motivational climate perceptions predicted less likelihood of adherence. Physiological measures did not distinguish adhering from dropout participants, indicating that psychological factors are more important in relation to the participation behaviour of young talented dancers.

8.2 Introduction

In order for a young person to develop his or her talents in a given domain, he or she must adhere to training. Sport research into adherence and dropout has been conducted since the 1970s. However, little is known about the factors that influence adherence in the domain of dance. The aim of this study was to better understand adherence to a dance talent development programme. While dance research in this area is lacking, the wealth of sport research can inform such investigations.

Typically, sport research has focused on psychological factors that are associated with adherence and dropout. Common descriptive reasons for adhering to sport are enjoyment, social relationships and perceived competence (e.g. Boiché & Sarrazin, 2009; Gould, Feltz & Weiss, 1985; Klint & Weiss, 1986; Ryska, Hohensee, Cooley & Jones, 2002). Dropout reasons include time conflicts, a lack of fun, low perceived competence and poor relationships with peers and coaches (e.g. Gould, Feltz, Horn & Weiss, 1982; Klint & Weiss, 1986; Molinero, Salguero, Alvarez & Marquez, 2009). In relation to coaches, perceptions of task-involving motivational climates – coach-created psychological environments that emphasise self-referenced learning and peer cooperation (Ames, 1992) – have been associated with adherence to sport (Boiché & Sarrazin, 2009; Le Bars, Gernigon & Ninot, 2009). In contrast, perceptions of ego-involving motivational climates – those which emphasise other-referenced learning and punish mistakes (Ames, 1992) – are associated with sport dropout (Pelletier et al., 2001; Sarrazin et al., 2002).

The little dance research that exists in the area of adherence and dropout has tended to focus on participation motives. Participation motives represent reasons for initiating and continuing engagement in an activity (Nieminen, 1998a), but do not form an in-depth investigation of long-term activity involvement. Dance participation motives include enjoyment, self-expression, movement sensations, achievement, emotional release, performing, creativity and socialising with likeminded individuals (Alter, 1997; Nieminen, 1998a, 1998b; Stinson, 1997). When comparing adhering and dropout ballet dancers on psychological characteristics, one study found that dropouts reported more disordered eating attitudes than their persisting counterparts (Hamilton et al., 1997). In terms of dropout reasons from dancers' own words, conflicting demands, change in aspirations, course content, difficulty making friends and lost passion were associated with dropout from a dance talent programme (Walker, Nordin-Bates & Redding, 2012). Perceptions of ego-involving motivational climate elements also emerged in terms of teacher favouritism and

strict behaviour (Walker et al., 2012). Some of these factors are similar to those reported in sport although the role of passion has not been explored in relation to adherence to date.

Passion has been defined as an emotional attachment to an activity that one likes, values, and spends a lot of time doing (Vallerand et al., 2003). Vallerand and colleagues (2003) posit that two types of passion exist: harmonious passion, characterised by a flexible involvement in the passionate activity; and obsessive passion, characterised by a rigid involvement in the activity. Given that a loss of passion was associated with dropout in a qualitative analysis of young dancers (Walker et al., 2012), it appears important to further study the role of passion in adherence to dance.

Due to the recent findings around passion, the current study examined harmonious and obsessive passion to assess whether one or both types of passion were associated with adherence. Investigation of the perceived motivational climate also seemed worthwhile as a result of the findings in sport and dance noted above. Another variable of interest in the current study was disordered eating attitudes given findings that these differentiated dropout from persisting ballet dancers in a previous study (Hamilton et al., 1997).

Two additional psychological variables, self-esteem and anxiety, were investigated in the current study according to previous recommendations (Musch & Grondin, 2001). It has been suggested that high self-esteem may help dancers when faced with arduous training (Pickard & Bailey, 2009). Given the associations made in sport between perceived competence and adherence and dropout (e.g. Boiché & Sarrazin, 2009; Klint & Weiss, 1986), it was of interest to assess whether global self-perceptions might have an impact on adherence. Anxiety seemed worthy of examination in a dance talent context as it is common in elite dancers (e.g. Walker & Nordin-Bates, 2010) and can affect performance (Neil, Fletcher, Hanton & Mellalieu, 2007). As such, it could be hypothesised that if a dancer is often affected by debilitating anxiety, he or she may decide to withdraw from dance.

While most sport studies of adherence and dropout have adopted a psychological perspective, some authors have called for inter- and multidisciplinary investigations (Burwitz, Moore & Wilkinson, 1994; Feltz & Ewing, 1987). This may be particularly pertinent in talent domains where selection is often based upon physical

characteristics and motor competencies (Durand-Bush & Salmela, 2001). Some authors have addressed these calls and as a result, three key themes have emerged from sport research, the first being actual competence. Studies of youth football players have found that persisting athletes have greater actual competence, such as technical and functional skills, than dropout players (Figueiredo et al., 2009; Ommundsen & Vaglum, 1997). Ommundsen and Vaglum (1997) reported that while low actual competence directly predicted dropout in young football players (12-13 years), perceived competence mediated the relationship between actual competence and dropout in older players (14-16 years). In dance, students who dropped out of an elite ballet school were more likely than persisting dancers to have technical and anatomical limitations that affected their dance technique (Hamilton et al., 1997). Therefore in talent contexts, where technical ability is often considered pivotally important, factors relating to actual competence may be a relevant consideration in the study of adherence. However, in contrast to these findings, two studies of gymnasts indicated that, once age was controlled for, no differences emerged between adhering gymnasts and those who later dropped out in a range of anthropometric and performance-related characteristics (Claessens & Lefevre, 1998; Lindner et al., 1991). As such, further research examining the role of actual competence in relation to adherence is warranted.

The second theme is injury, which has been associated with dropout in studies of athletes (Butcher, Lindner & Johns, 2002; Klint & Weiss, 1986; Maffulli, Baxter-Jones & Grieve, 2005) and dancers (Hamilton et al., 1997). There is a high injury rate in dance (e.g. Laws, 2005); injury may be career-ending or result in temporarily ceased training. One study found that time off due to injury allowed gymnasts to assess their involvement in gymnastics, with some participants deciding that the costs of participating outweighed the benefits and consequently withdrawing (Johns, Lindner & Wolko, 1990). Although it is beyond the scope of this study to examine such decision-making processes, investigation of current injuries in young talented dancers will extend research on the role of injuries in adherence.

The third theme relates to biological maturation. Sport studies have shown that early maturers tend to be over-represented in talent development schemes; this is known as the relative age effect (RAE) and occurs because those born earlier in the selection year exhibit more favourable size and strength gains than those born later in the selection year (Musch & Grondin, 2001). The RAE is related to dropout from football (Delorme, Boiché & Raspaud, 2010; Helsen, Starkes & Van Winckel, 1998)

and basketball (Delorme, Chalabaev & Raspaud, 2010), but has not been established in activities with an artistic or aesthetic focus including gymnastics (Baxter-Jones, 1995) and dance (Van Rossum, 2006). Indeed, the opposite is more likely to be true. Hamilton and colleagues (1997) found that persisting student ballet dancers tended to be late maturers whereas dropouts were more likely to have matured early or on-time. Ballet tends to favour the lean shape associated with late maturation and therefore the persisting dancers appeared to better fit the restrictive criteria of the art form than those who dropped out. In support of this, a study of young ballet students aged 8-13 years revealed that they were sexually immature according to Tanner stages compared to age-matched controls (Kadel, Donaldson-Fletcher, Gerberg & Micheli, 2005). Taken together these findings suggest that late maturation is valued in ballet, presumably due to the aesthetic and visual nature of the art form. Further research of this kind is required with dancers of different styles (e.g. contemporary).

As a result of the studies outlined above, physical competence, current injury and maturation (age of menarche) were investigated in the current study in addition to the psychological factors previously detailed. Physical competence was defined as components of physical fitness that relate to dance performance and included vertical jump height, upper body handgrip strength, hamstring flexibility, external hip rotation and aerobic fitness. These variables were chosen based on an extensive review of the dance talent literature as they are associated with aspects of dance technique and performance (Walker, Nordin-Bates & Redding, 2010). The term *physical* rather than *actual* competence is used; given the complexity and multi-faceted nature of dance talent (e.g. as including artistic competencies; Walker et al., 2010) it would be difficult to adequately capture actual competence.

In light of previous sport and dance findings and gaps in the literature, this study aimed to investigate adherence to a dance talent programme using a multidisciplinary set of predictors. Moreover, given calls for longitudinal designs in the investigation of adherence and dropout (Fraser-Thomas, Côté & Deakin, 2008a; Musch & Grondin, 2001; Weiss & Petlichkoff, 1989), a secondary aim was to assess changes in these variables over a one-year period. A longitudinal design may allow educators and researchers to understand differences between adhering and dropout participants that emerge over time and thereby structure appropriate interventions to maximise adherence.

8.3 Method

Participants

This study was part of a larger longitudinal research project investigating talent development in young dancers. Participants were female dance students recruited from eight of the UK Centres for Advanced Training (CATs), nationwide government-funded talent development programmes in dance. The CATs aim to provide high-quality part-time training to students aged 10-18 years in a range of dance styles. Most CATs focus on contemporary dance, although one centre focuses on ballet, one centre has both a contemporary and South Asian dance strand, and one centre has both a contemporary and an urban dance strand. Given that dancers typically attend two auditions to secure a place at one of the CATs, those who are chosen are assumed to possess talent in dance or show exceptional potential.

The number of participants contributing data varied according to several factors (e.g. injury preventing participation in certain physiological tests, temporary absence, or omission of occasional questionnaire items). For this reason, the N varies according to both the specific variable measured and the time point. The total number of adhering dancers participating at Time 1 was 280, with 127-280 participants providing data depending on the variable. The total number of dropout participants at Time 1 was 87, with 49-87 participants providing data depending on the variable. At Time 2, 116-179 adhering students participated, while 8-16 dropout students took part. These were the same groups of adhering and dropout students as at Time 1. Numbers of dropout students were much lower at Time 1 than at Time 2 because many of these participants withdrew from the programme prior to the data collection at Time 2. At Time 1, adhering students were aged 14.23 years (± 2.03) and dropouts were 14.66 years old (± 1.81). Adhering students had been dancing for 8.86 years (± 3.40) and dropout students for 8.43 years (± 3.48). Adhering students had been attended their CAT for 10.39 months (± 13.08) and dropouts for 10.28 months (± 13.02). Table 8.1 shows information regarding number of hours in dance training and non-dance physical activity per week at both time points, as well as the specific N for each variable.

Measures

Demographics

Participants reported the number of hours per week they trained at their CAT, at other dance schools, and engaged in non-dance physical activity. In order to

improve the distribution of these variables for analysis (e.g. as the CATs are a structured scheme, participants train for approximately the same number of hours per week at their CAT, meaning the responses were not normally distributed), log transformations were performed using SPSS®.

Vertical jump height

Vertical jump height was assessed using a jump belt (Probotics Inc., Huntsville, AL). Participants stood on a mat and were instructed to jump as high as they could. A researcher explained to participants that they could use their own strategies to achieve maximal jump height. Measures were taken in centimetres and the higher of two jumps, separated by a 30 second rest period, was used for analyses.

Upper body strength

Upper body strength was measured using a handgrip dynamometer (Takei Scientific Instruments, Tokyo, Japan). Participants were instructed to hold the dynamometer above their heads with the elbow extended and grip the bar maximally. To make the test more dance-specific it was made dynamic by asking participants to bring the dynamometer down to the lateral side of their bodies through the sagittal plane while continuing to grip the bar and keep the elbow extended. The average of two trials for each arm, separated by a 30 second rest period, was computed, before an overall average upper body strength variable was calculated.

Hamstring flexibility

Hamstring flexibility was assessed using active and passive straight leg raise assessments. For the active test, participants lay prone on a mat and were instructed to raise one leg at a time toward their chest as far as possible while keeping the knee extended. For the passive test, the researcher moved the leg to the point of resistance. Measurements were taken using a large custom-made protractor and an average for each leg was calculated. Due to high correlations between the active and passive measures[5], an overall average flexibility score was computed to avoid multicollinearity at the data analysis stage.

External hip rotation

External hip rotation was assessed using Functional Footprints® (Balanced Body, Sacramento, CA), rotator discs which allow maximum rotation in the hip and lower

[5] At Time, 1 $r = .80$, $p < .01$; at Time 2, $r = .85$, $p < .01$. Correlation matrices can be found in Appendices 2 and 7 (using the merged hamstring flexibility variable).

leg without friction. Participants stood on the rotator discs and were instructed to externally rotate their hips maximally while keeping the knees extended. Scores were recorded in degrees on the base of the discs. An average of three trials was computed for each leg, and then an overall external hip rotation variable was calculated.

Aerobic fitness

Aerobic fitness was measured using the Dance Aerobic Fitness Test (DAFT; Wyon et al., 2003). The DAFT is a validated sub-maximal test comprising five stages of contemporary dance movement, which increase in intensity at each stage. Each stage lasts for 4 minutes with the total test lasting for 20 minutes. Participants wore heart rate monitors (Polar Team) and recorded their heart rates at the end of each stage. For analysis, the percentage of participants' age-predicted maximum heart rate was used.

Injury

Participants completed one item on current injury status ("Do you have any form of injury at the moment?") which yielded a "yes/no" response.

Age at menarche

Participants were asked at which age, if at all, menarche had commenced. This was used as an indication of biological maturity.

Passion

The Passion Scale (Vallerand et al., 2003) is a 16-item questionnaire which measures whether an individual is passionate about their "favourite activity", and the extent to which this passion is harmonious or obsessive. Participants indicated their favourite activity at the top of the questionnaire; those who wrote "dance" and scored four or more on four criteria questions were considered passionate about dance. Those who wrote something other than dance or did not meet the criteria were excluded from analyses. The remaining items pertain to harmonious and obsessive passion, scored on a scale ranging from 1 (*Do not agree at all*) to 7 (*Agree very strongly*). The Passion Scale demonstrated good internal reliability at both time points (α = .79 - .84) and has been shown to be valid and reliable (Vallerand et al., 2003).

Motivational climate perceptions

Task- and ego-involving motivational climate perceptions were captured using the Perceptions of Motivational Climate in Sport Scale-2 (Newton, Duda & Yin, 2000), modified for use in dance (Quested & Duda, 2010). It comprises 24 items scored on a scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). One item ("Dancers are afraid to make mistakes") was deleted from the Punishment for Mistakes subscale in order to improve reliability; after this Cronbach's alphas were acceptable for all subscales (α = .74 - .91). Acceptable reliability and validity has been demonstrated elsewhere for both the sport (Newton et al., 2000) and dance (Quested & Duda, 2010) versions of the questionnaire.

Eating attitudes

Disordered eating attitudes relating to anorexia nervosa and bulimia nervosa were assessed using the Eating Attitudes Test (EAT-26; Garner, Olmsted, Bohr & Garfinkel, 1982). It consists of 26 items in three subscales (Dieting, Bulimia and Food Preoccupation, and Oral Control) scored on a scale ranging from *Always* to *Never*. While the internal consistency for the Dieting subscale was good at both time points (α = .82 - .83), items 9 and 26 from the Bulimia and Food Preoccupation subscale, and items 2 and 19 from the Oral Control subscale, had to be removed before acceptable internal reliability was reached (α = .65 - .71). Acceptable reliability and validity information is published in Garner et al. (1982). EAT-26 scores were log-10 transformed in SPSS® to improve distribution prior to analysis.

Self-esteem

The Self-Esteem Scale (Rosenberg, 1965) is a 10-item questionnaire that assesses the favourable and unfavourable attitudes an individual has towards him- or herself. Questions are scored on a scale ranging from 1 (*Strongly disagree*) to 4 (*Strongly agree*) and the scale demonstrated good internal reliability (α = .82 - .87). The scale has previously been shown to be valid and reliable (Blascovich & Tomaka, 1991).

Anxiety

The Sport Anxiety Scale-2 (Smith et al., 2006) was used to capture trait anxiety during dance classes and comprises three subscales: worry; concentration disruption; and somatic anxiety (five items each). Question scores range from 1 (*Strongly disagree*) to 4 (*Strongly agree*) and good internal reliability was exhibited for the concentration disruption and worry subscales (α = .77 - .88). The somatic anxiety subscale produced acceptable alphas (α = .66 - .73), the reliability of which

was not improved by item deletion. Reliability and validity is demonstrated in Smith et al. (2006).

Procedure

Once approval was granted by a Higher Education Ethics Committee, informed consent was gathered from all participants. Parental consent was also obtained for participants under the age of 16 years. Each of the measures were collected at Time 1 and then again at Time 2, approximately 12 months later. Adherence and dropout data was collected from the CATs approximately two years after Time 1, in order to examine differences between adhering students and those who later dropped out, and then statistically examine which factors predicted adherence to the CATs.

Analysis

Means and standard deviations for all variables at both time points are shown in Table 1. Independent t-tests for all variables at Time 1 were used to identify potential predictor variables for the logistic regression analysis based on significant differences between adhering students and those who later dropped out. This was an important initial step because entering all of the potential predictor variables into the regression at once would have violated sample size calculations (Peduzzi et al., 1996). Logistic regression was then employed to assess whether the variables identified in the independent t-tests could predict adherence to the CATs. Given the range of participants' ages (10-18 years), age was entered on the first step as a covariate, and the potential predictor variables were entered on the second step. The next stage of analysis was to examine changes for each group (adhering and dropout students) over the one-year period between Time 1 and Time 2 on all variables using paired sample t-tests. It was not possible to use a multivariate form of analysis due to low numbers of dropout participants at Time 2. Although using a repeated measures approach would have been preferable in order to compare adhering and dropout students as well as examine change over time within the same statistical test, this was not possible due to the low number of dropout participants at Time 2. Such low numbers would greatly decrease the statistical power of a repeated measures test. Instead, logistic regression analysis was employed as a sophisticated way to determine predictive relationships between the variables and the behavioural outcome of adherence. Due to the low numbers of participants at Time 2, examination of change over time was necessarily limited to a simple paired t-test to assess change or trends toward change in the variables.

8.4 Results

Means and standard deviations for each variable at both time points and for adhering and dropout participants are presented in Table 8.1.

Table 8.1. Means and standard deviations at Time 1 and Time 2. Numbers of participants providing data for each variable are shown in brackets.

	Adhering students		Dropout students	
	Time 1	Time 2	Time 1	Time 2
CAT (hrs/wk)	7.45 ± 2.49 (N = 270)	8.13 ± 3.45 (N = 166)	7.79 ± 3.08 (N = 80)	7.25 ± 2.60 (N = 12)
Non-CAT dance (hrs/wk)	5.05 ± 4.46 (N = 267)	5.06 ± 4.17 (N = 153)	5.30 ± 5.95 (N = 79)	5.79 ± 3.32 (N = 12)
Physical activity (hrs/wk)	3.57 ± 3.12 (N = 266)	3.12 ± 2.28 (N = 150)	3.38 ± 2.86 (N = 81)	3.16 ± 1.36 (N = 11)
Vertical jump height (cm)	39.25 ± 5.73 (N = 274)	40.69 ± 5.81 (N = 176)	38.88 ± 5.55 (N = 86)	41.25 ± 7.47 (N = 16)
Handgrip strength (kg)	21.94 ± 4.89 (N = 273)	22.89 ± 4.82 (N = 177)	21.97 ± 5.04 (N = 87)	25.35 ± 5.93 (N = 16)
Hamstring flexibility (°)	104.85 ± 10.96 (N = 276)	110.36 ± 11.27 (N = 175)	103.26 ± 11.42 (N = 87)	109.20 ± 10.26 (N = 15)
External hip rotation (°)	53.79 ± 7.92 (N = 274)	55.49 ± 7.85 (N = 179)	54.03 ± 8.84 (N = 87)	53.76 ± 7.11 (N = 16)
%HRmax Stage 3	80.86 ± 9.32 (N = 275)	76.26 ± 11.82 (N = 157)	80.46 ± 8.86 (N = 80)	78.12 ± 11.89 (N = 13)
%HRmax Stage 5	93.24 ± 6.03 (N = 272)	89.38 ± 10.56 (N = 155)	92.32 ± 8.01 (N = 79)	91.59 ± 6.67 (N = 12)
Currently injured (%)	23.90 (N = 243)	23.30 (N = 180)	17.50 (N = 63)	20.0 (N = 15)
Age at menarche (yrs)	12.60 ± 1.40 (N = 127)	N/A	12.68 ± 1.05 (N = 49)	N/A
Self-esteem	30.48 ± 3.89 (N = 275)	30.52 ± 4.50 (N = 165)	29.78 ± 4.85 (N = 83)	30.00 ± 3.49 (N = 12)
Anxiety	22.90 ± 5.01 (N = 273)	21.93 ± 5.29 (N = 163)	23.78 ± 5.96 (N = 83)	22.46 ± 5.43(N = 13)
Eating attitudes	4.60 ± 6.09 (N = 278)	5.12 ± 6.98 (N = 166)	7.00 ± 8.70 (N = 83)	6.54 ± 9.68 (N = 13)
Harmonious passion	6.06 ± .73 (N = 231)	6.08 ± .76 (N = 116)	5.72 ± .98 (N = 61)	5.62 ± 1.22 (N = 7)
Obsessive passion	4.39 ± 1.41 (N = 231)	4.04 ± 1.52 (N = 116)	4.22 ± 1.43 (N = 60)	4.46 ± 2.02 (N = 8)
Task-involving perceptions	4.36 ± .43 (N = 280)	4.39 ± .42 (N = 166)	4.16 ± .48 (N = 81)	4.34 ± .42 (N = 13)
Ego-involving perceptions	1.95 ± .63 (N = 276)	2.11 ± .64 (N = 164)	2.32 ± .80 (N = 84)	2.16 ± .67 (N = 11)

Preliminary T-tests at Time 1

After applying a Bonferroni correction of .003 (.05/18 variables), significant differences between adhering and dropout students emerged in task-involving, $t(359) = -3.77$, $p < .001$, and ego-involving motivational climate perceptions, $t(358) = 3.82$, $p < .001$. Differences between the groups in harmonious passion (HP) and EAT-26 scores were also approaching significance, $t(290) = -2.54$, $p = .01$, and $t(256) = 2.72$, $p = .007$, respectively. Compared to dropout students, adhering students reported greater HP and perceptions of task-involving climates, and lower ego-involving climate perceptions and EAT-26 scores. No significant differences were observed between the groups for the physiological or demographic variables. There was also no difference in current injury prevalence between the two groups according to chi square analysis, X_2 (1, $N = 306$) = 1.18, $p > .05$, phi = -.06. Task-involving and ego-involving motivational climate perceptions, HP and EAT-26 scores were therefore used as predictor variables in the logistic regression.

Logistic Regression using Predictors from Time 1

Three versions of the logistic regression were run because, according to Tabachnick and Fidell (2007), regression models should be simplified where possible by reducing the number of predictors provided a good model fit remains. The full model containing all four predictors was significant, X^2 (5, N = 282) = 13.67, $p < .05$, exhibited a good model fit according to the Hosmer and Lemeshow test ($p > .05$), and correctly classified 80.1% of cases. Only HP made a marginal contribution to the model ($p = .06$). The number of variables in the model was then reduced consecutively according to their effect size (as indicated by odds ratios; Tabachnick & Fidell, 2007). Accordingly, EAT-26 scores were removed from the second model because these demonstrated the smallest effect size compared to the other variables. The second model was significant, X^2 (4, N = 283) = 13.53, $p < .05$, correctly classified 80.2% of cases, and exhibited a good model fit. Only HP made a unique significant contribution to the model ($p = .05$). The final version was run with HP and ego-involving perceptions only, because task-involving motivational climate perceptions demonstrated a smaller effect size than these two variables. The full model was significant, X^2 (3, N = 287) = 13.97, $p < .01$, correctly classified 79.4% of cases overall (see Table 8.2), and demonstrated a good model fit, Hosmer & Lemeshow: X^2 (8, N = 287) = 8.24, p = .41. Ego-involving perceptions ($p < .05$) and HP ($p = .05$) made significant contributions to the model, where HP was the most influential predictor according to odds ratios. This model was deemed preferable

due to the reduced number of variables while maintaining good model fit. In the model, Cox and Snell R square = 4.7%, and Nagelkerke R squared = 7.4%.

Table 8.2. Logistic regression results for the third model.

	B	Wald	Sig	Exp(B)	Lower CI	Upper CI
Age	-.05	.41	.52	.95	.82	1.11
Ego	-.49	4.86	.03	.61	.40	.95
HP	.36	3.73	.05	1.44	1.00	.207
Constant	.92	.28	.60	2.50		

Overall, students with greater levels of HP were more likely to adhere to the CATs than students with lower levels of HP, while those with greater ego-involving motivational climate perceptions were less likely to adhere compared with students reporting lower perceptions of ego-involving elements. However, these results should be interpreted with caution as the odds ratios indicated a relatively small effect size for both HP (1.44) and ego-involving climate perceptions (.61).

Paired Sample T-tests for all Variables

Paired sample t tests indicated that over the one-year period from Time 1 to Time 2 adhering students improved significantly in all of the physiological variables (vertical jump height, handgrip strength, hamstring flexibility, external hip rotation and aerobic fitness; $p < .003$ following Bonferroni correction, see Table 8.3). Due to low numbers of dropout participants at Time 2, statistical differences in scores were not discernible in the t-tests with the exception of a significant increase in hamstring flexibility. A speculative inspection of means indicated that dropout students also improved in each physiological variable except for external hip rotation, the value of which decreased over time. This should be interpreted with caution however as the standard deviations were relatively large for the small sample size of dropouts at Time 2. Adhering students reported a significant increase in ego-involving motivational climate perceptions over time. In addition, adhering students engaged

in significantly less non-dance physical activity, and marginally more CAT training, over the one year period. Dropout participants appeared to engage in slightly more non-CAT dance training over time.

Table 8.3. Paired samples t-tests of change over one year for all variables.

	Adhering			Dropout		
	T	Df	*p*	*T*	Df	*p*
CAT (hrs/wk)	-2.25	165	.03	-1.20	11	.07
Non-CAT dance (hrs/wk)	-1.67	152	.09	.43	11	.68
Physical activity (hrs/wk)	3.12	149	.00*	.94	10	.35
Vertical jump height (cm)	-4.26	175	.00*	-2.25	15	.04
Handgrip strength (kg)	-6.99	176	.00*	-3.11	15	.01
Hamstring flexibility (°)	-9.16	174	.00*	-4.93	14	.00*
External hip rotation (°)	-2.99	178	.00*	.98	15	.34
%HRmax Stage 3	4.76	156	.00*	1.97	12	.07
%HRmax Stage 5	4.58	154	.00*	1.31	11	.22
Self-esteem	.56	164	.58	.49	11	.64
Anxiety	2.29	162	.02	.75	12	.47
Eating attitudes	-.62	165	.53	-.95	12	.36
Harmonious passion	.26	115	.79	.35	6	.74
Obsessive passion	2.53	115	.01	-.91	7	.39
Task-involving perceptions	-1.42	165	.16	-1.25	12	.24
Ego-involving perceptions	-4.52	163	.00*	-.14	10	.89

Note: * denotes significance at the level of $p < .003$ based on Bonferroni calculation of .05/17.

8.5 Discussion

The aim of this study was to investigate adherence to dance using a mutlidisciplinary set of variables related to both dance performance and previous adherence and dropout literature. A secondary aim was to assess changes over time in these variables for both adhering students and those who later dropped out. Preliminary analyses revealed few differences between the adhering and dropout participants. Adhering students reported greater task-involving motivational climate

perceptions and harmonious passion (HP), and lower ego-involving climate perceptions and Eating Attitudes Test (EAT-26) scores, compared to dropout students. Only two variables, HP and ego-involving climate perceptions, emerged as predictors of adherence according to the logistic regression analysis.

Students reporting greater levels of HP for dance were more likely to adhere to training than students reporting lower HP. This is a unique finding as passion has not previously been investigated quantitatively in relation to adherence. Sport research has typically focused on enjoyment but has not explored whether a positive affective response can result in an emotional attachment to an activity (i.e. passion; Vallerand et al., 2003), that in turn predicts adherence. Given the anecdotal importance of passion in persisting with arduous training and performance regimes (e.g. Hamilton, 1998), and the role of passion in dance commitment and dropout highlighted in qualitative research (Aujla et al., in submission; Walker et al., 2012), such a finding is a valuable step forward in understanding the importance of passion in adherence to dance.

Interestingly only HP, and not obsessive passion (OP), was a predictor of adherence. There is a traditional stereotype that dancers must sacrifice everything for their art (e.g. Austin, 1982; Hamilton, 1998), which is in line with the rigid persistence characteristic of OP that can lead to conflicts between the passionate activity and other life areas (Vallerand et al., 2003). For example, the famous contemporary dancer Martha Graham once stated: “Being a dancer was an act of total commitment costing no less than everything”. However, the current study findings suggest that dance can be balanced with other commitments in a healthy way, as is characteristic of HP. This is a cautious interpretation as the participants in the current study were young dancers in training rather than adult professionals; further research should be conducted with professional dancers. In any case, the finding is certainly positive as OP has been associated with a range of maladaptive outcomes, such as injury in dancers (Rip, Blanchard & Vallerand, 2006). The positive outcomes associated with HP, including flow experiences and positive affect (e.g. Vallerand et al., 2003), may give rise to the enjoyment that is essential for committing and adhering to activities (e.g. Gould et al., 1985; Walker et al., in submission). Dance can be a young person’s main passion, but it can be typified by a healthy involvement that does not completely overshadow other aspects of his or her life.

The second independent predictor of adherence was ego-involving motivational climate perceptions. Students reporting greater ego-involving motivational climate perceptions were less likely to adhere to the CATs than students reporting lower ego-involving perceptions, supporting previous sport findings that reported associations between ego-involving climate perceptions and dropout (Pelletier et al., 2001; Sarrazin et al., 2002). Dance research has indicated that perceptions of ego-involving climates are related to physical and emotional exhaustion (Quested & Duda, 2010), anxiety (Carr & Wyon, 2003; Nordin-Bates, Quested, Walker & Redding, 2012) and neurotic perfectionism (Carr & Wyon, 2003). As such, if young dancers feel that their well-being is negatively affected by the learning environment, they may choose to remove themselves from that environment. Although not contributing to the predictive analysis, adhering students also perceived their learning climate as more task-involving than dropout students, which supports previous findings that adherence is associated with task-involving motivational climate perceptions in sport (Boiché & Sarrazin, 2009; Le Bars et al., 2009).

Even though ego-involving climate perceptions were a negative predictor of adherence, adhering students reported greater ego-involving motivational climate perceptions at Time 2 than at Time 1. A similar increase in ego-involving motivational climate perceptions was observed across the whole CAT cohort over a six-month period (Nordin-Bates et al., 2012), as well as being reported in a study of elite judoka over a two-year period (Le Bars et al., 2009). These findings suggest that as students progress through training, the learning environment changes. It may be that teachers can perceive commitment in students and feel able to push them, focus more on their weaknesses and areas for improvement, and set higher expectations. The dropout students did not perceive such a change, but reported similar scores at Time 1 to the adhering students at Time 2. Why did the dropout participants perceive the learning environment so differently at Time 1? Were they treated differently or were they somehow more likely to notice criticism, favouritism and punishment of mistakes? For the adhering students, an increase in ego-involving elements seemed insufficient to affect their participation behaviour. Perhaps a greater harmonious passion for dance helps dancers to override negative environmental cues. Are committed students able to use ego-involving climate elements such as peer comparison to spur them on? It is possible for example that dancers with higher levels of confidence and perceived competence can interpret interpersonal comparison as being informative or motivating more than dancers with low levels of confidence and perceived competence (see e.g. Duda, 2001). While

many interesting questions remain, it appears clear that teachers should endeavour to create task-involving motivational climates in talent settings, in order to increase the likelihood of both adherence and elements of well-being (e.g. Le Bars et al., 2009; Quested & Duda, 2011).

It is important to note that, while not a predictor of adherence, differences in EAT-26 scores emerged between the adhering and dropout groups. This supports Hamilton et al.'s (1997) finding that dropout ballet students reported greater disordered eating characteristics than their persisting counterparts. The finding highlights the importance of supporting students even as they withdraw from training, and of having an established eating disorders policy to try and prevent symptoms from developing into a clinical disorder.

No significant differences emerged between adhering and dropout students for any of the physiological factors at Time 1. This contrasts some findings in sport and dance regarding the roles of physical competence (Figueiredo et al., 2009; Hamilton et al., 1997; Ommundsen & Vaglum, 1997), maturation (Delorme, Boiché & Raspaud, 2010; Delorme, Chalabaev & Raspaud, 2010; Hamilton et al., 1997; Helsen, Starkes & Van Winckel, 1998) and injury (Butcher et al., 2002; Klint & Weiss, 1986; Hamilton et al., 1997; Maffulli et al., 2005) in adherence and dropout. Furthermore, both adhering and dropout participants appeared to improve their physical competence over time. Paired t-tests revealed significant increases in vertical jump height, handgrip strength, hamstring flexibility, external hip rotation and aerobic fitness for the adhering students between Time 1 and 2. For the dropout participants, the sample size was too small for the t-test to detect significant changes, but at least cautiously suggested similar increases. It appears that neither baseline level nor change over time in physiological factors is particularly important in terms of adherence and dropout. Instead psychological factors seem most important regarding young talented dancers' participation behaviour. A study of adhering and dropout gymnasts similarly indicated that neither maturation- nor performance-related characteristics were associated with adherence; the authors suggested that psychological and social factors were likely to be more important (Claessens & Lefevre, 1998). Collectively these conclusions appear valid: previous qualitative research with the same CAT cohort revealed a broader range of factors associated with dance commitment and dropout than those examined in the current study, the majority of which were unrelated to physical factors (Walker et al., in

submission; Walker et al., 2012). However, due to the small number of dropout participants providing data at Time 2, further research of this nature is encouraged.

In summary, adherence to a dance talent scheme was positively predicted by HP and negatively by ego-involving motivational climate perceptions. The results indicate that in order to maximise adherence, educators should endeavour to create task-involving motivational climates in the dance studio. Not only may this enhance adherence in and of itself, but may also enhance the strongest predictor of adherence in the current study, HP. Recent research with the same cohort revealed that increases in task-involving climate perceptions predicted increases in HP (Redding, Nordin-Bates & Walker, 2011), which indicates that the two predictors of adherence are related, further strengthening the recommendation of creating task-involving motivational climates.

Limitations

The effect sizes for the regression analysis were relatively small, indicating that HP and ego-involving climate perceptions only represent a small part of the explanation as to why students persist with training. This is supported by the broad range of reasons given by committed and dropout students during qualitative studies of the same cohort (Walker et al., in submission; Walker et al., 2012), highlighting the complexity of commitment, adherence and dropout among young dancers.

Another limitation was the low number of dropouts with complete data at Time 2, making the original aim of conducting a logistic regression using change scores (examining whether change over time in the variables could predict adherence) impossible. The longitudinal aspect of the study was therefore necessarily basic and should be interpreted with caution. However, it was a first step toward understanding changes in characteristics that could distinguish adhering from dropout students, suggesting that neither baseline level nor change in physical competence appear particularly important in relation to adherence and dropout in dance. It is possible that the physiological variables investigated did not fully capture competence in dance, as they were focused more on components of physical fitness than technical or artistic factors. Even though factors such as strength and flexibility are important, dance talent is complex and multi-faceted, comprised of artistic and technical skills beyond pure physical capacity or fitness (Walker et al., 2010). Further research could endeavour to create valid measures of dance performance, as currently none are available.

Finally, the CATs are a relatively new and unique scheme, with a focus on individual progression and an interest in dance science research and application. Therefore, the results of the current study may be particular to the CAT cohort and may not generalise to other dance environments.

8.6 Conclusion

In conclusion, greater levels of harmonious passion predicted greater likelihood of adherence to the talent development programme, while greater ego-involving motivational climate perceptions predicted less likelihood of adherence. Adhering students and those who later dropped out did not differ on measures of physical competence, indicating that psychological factors are more important than physical ones in relation to adherence and dropout among this talented cohort. Overall, while adherence and dropout is complex, the current study has provided a first step toward understanding the factors that impact upon young dancers' participation behaviour.

Chapter 9

General Discussion

The aim of this PhD research was to develop a greater understanding of commitment, adherence and dropout among young dancers enrolled on a talent development scheme. Dance training can be both rewarding and arduous. The uncovering of why certain young people commit to dance while others leave is an intriguing research area. An enhanced understanding of the factors related to commitment, adherence and dropout was deemed important because little is known about this area in dance; the study of the area could help dance educators and programmes to maximise retention rates. In doing so, dance educators could optimise the talent development of their students in addition to enhancing students' physical and psychological well-being via regular participation in physical activity. Dance talent development programmes were studied as a unique context by considering variables relating to talent and how they may influence participation behaviour.

Prior to the PhD research, only a handful of studies had addressed factors relating to commitment, adherence and dropout in dance. Pickard and colleagues studied motivation, embodied experiences and crystallising experiences in young ballet dancers (Pickard, 2006, 2007b; Pickard & Bailey, 2009; Wellard et al., 2007), while three studies of dance participation motives had been conducted (Alter, 1997; Nieminen 1998a, 1998b) and one study investigated sources of fun in dance (Stinson, 1997). While certainly relevant, none of these studies investigated psychological commitment or behavioural adherence to dance; participation motives do not necessarily represent the factors that underlie long-term activity involvement. Two previous studies compared adhering and dropout dance students (Bakker, 1991; Hamilton et al., 1997), but these were of ballet dancers only. Furthermore, these two studies were methodologically limited: the sample sizes were small (N = 43 and 40, respectively), and some of the questionnaires used assessed personality traits, an approach not typically used in other adherence and dropout research. As such, dance research in the area of commitment, adherence and dropout was extremely limited.

In contrast, a large amount of research had been conducted in sport. While sport investigations informed this PhD research and study designs to an extent, the differences between dance and sport, for instance in relation to artistic factors, made the direct application of sport research findings and theories to dance questionable. Therefore, a clear gap in the literature had been identified. In order to address this gap in the literature, a mixed methods design was employed to capture

a combination of breadth and depth within the research findings (Johnson & Onwuegbuzie, 2004; Krauss, 2005; Moran-Ellis et al., 2006), enabling data to be generated both quantitatively and qualitatively from the dancers' own words. This approach was deemed optimal given that the combined use of quantitative and qualitative research can answer complex and under-researched areas, and increase confidence in the interpretation of the results (Coll & Chapman, 2000; Denzin & Lincoln, 1998; Johnson & Onwuegbuzie, 2004; Moran-Ellis et al., 2006). By adopting a mixed methods approach, findings emerged in both diverse and complementary ways. For example, it was expected that during the interviews with committed students some would articulate their love of dance, yet only through the quantitative data could the constructs of harmonious and obsessive passion be investigated in a systematic fashion. Furthermore, the correlates and outcomes of the two types of passion could only be investigated at the population level through quantitative analysis. On the other hand, factors emerged from the interviews that could not be captured within the quantitative data, such as details relating to the intricacies of relationships with peers and parents. Importantly, because of the scarcity of existing dance literature in the area, the research took a descriptive and exploratory approach, rather than employing a pre-determined theoretical perspective. Consideration was taken of psychological *and* physical factors that may influence participation behaviour based on previous suggestions that inter- and multidisciplinary investigations of adherence and dropout are necessary (Burwitz et al., 1994; Feltz & Ewing, 1987). This approach enabled a range of detailed findings to emerge that generated specific practical implications. As such, the PhD studies were the first to comprehensively investigate commitment, adherence and dropout in dance from both a psychological (commitment) and behavioural (adherence/dropout) perspective.

In order to address the research aims, five studies were conducted. The first study was a literature review on talent identification and development in dance, drawing from research in dance as well as related areas such as sport and music. Given that the participants in the studies were from the Centres for Advanced Training (CATs), and by implication were talented or exhibited exceptional potential, it was important to explore previous research around dance talent in order to gain an understanding of the nature of both the cohort under investigation and the talent development environment. The literature review (Chapter 4) also aided in identifying which variables to investigate in the subsequent studies. The second study (Chapter 5) quantitatively examined the young talented cohort according to some of the

multidisciplinary characteristics identified in the literature review as being relevant to dance talent. Essentially, this was to gain a descriptive 'view' of the cohort, and included an examination of differences in variables according to age to assess the possible impact of maturation on the results. Thirdly, as reported in Chapter 6, nineteen committed young dancers were interviewed about their experiences in dance and the factors that facilitated and supported their commitment to dance. This qualitative, exploratory approach allowed reasons for committing to the CATs to emerge from the dancers' own words. The fourth study examined dropout from the CATs both qualitatively and quantitatively (Chapter 7). Ten dropout students were interviewed about their experiences in dance and reasons for leaving in order to understand the complexities of dropout from the participants' perspectives. The qualitative data was triangulated using quantitative data on dropout reasons from the CAT graduate destinations spread-sheets which detailed categories of dropout reasons from the larger student cohort. Finally, a multidisciplinary set of variables, many of which were described in the first two studies, were used to predict behavioural adherence to the scheme in Chapter 8. The multidisciplinary variables included both psychological characteristics as well as components of physical fitness that related to dance performance (termed physical competence). In this way, commitment, adherence and dropout among the CAT students was investigated from a variety of perspectives. In other words, data were gathered regarding *what* adhering and dropout students are like – and *why* they commit or withdraw. Overall, the PhD research addressed a gap in the dance science literature by providing a range of novel findings. Due to practical applications that arose from the findings, the PhD research could also contribute to the development of dance pedagogy.

9.1 Key Findings in Brief

Findings will first be summarised before they are discussed in depth. Exploring the notion of talent in dance indicated that it is complex and multi-faceted, concerning not only the individual but the environment in which he or she trains. As such the literature review indicated that investigations of commitment, adherence and dropout in a talent context should take into account the dancer's characteristics (psychological, physical and artistic) and his or her perspectives of dance training, as well as the role of social agents within and outside of the activity. Examination of the cohort according to age groupings revealed that some of the characteristics of talented dancers differ across the adolescent years, for example in terms of motivational climate perceptions, suggesting that both talent identification

procedures and training should be age-appropriate. Commitment to the CATs was underpinned by dance enjoyment, the social relationships and opportunities on the scheme, and parental support. Dropout students cited other commitments, change in aspirations, course content, difficulty making friends, and lost passion as major reasons for withdrawing from the scheme. Minor reasons included low perceived competence, teacher behaviour, travel, financial issues and injury. Younger students were more likely to cite course-related reasons for dropping out than older students, while older students were more likely to cite change in aspirations and lost passion. Comparisons of adhering students and those who later dropped out revealed that at Time 1, adhering students reported greater harmonious passion and task-involving motivational climate perceptions, and lower disordered eating attitudes and ego-involving motivational climate perception scores, than dropout students. Adherence to the CATs was predicted positively by harmonious passion and negatively by ego-involving motivational climate perceptions. No differences were found in any of the physical variables. In terms of change over time, both adhering and dropout students appeared to improve in all of the physical variables, with the exception of dropouts' external hip rotation. This suggests that physical competence, in terms of both baseline measures and change over time, is less important than psychological factors in relation to adherence and dropout among young talented dancers.

The main reasons for commitment, adherence and dropout among the young dancers are discussed below. As the aim of this discussion is to directly compare the committed and adhering students with their dropout counterparts, results are discussed in order of importance, although this has not always been possible as some results are unique to either group. Each section also contains practical recommendations that have arisen from the findings and related literature.

9.2 Enjoyment

Interview data revealed that enjoyment was the main factor associated with commitment to the CAT scheme. This is in accordance with previous descriptive research in sport (Gill et al., 1983; Gould et al., 1985; Gould & Petlichkoff, 1988; Klint & Weiss, 1986; Ryska et al., 2002; Sapp & Haubenstricker, 1978; Salguero et al., 2003a; Ullrich-French & Smith, 2009) and findings from research based on the sport commitment model (Alexandris et al., 2002; Carpenter et al., 1993; Scanlan et al., 1993b; Scanlan et al., 1993c; Sousa et al., 2007; Weiss et al., 2001; Weiss & Weiss, 2006). A diverse range of enjoyment sources were cited, including

movement sensations, emotional release and task mastery, which concur with previous sport research (Fredricks et al., 2002; McCarthy & Jones, 2007; Scanlan et al., 1993a; Scanlan & Lewthwaite, 1986; Scanlan et al., 1989; Stein & Scanlan, 1992; Wankel & Kreisel, 1985; Wankel & Sefton, 1989). Furthermore, artistic factors were important enjoyment sources, in particular self-expression, performing and creativity. These factors are similar to those reported in studies of dancers (Alter, 1997; Nieminen, 1998a; Nieminen, 1998b; Pickard, 2006, 2007b; Stinson, 1997; Wellard et al., 2007) and figure skaters (Ryba, 2007; Scanlan et al., 1989). Self-expression was the most frequently cited general dance enjoyment source, supporting a previous study which found that self-expression was the most important participation motive for those attending dance classes in a range of styles and levels (Nieminen, 1998b). Similarly, it has been suggested that musicians are motivated by a desire to establish a unique musical identity and to express themselves through music (Chapman, 2010; Holmes, 2011). Performing artists thus appear to form a personal and emotional connection to their activity which presumably has an impact upon their desire to continue to pursue their art. This relates to notions of passion (Vallerand et al., 2003), in which the passionate activity becomes internalised into the individual's identity so that it is part of who they are (the importance of passion in relation to commitment, adherence and dropout is further explored below). In addition to relating to the passion model, some of the enjoyment sources cited relate to theories of flow (Csikszentmihalyi, 1990) and intrinsic motivation (Deci & Ryan, 1985; Vallerand et al. 1992). For example, the movement sensations reported resemble aspects of both flow and intrinsic motivation to experience stimulation (Vallerand et al., 1992). Given that intentions to continue participating in physical activity have been best predicted by intrinsic motivation to experience stimulation (Hein et al., 2004), and commitment among talented teenagers was found to be best predicted by flow (Csikszentmihalyi et al., 1993), future research could assess whether the enjoyment sources reported by the dancers in Chapter 6 relate empirically to theories of flow and intrinsic motivation. In light of these findings and suggestions that aesthetic physical activities comprise a greater number of enjoyment sources than non-aesthetic physical activities (Scanlan et al., 1989), dance appears to be well-placed to encourage participation and commitment among young people. This research is the first to explicitly consider artistic factors in relation to commitment, highlighting how the various aspects that constitute dance (e.g. movement sensations, creativity) combine to enhance enjoyment and subsequently commitment. As such the PhD research has extended existing dance research in the area.

Although most of the enjoyment sources were intrinsically motivating in nature, some examples of extrinsic motivation were given, such as audience recognition, which have also been reported in sport (Ryba, 2007; Scanlan et al., 2003). However, as with other studies of talented youth, intrinsic motivation appeared to have the strongest influence over commitment in terms of the enjoyment sources outlined above (Csikszentmihalyi et al., 1993; Phillips & Lindsay, 2006; Ryba et al., 2007). This is presumably because the enjoyable experiences inherent in the act of dancing itself are enough to encourage continued involvement, above and beyond external rewards; indeed, intrinsic motivation is generally associated with adherence in sport (Pelletier et al., 2001; Sarrazin et al., 2002). While the motivation continuum within self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000, 2002) seems relevant to this study, it is important to note that dropout students described similar enjoyment sources to the committed students. For example, one CAT student who had left said about dance that, "I think it's just really fun and it's a way of – I don't know how to put it...express yourself without having to, like, talk." This indicates that intrinsic and/or extrinsic motivation for dance in general was not the key factor differentiating between the two groups. It is possible that because students were enrolled in a talent development programme, they already had high levels of intrinsic motivation; the fact that most dropouts continued to dance elsewhere (typically at a recreational level for enjoyment) appears to support this. Several previous studies similarly reported that 'dropout' participants had re-entered, or planned to re-enter, their activity at a different level in both sport (Butcher et al., 2002; Klint & Weiss, 1986; Gould et al., 1982; Sefton & Fry, 1981) and dance (Bakker, 1991), again suggesting that intrinsic and extrinsic motivation may not be the best way to differentiate adhering from dropout participants. Future research could address this suggestion quantitatively among dancers.

Because most of the dropout participants continued to dance elsewhere, a lack of general dance enjoyment did not emerge as a reason for their withdrawal from the scheme; for many, either the course content or factors external to the CATs caused them to drop out. Sport research has shown that as commitment and performance level increases, enjoyment tends to decrease (Butcher et al., 2002; Casper & Andrews, 2008; Scanlan & Lewthwaite, 1986; Weiss & Weiss, 2007). This may be because as performance level or standard increases, so does deliberate practice (Ericsson et al., 1993). As a young athlete progresses in his or her sport, the content of training sessions will presumably include greater amounts of deliberate practice over time, which may inhibit enjoyment. A similar effect seemed to have

happened for some dropout participants in Chapter 7, with increased commitment and technical training having a lessening impact upon their enjoyment of the CAT scheme. The influence of the training programme content is discussed in more detail in the Course Content section.

In contrast, enjoyment did not seem to decrease as commitment and performance level increased among the committed dancers. In Chapter 6, enjoyment was the factor most strongly associated with commitment for all participants regardless of their age (between 10-17 years). It is likely that enjoyment in talent development settings incorporates not only 'fun' and the enjoyment sources reported above, but also feelings of satisfaction associated with overcoming challenges and hardships (Csikszentmihalyi et al., 1993); the physical hard work of dance activity and its associated 'aches and pains' may in itself be enjoyable or satisfying (Stinson et al., 1990; Wainwright et al., 2005). For example, one of the committed students explained, "If I ache the next day I know I've done good. It might be hurting me but [laughs] I don't know, it makes me feel good 'cause I've worked really, really hard". It would be interesting to further explore notions of enjoyment among dancers at different stages of participation. For example, enjoyment in terms of hard work and physical discomfort such as muscle soreness may spur some young dancers on while discouraging others. Furthermore, might definitions and sources of enjoyment alter as a young person moves from his or her first recreational steps to a performing career in the profession? Taken together it appears that enjoyment in dance talent contexts is multi-faceted, and the experiences intrinsic to dance are, for many, sufficient to maintain enjoyment throughout the talent development process.

In terms of practical recommendations, the enjoyable aspects of dance, such as self-expression, performing and creating, should be maximised where possible to enhance or maintain students' enjoyment. For example, emphasis on movement qualities through the use of verbal description and imagery may facilitate enjoyable movement sensations. Self-expression could be encouraged by employing emotions during technique class, asking students to create variations in movement qualities, and using imagery to generate emotions (Buckroyd, 2000; Nordin & Cumming, 2005). Participants also reported specifically enjoying performances; opportunities can be created in terms of formal performances on stages, informal ones such as sharings, and performing work to peers during class. Another artistic aspect, creativity, can be encouraged in specific choreography sessions but also in

technique classes (Watson, Nordin-Bates & Chappell, 2012). For example, students could improvise the arm movements to a footwork exercise, or decide on the rhythmic phrasing of a sequence (Wootten, 2009), strategies which could also foster self-expression and autonomy. In addition, opportunities to be creative can be encouraged using the Divergent Production teaching style for example, where students are set tasks and asked to produce multiple responses. This may be an open-ended choreographic task, or through asking students to solve a specific technical problem such as maintaining balance during a pirouette (Gibbons, 2007). Overall, learning should focus on enjoyment alongside 'serious' technical and artistic instruction. Other qualitative research with the CAT cohort similarly found that a balance between seriousness and enjoyment was conducive to the nurture of creativity (Watson et al., 2012). To this end, students should be encouraged to understand how they can both enjoy the activity in the moment and appreciate how it is important for their long-term goals.

9.3 Other Commitments

The most frequently cited reason for dropping out of the CAT scheme according to Chapter 7 was having other commitments or conflicting demands. This supports previous descriptive research in sport (Butcher et al., 2002; Enoksen, 2011; Fredricks et al., 2002; Gould et al., 1982; Klint & Weiss, 1986; McPherson et al., 1980; Molinero et al., 2006, 2009; Salguero et al., 2003b; Sefton & Fry, 1981) as well as the attractive alternatives component of the SCM which has been found to lower commitment among sport participants (e.g. Sousa et al., 2007; Weiss et al., 2010). During adolescence, young people seek activities that suit or match their developing identities (Burton & Martens, 1986; Fredricks et al., 2002), suggesting that the dropout students may have enjoyed their experiences on the CAT but withdrew in order to prioritise or pursue other activities that they felt better suited them. These other activities included school work, other dance classes or other hobbies, and, in particular, socialising; many statements akin to, "It was quite hard to have a social life when you when to CAT" emerged. Previous studies of talented arts and athletics students have similarly found that dropout participants left their activity – despite often enjoying it – because of the social cost it entailed (Johns et al., 1990; Patrick et al., 1999). Given that peer relationships take on increased importance during adolescence (Horn & Weiss, 1991; Youniss & Smollar, 1985), young people must choose between dedicating time to developing their talents, and being part of a social group. Perhaps having few friends on the CAT (see section on CAT Peers) 'pushed' students to value the cultivation and maintenance of other

friendships more highly. It would be interesting to investigate the extent to which prioritising other commitments is due to enjoying another activity more and/or negative aspects of the course such as poor peer relationships.

One of the committed students appeared to be going through similar thought processes to those of the dropout participants in terms of trying to decide which activity best suited him. His busy schedule had prompted questions in his mind about the extent to which dance was more enjoyable than playing football and spending time with friends. This type of thought process is outlined in expectancy-value theory (EVT; Eccles et al., 1983) and social exchange theory (SET; Kelley & Thibaut, 1978; Thibaut & Kelley, 1959). For the meantime at least this participant remained in dance training, presumably concluding that the benefits of dance involvement outweighed the costs. It would be interesting to further understand the nature of benefits and costs in dance training; for example, is it the number of costs and benefits or their perceived importance that have the most impact? Are perceptions of costs and benefits moderated by factors such as an individual's passion for dance and the extent to which he or she receives social support in relation to training? More in-depth research could begin to answer these intriguing questions.

Similarly to the dropout participants, committed students reported that they had increasing school pressures and social activities to balance over time. However, the majority of these dancers felt that juggling their commitments was manageable and worthwhile, and had taught them valuable time management skills. This is similar to previous research in sport and the performing arts which reported that participants had learned self-regulatory skills due to their many commitments (Fraser-Thomas & Côté, 2009; Oreck et al., 2000). It is possible that a flexible and harmonious, rather than rigid and obsessive, passion for dance enables young people to juggle various activities in their lives while still remaining committed to dance. In any case, some of the committed participants realised that their busy schedules had an effect on their families, such as spending less time together, financial implications and fewer holidays; factors which have been documented in previous research detailing the sacrifices some families make in order to support their talented child's development (Côté, 1999; Kay, 2000; Ferreira & Armstrong, 2002; Pickard, 2006). Like the dropout participants, committed dancers also reported that they were less able to spend time with their friends outside of dance. Despite this, some participants were so involved in their dance training that they did not appear to be affected by such

social costs. It appears that for young people who are very passionate about dance, such factors are unimportant. Taken together, the extent to which other commitments influenced participation behaviour appeared to depend on the role of high-level dance training in the individual's life, and which activities he or she wished to prioritise. Again, the reasons behind such prioritising may develop due to factors such as passion for dance versus other activities; if dance is what a young person really wants to do, he or she will find a way to make it fit alongside other commitments.

In terms of practical recommendations, it may be difficult – and inappropriate – for educators and schools to attempt to alter a young person's priorities if they choose to pursue an activity other than dance, but regarding committed students it may be helpful for educators to be aware of the other activities and obligations that they are managing. Taking into account students' various commitments can help teachers to better understand their actions and behaviours (e.g. being aware of school exam periods that could affect a student's effort, concentration and attendance). The CATs attempt to do this, by creating individual training plans, and similar strategies could be implemented by other dance schools. An understanding approach to young dancers' busy lives, rather than a demand for prioritisation of dance, may be the best way in which to encourage commitment.

9.4 Passion

Many committed students discussed their love of dance and how it was part of their identity, indicating that their reasons for participating went beyond intrinsic motives to a deeper emotional connection to the activity. This is similar to descriptive reports in dance (Alter, 1997; Pickard, 2006, 2007b), other art forms (Dudek et al., 1991; Oreck et al., 2000; Talbot-Honeck & Orlick, 1999) and sport (Legg et al., 2005; Mallett & Hanrahan, 2004). Such a passion for dance was evident not only in the interviews but also throughout data collections during the larger talent development research project, of which the author was a part of the core research team. Meeting the young dancers several times over the two-year research period made clear the extent to which most of the participants loved and valued dance in general as well as their involvement on the CATs. In support of the qualitative data and these less formal observations, quantitative data revealed that the majority of adhering participants were passionate about dance according to the criteria of the Passion Scale (Vallerand et al., 2003). It has been suggested that when the passionate activity becomes part of one's identity and who one wants to become, commitment

to that activity is logically more likely (Mageau et al., 2009). Furthermore, in talent development settings, passion may be essential in committing to often arduous training. Previously, it was unknown how or why individuals continued to engage in effortful and time-consuming deliberate practice (Ericsson & Charness, 1994), but recent studies of young talented athletes and elite dramatic arts and psychology students have shown that passion predicts deliberate practice which in turn predicts performance (Vallerand et al., 2007, 2008). Regarding the PhD research, it is likely that the diverse enjoyment sources reported above contributed to the participants' passion for dance, which in turn helped to enhance or maintain their commitment to training. Future research could usefully investigate how passion relates to other antecedents of commitment such as enjoyment sources as well as training-related factors such as deliberate practice.

Although the association between passion and commitment/adherence is intuitively logical, the study reported in Chapter 8 was the first to empirically establish such a relationship. Importantly, it appears that dance had become part of adhering students' identities in a predominantly 'healthy' way. Across the entire cohort scores for harmonious passion (HP) were greater than those for obsessive passion (OP), but of particular importance is the fact that adhering students reported greater HP than dropout students; furthermore only HP predicted adherence to the CATs. This finding contradicts traditional stereotypes of dancers who sacrifice all other life areas to devote themselves to dance (e.g. Austin, 1982), suggesting instead that young dancers can balance their love of dance with other commitments and activities. Darcey Bussell alludes to this notion in her biography, saying:

> …[dance] has to be what [dancers] love doing most and what they are determined to succeed at. But they also have to be able to keep it in proportion. I find that it's just as important for me to be able to cut off and relax as it is to be able to work hard
> (Bussell, 1998, p.4).

By maintaining high levels of HP, dancers may also benefit from its associated outcomes such as positive affect both during and following activity engagement, subjective well-being, flow experiences and vitality (Carbonneau et al., 2008; Carpentier et al., 2011; Mageau et al., 2005; Mageau & Vallerand, 2007; Philippe et al, 2009, 2010; Vallerand et al., 2003, 2006, 2010). HP has also been associated positively with performance (Bonneville-Roussy et al., 2010; Vallerand et al., 2007, 2008) and greater work satisfaction (Vallerand et al., 2010). Hence, there is a clear rationale for educators to encourage this healthier, more flexible type of involvement

among their students. It would be interesting to track these students over time as they begin their careers in dance to observe whether or not HP remained dominant. It might not be surprising if OP increased given the high level of competition for jobs in the field, potentially resulting in attempts to succeed in dance by any means (such as by adopting adaptive as well as maladaptive goals; Bonneville-Roussy et al., 2010; Vallerand et al., 2007, 2008). However, it seems reasonable to suggest that having high levels of HP in training at least would stand dancers in good stead as they enter the profession.

It is noteworthy that while adhering and dropout students differed in the extent to which they were harmoniously passionate about dance, they did not differ in terms of *being passionate* about dance[6]. Indeed, most participants met the stipulated passion criteria in the Passion Scale (see page 118; Vallerand et al., 2003): using the same dataset that was employed in Chapter 8, 83.3 % of adhering female students and 78.6 % of female dropouts were classified as passionate about dance at Time 1. Although at first glance this finding appears counter-intuitive, it is easier to understand why so many students were classified as passionate if considering the methodology of Chapter 8 as well as the passion criteria. Firstly, students completed the instrument while they were still attending their CAT. As such it is likely that students who later dropped out were spending a relatively large amount of time in training at the time of completing the questionnaire[7], demonstrating that they would meet the criterion "I spend a lot of time doing this activity". As noted in the Enjoyment section, it is also likely that these students enjoyed dance ("I like this activity"), valued it highly ("This activity is important for me"), and may still have felt passionate about it ("This activity is a passion for me"). Instead, the difference emerged in mean scores for HP; adhering students were 'more' passionate, in a healthy way, than dropouts.

Despite no quantitative differences being found between the large cohort of adhering and dropout students in terms of being passionate, in the qualitative part of the research three of the dropout participants described having lost their passion for dance. For the dropout interviewees, this loss of passion had occurred over time and was attributed to intense early involvement in dance, a reduction in enjoyment

[6] X^2 (1, n = 311) = 1.98, p = .16, phi = -.07
[7] Dropouts participated in 7.79 ± 3.08 hours of weekly CAT training and 5.79 ± 3.32 hours of weekly non-CAT dance training at Time 1, which did not differ significantly to the weekly training hours reported by adhering students.

due to the intensity of the training, and a lack of challenge. As such, passion for an activity appears essential for pursuing training and practice, and maintaining a long-term goal of future success in a difficult profession. While some studies have been interested in the development of passion (e.g. Mageau et al., 2009), little is known about decreases in this characteristic. Further research is warranted to explore this finding in more depth. However, only three of the dropout participants reported having lost their passion for dance; perhaps the remainder of the dropout students maintained their passion for dance in other contexts.

In talent development settings, where technical development is often prioritised through deliberate practice, "…a long-term challenge is ensuring the longevity of students' passion for dance" (Field, 2011, p.13). Presumably in talent development settings most students will be passionate about dance, and it is likely that some of the practical recommendations regarding enjoyment will help to maintain students' passion for dance even in the face of what might be arduous training. However, the dominant type of passion students adopt may have an impact upon their performance and well-being as well as adherence. In order to encourage HP, teachers should create task-involving motivational climates because the larger talent development project found that increases in task-involving climate perceptions predicted increases in HP (Redding et al., 2011). In addition, employing autonomy-supportive behaviours such as allowing students to make choices may facilitate the development of HP (Mageau et al., 2009). Teachers should also encourage students to monitor their progress in relation to themselves rather than to others, as a task achievement goal orientation is compatible with notions of HP and has been shown to improve performance (Bonneville-Roussy et al., 2010; Vallerand et al., 2007, 2008). Finally, to reduce OP, students should be encouraged to develop interests and social relationships outside of dance so that their lives remain well-balanced (Bonneville-Roussy et al., 2010).

9.5 Aspirations

Given that long-term goals can play a role in activity participation, motivation and related behaviours such as effort (Csikszentmihalyi et al., 1993; Jones et al., 2007; McPherson & Davidson, 2002), it is understandable that a second major reason for dropping out of the CATs was a change in aspirations, which was cited by older students (over 15 years) only. Older students will presumably be beginning to make decisions about their futures, such as post-school options and careers, and explore activities that are in line with their future aspirations. In this way, dropout reasons

pertaining to other commitments and change in aspirations may be related to one another. Similarly, older athletes have been found to change priorities from sport to other activities such as studying and part-time work which might align better with their future goals (Bennie & O'Connor, 2006; Butcher et al., 2002; Hills, 2008). For some of the dropout students, a change in aspirations appeared to have occurred at least in part due to recognition of the realities of the dance profession. It is no secret that a performing arts career is difficult (e.g. Burns, 2007; Burns & Harrison, 2009; Hamilton, 1998; Hamilton et al., 1997; Hanna, 1988). Such recognition of career difficulties was also noted in a study by Stinson and colleagues (1990), who reported that some student dancers had altered their ambitions from being a principal dancer to more modest positions within a dance company because of the difficulty of securing principal roles. For some of the participants in Chapter 7, such considerations were sufficient to have an impact upon their participation decisions. Future research could attempt to identify to what extent altered ambitions are due to the nature of the profession, factors associated with the training programme, and a simple change of interests. Regardless of the reasons, once a change in aspirations had occurred, attending CAT training was no longer relevant to the participants' future aspirations. In EVT terms, training at CAT had lost its utility value (Eccles et al., 1983), meaning that commitment was unnecessary, even when training was still perceived to be enjoyable. Continued recreational involvement in dance enabled dropout students to continue enjoying dance, but participation in a dance talent development scheme was no longer relevant to their needs and future goals.

It is noteworthy that four of the dropout interviewees still hoped for a career in dance and continued training elsewhere: for two of these students time conflicts – especially with other dance training – was the primary reason for dropout from the CATs; one had simply moved away; and another disliked the focus on technique and also reported financial difficulties. Therefore it appears that while time conflicts was the main reason for dropout among the students who still held ambitions for a dance career, aspects of the CAT environment did not appear to meet one of the participant's needs. It is interesting that this participant disliked the focus on technique while still hoping for a dance career; perhaps she lacked the maturity to understand the role technical training plays in preparing for a performing career. The way in which dance material was taught may also have contributed to this student's dislike of the focus on technique, for example by providing little variety in technique exercises.

The ambitions of committed students were quite different to those of many of their dropout counterparts. Previous studies of talented athletes and musicians have found them to be characterised by high levels of commitment not only to short-term goals, performance preparation and negotiating talent development stages, but also to long-term goals and excelling in their domain (Gould & Maynard, 2009; Gould et al., 2002; Gould et al., 1999; MacNamara et al., 2010a, 2010b; Orlick & Partington, 1988; Talbot-Honeck & Orlick, 1999). The committed students were similarly dedicated to their dance practice and performance, took responsibility for their own learning, and had dance-related ambitions for the future. They were aware of the difficulties inherent in the profession but tended to have positive outlooks, which relates to Gould and colleagues' (2002) findings that Olympic athletes were characterised by high levels of dispositional hope and optimism. Perhaps engaging in a self-defining activity in a healthy, harmonious way enables talented individuals to overcome their concerns and remain positive and confident. Positive perceptions of individual ability and progress, combined with a perception that the training environment is sufficient to prepare them for a career, may further help young dancers to adopt an optimistic attitude toward their futures.

Given that the difficulties inherent in achieving a successful performing career were recognised by all participants, and discouraged some of the dropout students from pursuing such a career, dance schools and institutions could try several strategies to increase understanding of potential dance careers and to help prepare students for futures in dance. These could include: creating career documents with information on potential careers and case studies, highlighting that there are several possible careers in dance besides performing; implementing seminars and talks with established professionals; setting up mini work placements in studios or companies with choreographers, performers and teachers; and facilitating mentoring schemes with established artists (Ramphal & Alake, 2010). Moreover, given the increasing rates of self-employment in dance and the prevalence of portfolio careers, entrepreneurial, management and marketing skills could be taught to older students alongside their technical and artistic training in order to help them feel prepared for freelance careers (Burns, 2007; Ramphal & Alake, 2010). In terms of dropout students, dance institutions and schools should signpost them to other organisations or opportunities that might be more suitable. Up-to-date networks and web resources could help to achieve this aim.

9.6 Social Relationships in the CATs

9.6.1 CAT peers

Given how important peer relationships become during adolescence (Horn & Weiss, 1991; Youniss & Smollar, 1985), it is perhaps unsurprising that several studies have reported associations between positive peer relationships within an activity and enjoyment, commitment and adherence (Fredricks et al., 2002; Klint & Weiss, 1986; Nieminen, 1998a, 1998b; Oreck et al., 2000; Patrick et al., 1999; Pickard, 2006; Scanlan et al., 1993a; Ryska et al., 2002; Van Rossum, 2001; Ullrich-French & Smith, 2006; Wankel & Kreisel, 1985; Weiss & Smith, 2002). For example, Fraser-Thomas et al. (2008a, 2008b) reported that persisting swimmers were more likely to report having their best friend at swimming than dropouts. In Chapter 6 it became clear that peer relationships were of great importance to the committed participants, emerging strongly as a factor relating to commitment second only to enjoyment. Positive peer relationships may be particularly important in talent settings where young people spend much time with like-minded peers, contributing toward the development of their identities as dancers (Fredricks et al., 2002; Pickard, 2006). It could be that peers are particularly influential in commitment to dance because this relationship can operate across several dimensions. Interviews revealed that CAT peers were important not only in terms of friendship, support and sharing a common interest, but also in terms of working together, collaborating creatively and performing with one another. Moreover, participants reported being motivated and inspired by their peers both technically and artistically. These findings reflect the fact that positive social relationships are important not only in terms of motivation and commitment, but also in terms of talent development because successful artistic performance often depends on several people, while collaboration can be crucial in creating new works (Kogan, 2002; Watson et al., 2012).

In clear contrast to these findings, half of the dropout interviewees mentioned that they found making friends difficult on the scheme. Previous research has also highlighted that problems with social relationships or team atmosphere are related to dropout (Gould et al., 1982; Fraser-Thomas et al., 2008a, 2008b; Fredricks et al., 2002; Molinero et al., 2009; Oreck et al., 2000; Patrick et al., 1999; Robinson & Carron, 1982). Furthermore, when involvement in an activity does not result in meaningful new friendships, the cultivation and maintenance of social relationships outside of the activity may take on greater importance. This finding supports those noted in the Other Commitments section (above). Competition and rivalry, not feeling heard during creative tasks, and insufficient time during the busy CAT

schedule were cited as reasons for poor peer relationships. Being the youngest or oldest on a CAT also appeared to make it difficult to 'fit in' with the larger peer group. Fraser-Thomas et al. (2008a) similarly found that dropout swimmers were more likely to be the youngest in the group than their persisting counterparts. Such findings raise questions about the structure of the training day as well as student grouping: how can time for socialising be incorporated into a busy talent development timetable? If groups are based on ability rather than age what social cost might that entail? According to these findings it appears that talent development schemes might have to take some responsibility in helping young dancers to make friends with one another. It could be assumed that young people enrolled in selective training programmes are engaged in the single-minded pursuit of excellence, but the results of Chapters 6 and 7 make clear that social relationships impact upon commitment. Future research could investigate whether strategies to improve peer relationships have a positive impact upon adherence, or whether other factors such as time conflicts would still lead to the withdrawal of some participants.

In order to enhance peer relationships, dance schools could provide social activities both in and outside of training (Gould et al., 1985). Team-building games and activities could be incorporated into classes, and tasks could be set for pairs and small groups where groups are regularly changed by the teachers. This approach could be employed during choreography tasks, when learning a particular phrase or when students are giving each other directed feedback (Buckroyd, 2000; Gibbons, 2007; Wootten, 2009). When giving feedback to one another, teachers could consider using rules and criteria sheets to avoid over- or under-critical remarks (Gibbons, 2007). Discussions could also be generated around peer comparisons, effort, reactions to others' mistakes, the role each dancer plays in the studio and on stage, and the importance of teamwork in all dance contexts. Social events outside of training could be organised, such as parties, film nights or watching performances, while buddying or mentoring schemes could be introduced to enhance relationships between students of different ages and/or ability levels (Brooks & Magnusson, 2006; Green, 2005; Hills, 2008). Finally, schools could take advantage of social networking, for example by creating a Facebook group specifically for students so that they feel part of the dance community outside of training hours (Hills, 2008).

9.6.2 CAT teachers

Both qualitative and quantitative findings highlighted the importance of teacher behaviour in relation to commitment, adherence and dropout. Committed students described their teachers as inspiring role models who both challenged and supported them throughout their training. Teachers were motivating, encouraging and approachable, used primarily positive feedback, emphasised personal progression, and facilitated student autonomy and responsibility. Such teaching behaviours may have contributed positively to the young dancers' psychosocial development (Barnett, Smoll & Smith, 1992; Quested & Duda, 2010; Smoll, Smith, Barnett & Everett, 1993) and consequently resulted in greater commitment. Indeed, autonomy support has been associated with adherence in sport (Pelletier et al., 2001) and intentions to be physically active in the future (Almagro et al., 2010). Furthermore, such factors as employing a challenging and supportive approach, emphasising personal progression and treating students as individuals have been reported in previous talent development research (Csikszentmihalyi et al., 1993; Fraser-Thomas et al., 2008a; Pickard, 2006, 2007b; Van Rossum, 2004). In Chapter 6, participants also described their teachers as inspiring due to factors such as their professional credentials, experience and continued involvement in the dance scene; being passionate about dance may have also contributed toward this perception (Csikszentmihalyi et al., 1993; Fredricks et al., 2010; Gentry, Steenbergen-Hu & Choi, 2011).

Although most dropout students perceived their teachers to be supportive, one interviewee felt that CAT teachers were stricter than those at her other dance school and had favourites in the class, descriptions which are in line with ego-involving climate definitions (Ames, 1992). This and the above qualitative findings are complemented by the quantitative data in Chapter 8: adhering students reported significantly greater task-involving, and significantly lower ego-involving, motivational climate perceptions than did dropout participants. As such, adhering students were more likely to perceive their teachers as emphasising personal progression and improvement, peer collaboration and effort and hard work (Ames, 1992). On the other hand, dropout students were more likely to perceive that their teachers emphasised other-referenced learning, peer comparison and rivalry, and objective success or talent (Ames, 1992). Moreover, ego-involving climate perceptions negatively predicted adherence to the CATs. Given that ego-involving climate perceptions have been associated with negative well-being outcomes such as anxiety, exhaustion and neurotic perfectionism in dance (Carr & Wyon, 2003;

Nordin-Bates, Quested, Walker & Redding, 2012; Quested & Duda, 2009), it is perhaps unsurprising that dancers who perceived their climate to be more ego-involving removed themselves from such an environment. Overall, these findings support previous sport research which demonstrated positive associations between task-involving climate perceptions and adherence (Boiché & Sarrazin, 2009; Le Bars et al., 2009; Ntoumanis et al., 2007; Vazou et al., 2006), and between ego-involving motivational climate elements and dropout (Pelletier et al., 2001; Robinson & Carron, 1982; Sarrazin et al., 2002).

Another interesting finding is that adhering students reported a significant increase in ego-involving motivational climate perceptions over time, although this seemed insufficient to affect their commitment. In addition, older students (13-18 years) reported significantly greater ego-involving climate perceptions than younger students (10-12 years) in Chapter 5. This supports previous research documenting increases in ego-involving perceptions over time among the entire CAT cohort (Nordin-Bates et al., 2012) and elite judoka (Le Bars et al., 2009). It appears that as young people progress through training, the learning environment changes; perhaps elements of ego-involving climates increase over time as a function of the talent development process. In the judoka study task-involving perceptions decreased over the same period as ego-involving perceptions increased (Le Bars et al., 2009). Positively, in Chapter 8 task-involving perceptions remained high and stable over the one-year period which may have helped to buffer any negative effects of increased ego-involving elements (see also Nordin-Bates et al., 2012). Similarly, student dancers in Van Rossum's (2001) study reported that although classes became more structured and disciplined over time, teachers continued to be inspiring and motivating, indicating that the positive elements of learning environments remained consistent and served to facilitate the dancers' continued participation. It is also possible that some students are able to use ego-involving climate elements in a constructive manner. This is particularly likely when confidence and perceived competence is high; for example, interpersonal comparison can be interpreted as informational or motivating rather than threatening to self-perceptions (Duda, 2001). Vocational dance students have reported perceiving authoritarian behaviour as important when learning new skills (Rafferty & Wyon, 2006), further indicating that ego-involving climate elements can be interpreted as helpful by some students and may not affect their participation behaviour. Future research could investigate these suggestions further, for example

by examining achievement goal adoption and measures of self-perceptions in relation to motivational climate perceptions and behavioural outcomes.

One question to emerge from these findings is why adhering and dropout students differed at Time 1 in their motivational climate perceptions. There are two possible explanations: teachers treated adhering students differently to those who later dropped out, or the students' *perceptions* of the same climate differed. Firstly, teachers may simply have treated students who appeared less committed and/or talented differently to their more committed counterparts. Research indicates that coach or teacher expectations can be self-fulfilling so that if a coach or teacher believes a student is talented (high expectancy), he or she will set goals to enable the student to fulfil their potential (Solomon, 2001). Sport studies have demonstrated that high expectancy athletes perceive their coaches to give them more positive and instructional feedback and less negative feedback than low expectancy athletes, as well as setting higher standards for them (Solomon, DiMarco, Ohison, & Reece, 1998; Solomon, Striegel, Eliot, Heon, Maas, & Wayda, 1996). It appears that a similar effect may occur in dance talent development contexts, whereby teachers treat students differently depending upon their expectations – whether they be for commitment to training or future career success. For example, teachers may set greater challenges for students that they perceive to be committed, and use peer comparison and favouritism (e.g. spending more time with students who appear more committed), which may be noticed by both committed students and those who later drop out (Solomon et al., 1996, 1998; Wilson & Stephens, 2007). Indeed, some dropout students spoke of a lack of individual feedback from teachers, which one participant described as making him feel like "an under-achiever". Similarly, research with talented young swimmers found that dropouts reported receiving less one-on-one coaching than persisting athletes (Fraser-Thomas et al., 2008b). More research is needed to examine expectancy behaviours in relation to adherence and dropout.

The second explanation is that some students interpret environmental cues differently to their fellow dancers. It is possible that some students are more likely to perceive teacher favouritism when instruction or feedback is not directed toward them, and/or interpret mistake-contingent feedback as criticism or punishment, even when intended as constructive. For example, might an ego-orientated student with low self-esteem interpret feedback differently to task-orientated students with greater self-esteem? Competition between students during classes was mentioned

by some of the dropout interviewees, but not by adhering students. Again, are some students more likely to perceive interpersonal pressure and rivalry? For example, might an ego-orientated student be more likely to perceive interpersonal competition in a talent development setting than students with a self-referenced goal orientation? It is also possible that the perception of competition may have been exacerbated by difficulties making friends, as discussed previously. Collectively these potential explanations indicate that both actual teacher behaviour and individual student perceptions interact to influence behavioural outcomes.

Overall, results suggest that teacher behaviour can be paramount in the participation behaviour of young dancers. It would be interesting to further explore the role of social relationships in the context of HP, the strongest quantitative predictor of adherence to the CATs. Recent studies have shown that HP is associated with high-quality coach-athlete relationships (Lafrenière et al., 2008) and positive peer relationships (Philippe et al., 2010) in the passionate activity, mediated by positive emotions. The positive outcomes associated with HP, for example positive affect and flow experiences, may result in tangible behaviours such as smiles and laughter which encourage interaction with others and thus result in positive relationships (Philippe et al., 2010). Furthermore, the larger talent development project revealed that increases in task-involving motivational climate perceptions predicted increases in HP (Redding et al., 2011). Might students with greater HP be more likely to perceive the motivational climate as being task-involving, which in turn results in greater HP and greater likelihood of adherence? Future research could attempt to investigate this notion.

A final consideration regarding teacher behaviour is the role of staff when a student decides to withdraw from training. Most dropout participants reported that CAT staff had been supportive during the withdrawal process, although perceptions of disappointment or even indifference from staff emerged during three interviews. Previous research has not considered the dropout process, which can often be lengthy and difficult. The findings here indicated that young people need support throughout this process; teachers should show their support for, and interest in, students who follow a different pathway so that they feel their choices are valid.

There are several practical implications emerging from the research findings. Firstly, teachers should be enthusiastic, motivated, caring and available in their approach (Fredricks et al., 2010; Gentry et al., 2011; Loughead, Colman & Carron, 2001).

Csikszentmihalyi and colleagues (1993) spoke of ‘flow’ teachers: those who were still interested in and continued practicing in their domain, whose passion was inspiring to students and may have also helped students to perceive a career in the domain as being within their grasp. Regarding instructional behaviour, sport research indicates that training should focus on doing one’s best and improving while having fun, through reinforcement and praise of effort as well as good performance, encouragement following mistakes, and corrective and informational instruction (Gould, 1987; Gould & Petlichkoff, 1988; Smoll & Smith, 2002; Wankel & Kreisel, 1985). Such behaviours can increase enjoyment, intrinsic motivation, a preference for optimally challenging tasks, perceived competence and intentions to continue participating (Amorose, 2002; Black & Weiss, 1992). To avoid the negative effects of limited individual feedback, for example when group sizes are large, students could be helped to feel that they are ‘seen’ in each class by the teacher rotating student lines, changing the ‘front’ of the studio, and altering his or her position. Students could also be grouped into pairs or small groups to engage in peer feedback exercises (Gibbons, 2007). Finally, teachers could encourage the development of autonomy and personal responsibility by employing democratic behaviour, giving choices, explaining the objectives of exercises and encouraging critical thinking (Fredricks et al., 2010; Gibbons, 2007; Ryba, 2007; Siddall, 2010; Van Rossum, 2004).

Many of these recommendations are in line with the creation of a task-involving motivational climate, which has been shown not only to reduce intentions to drop out, but also to enhance adherence, enjoyment, feelings of connection with others, HP, task persistence and effort, a task achievement goal orientation, perceptions of greater creative ability, preference for challenging tasks and perceived competence (Boiché & Sarrazin, 2009; Le Bars et al., 2009; Mageau et al., 2009; Ntoumanis & Biddle, 1999; Redding et al., 2011; Vazou et al., 2006). Specific recommendations for creating a task-involving motivational climate are in the General Implications section. Given that adherence was negatively predicted by perceptions of ego-involving motivational climates, teachers should avoid comparing students openly, discourage potentially damaging competition and rivalry, avoid punishing mistakes and try to minimise comments and feedback based on perceptions of ‘success’ or talent, instead focusing on effort and hard work (Ames, 1992).

9.7 Course Content

Not only were the social relationships found in the CATs important to commitment, adherence and dropout, but the structure and content of the CAT course also had an impact. Committed students perceived their training to be structured and well-planned, providing plenty of challenge and hard work. In terms of dropout participants, some contrasting perceptions of the course content emerged. Some of the participants reported that the focus on technique during CAT training was too intense and tiring and incorporated too much repetition. In order to develop talent, a focus on technical skill acquisition, typically achieved via repetition (deliberate practice), is necessary; this appeared to discourage some of the dropout students from continued participation. Younger students in particular (< 15 years) were likely to discuss the focus on technique and repetition as a dropout reason; in fact, students who dropped out for CAT-related reasons were significantly younger than those who dropped out for any other reason category according to the quantitative data in Chapter 7. Similarly, Ryska and colleagues (2002) found that younger dropout gymnasts were more likely to cite reasons relating to the course structure than older dropouts. These findings suggest that if intense training is undertaken before a young person is ready – physically, psychologically and emotionally – they may not have the resources to cope with it and subsequently drop out. Authors using the developmental model of sport participation (DMSP; Côté & Hay, 2002; Côté et al., 2003) have found that factors relating to deliberate practice and early specialisation in one activity are associated with less fun (Laws et al., 2007) and dropout (Fraser-Thomas et al., 2008a; Wall & Côté, 2007). Collectively the PhD results and previous literature indicate that early specialisation and deliberate practice can discourage some young people; the following quote from one of the dropout participants represents this notion: “I still love dancing, it was like the sheer concentration on...the constant technique”. The ability to cope with intensive training could also depend upon the extent to which a young dancer perceives physical hard work, deliberate practice and challenge to be enjoyable (as discussed in the Enjoyment section). Morris (2000) suggested that young people in talent settings should be taught coping skills, which may help them to cope with the potentially de-motivating influence of deliberate practice. Training should also be age-appropriate for physiological reasons because some of the students found the course content intense and tiring. For example, the results of Chapter 5 indicated that the training of muscular strength and power should be appropriate to a young person’s physiological development. The intensity of dance training in relation to student age certainly appears to be an important area for future research.

In contrast to the above, some dropout participants perceived a lack of challenge in the course. Training that lacks challenge can be perceived as boring (Fredricks et al., 2002; Keegan, Harwood, Spray & Lavallee, 2009); in dance, Hefferon and Ollis (2006) found that over-familiarity with an exercise or dance piece could inhibit the experience of flow which presumably decreased enjoyment. Why did these students perceive a lack of challenge? One participant felt that the ballet classes were too easy, one described teachers' expectations as becoming easy to predict, and one felt he had 'come to the end of the road' with his dancing. Coakley and White (1992) reported that young people sometimes feel that they have reached their peak in physical activities and choose to alter their participation level accordingly. Overall, perceptions of challenge and content may influence the affect experienced during class, such as satisfaction and enjoyment, and subsequently impact upon participation decisions. The extent to which this is related to individual student perceptions and needs as opposed to actual course content is as yet unknown and represents a potential avenue for future research.

The findings around course content pose a challenge for teachers who must often teach to the group average level while individualising instruction wherever possible. Optimal challenge is important in relation to other factors associated with commitment, for example it can maximise positive affect and flow experiences (Britton, 2010; Csikszentmihalyi, 1990). One way of addressing the notion of optimal challenge is to use differentiation so that a variety of learner needs are accounted for within one class (Fredricks et al., 2010). Gibbons (2007) provided examples of differentiation in a dance technique class, such as teaching a phrase that includes four levels of complexity that students can attempt depending on their current capabilities. Doing so would be an example of differentiation in terms of the task; differentiation can also be incorporated in terms of the outcome (i.e. setting a task that can be interpreted in several ways; Siddall, 2010). Encouraging individual goal-setting may help students to challenge themselves and feel in control of their progress, which can enhance self-confidence more than depending solely upon teacher instruction and feedback (Green, 2005; Wootten, 2009). The findings also suggest that ability groupings are important in talent development settings; however the basis for forming groups could be on students' artistic, technical or physiological development. As was suggested in Chapter 5, grouping students on artistic or technical ability alone may result in younger students being given material that is physiologically inappropriate for their stage of development. Ability groupings may

also have an impact upon peer relationships, as noted earlier. Therefore, student grouping should be considered carefully when courses are planned.

It would be interesting to uncover whether changes to course content such as those suggested above would be sufficient to prevent some participants from dropping out. Given that the committed students appeared satisfied with their training at the CATs, might altering the course content to better suit potential dropouts have a negative impact upon these committed students' perceptions? Would it be possible to design a course that met the needs, interests and goals of each and every individual? It is unlikely that a single course could suit every participant; however, the above recommendations may help to reduce dropout that results from factors relating to course content.

9.8 Opportunities

In addition to the content of training sessions, interviews revealed that the opportunities available on the scheme influenced the participants' commitment. The CATs offer several inspiring opportunities to give students a taste of the professional world, including choreographic workshops, performances in various venues, visits to see performances, collaborations with other schools (e.g. music CATs), and guest teaching by professional artists. CAT students also train in purpose-built dance spaces used by other schools and often professional companies. These enriching additions to the curriculum gave participants a glimpse of their potential futures as dance artists and may have helped them to feel that their goals were within their reach. Similarly, the SCM incorporates involvement opportunities as an antecedent of the model, which has consistently been associated with commitment (e.g. Alexandris et al., 2002; Carpenter et al., 1993; Scanlan et al., 1993b, 1993c; Sousa et al., 2007; Weiss et al., 2001). Taken together these findings indicate that exciting opportunities can be an important motivational tool for young people. It would be interesting to further investigate whether such opportunities could be classified as refining crystallising experiences (Pickard & Bailey, 2009) in that they serve to enhance or maintain students' motivation and commitment once they have already decided to pursue dance training.

Given the importance of inspiring opportunities related to artistic practice, dance schools should attempt to offer as many novel and exciting experiences as possible. This could include: visits to theatres (to see backstage as well as on stage work);

workshops with choreographers; site-specific choreography; seminars and talks from professional artists about their working lives; informal and formal performances; collaborations with other schools or arts disciplines; and opportunities to not only present work at performances but also contribute to the production of performances (such as designing posters, helping with costumes or sets etc.). Introducing exciting opportunities to training programmes would add variety and inspiration to the course, providing respite from intense technical instruction and inspiring students to continue training. Additional responsibilities and developmental opportunities such as teaching younger students and helping out at performances (Hills, 2008) may broaden older students' notions of viable dance careers while ensuring they feel that they are an important part of the school. Schools may also consider inviting feedback from students about what they like or enjoy, and what they might like to change with regards to the course content (Gould & Petlichkoff, 1988; Hills, 2008).

9.9 Social Relationships Outside of the CAT

During talent development, family support is crucial in terms of emotional care, encouragement, motivation, advice, financial and logistical assistance (Bloom, 1985; Boiché & Sarrazin, 2009; Côté, 1999; Davidson et al., 1996; Ferreira & Armstrong, 2002; Gould et al., 2006; Holt & Dunn, 2004; Oreck et al., 2000; Pickard, 2006; Wolfenden & Holt, 2005). The qualitative results similarly revealed that parental support was essential in both the committed and dropout students' dance involvement. The CATs themselves recognise the importance of parental support in commitment to the talent development process, as separate informal interviews are conducted with parents detailing the time commitments and financial requirements of their child attending the training. Furthermore, the findings of Chapter 7 revealed that parental support was important when deciding to withdraw because for many of the dropout students leaving CAT was a difficult decision to make. Some parents had seemed somewhat rueful as they felt their children were wasting their talents, but such comments were surpassed by positive supportive behaviours.

Many of the committed students also reported receiving support from their non-dancing peers at school, as well as from their siblings. Studies of talented swimmers found that persisting athletes experienced more support from non-swimming peers and siblings than dropouts (Fraser-Thomas et al., 2008a, 2008b). Indeed, dropout participants in Chapter 7 reported that friends outside of dance had not always been supportive of their dance involvement, often not understanding the time

commitments necessary for developing dance talent. However, this finding was not unique to the dropout participants: not all of the committed students reported receiving support from non-dancing peers. As an illustration, some students reported unfriendly teasing from non-dancing peers which in some cases had resulted in lost friendships. Interestingly, while Patrick and colleagues (1999) found that the reactions of peers to certain activities could influence activity participation, participants in Chapter 6 were more likely to end the friendship than their dance training, reflecting findings with young ballet students (Wellard et al., 2007). Three committed participants also felt that their parents were not particularly supportive of their dancing, perceiving it to be a hobby or as being less important than school work. Finally, one committed student's romantic relationship had lessened her commitment. Previous studies have similarly reported that romantic relationships have a lessening effect on commitment among young female sport participants (Coakley & White, 1992) and elite female netballers (Scanlan et al., 2009). Future research could consider longitudinally the extent to which romantic relationships affect commitment, particularly when a young person dedicates much time to developing his or her talents in an activity. It would also be interesting to investigate this finding among male and female participants, because previous research has indicated that romantic relationships have a lessening impact on commitment for female sport participants only (Coakley & White, 1992). Positively, infrequent instances of unsupportive behaviours from parents and non-dancing peers were insufficient to affect the participants' commitment to dance; in a review of the education literature Ambrose (2003) noted that such barriers can certainly be overcome when an individual is sufficiently determined.

Overall, although much adherence and dropout literature tends to focus on the individual and the activity context, the impact of social agents – particularly parents – outside of the talent activity should be considered. In order to encourage parental support, educators should endeavour to create a community around the dance school so that parents feel involved in and understand their child's training (Green, 2005). This might include inviting parents to: 'open days' where they can observe classes, have lunch with the staff and even be given the opportunity to participate in a movement session; informal sharings, social events and parents' evenings; and careers seminars or discussions to help parents understand the nature of the dance profession and the support that their child might need in order to succeed. For those parents concerned about the amount of time their children spend in dance, they could be reassured that dance can be prioritised alongside school, highlighting that

regular physical activity has actually been shown to improve academic school grades (Brettschneider, 1999; Hills, 2008). Interestingly, Jago and colleagues (2011) noted that in terms of recruitment to and retention in dance programmes, parents and their children may be attracted by different factors. Parent interest and support may be encouraged by emphasising the health benefits of participation and highlighting teachers' credentials such as teaching experience and any associated qualifications (e.g. those provided by the International Association of Teachers of Dancing or the Certificate in Safe and Effective Dance Practice). Efforts to enhance student retention should focus more on the enjoyable elements of classes such as dance style, opportunities to socialise, mastery and autonomy experiences, and music (Jago et al., 2011). Overall, these latter suggestions support the findings of Chapter 6 in terms of the factors which most enhance commitment among young dancers, particularly enjoyment and social relationships.

While parental support should be encouraged, it would be interesting to further consider notions of optimal parental support in dance. One dropout student had delayed withdrawal from her CAT due to the high levels of support and finances her parents had invested in her dancing. As a result she felt guilty about wanting to withdraw from dance, explaining how she perceived some disappointment from her parents. This suggests that parental over-involvement can affect young dancers' participation decisions; such 'stage parents' can encourage their children excessively resulting in undue pressure related to achievements and performances (Hamilton, 1997). Kanters, Bocarro and Casper (2008) found that sporting children's perceptions of parental pressure were consistently higher than the parents' own perceptions. Therefore, high levels of involvement could be perceived as pressure by children even when the parents believe their behaviours to be positive (Wolfenden & Holt, 2005). Parents typically play a highly influential role in their children's dance participation, although research into how parents may best support young dancers without becoming over-involved would be beneficial.

9.10 Developmental Factors

In Chapters 6 and 7, participants were asked to describe their dance and other activity participation backgrounds to enable comparison with the literature around the DMSP (Côté & Hay, 2002; Côté et al., 2003). On the whole, varied backgrounds and current levels of participation were reported by adhering and dropout participants alike. This indicates that more research is needed before the third trajectory of the DMSP, which is posited to be most beneficial in terms of well-being,

commitment and eventual expertise development, can be recommended in dance. However, it was commonly reported that weekly hours of training, as well as technical difficulty, had increased over time, in accordance with talent models and previous research (Bloom, 1985; Côté, 1999; Côté et al., 2003; Ericsson et al., 1993; Van Rossum, 2001). Inspection of Table 5.2 supports this, suggesting that older students could be categorised as being in the specialising years (Côté, 1999), as they were engaged in more dance training and less non-dance physical activity per week than younger students. In addition, committed participants' passion for dance appeared to have developed over time, as many of these students reported that dance had changed from being a hobby to a passion for which they had future ambitions. This supports previous findings in the performing arts that passion and drive can often develop over time (Mageau et al., 2009; Oreck et al., 2000). This finding also suggests that initial participation motives are insufficient to explain long-term commitment because they do not take into account developmental changes and alterations in goals. Therefore, only research aimed specifically at understanding commitment may uncover reasons behind long-term activity involvement.

Although the specific trajectories of the DMSP cannot be supported or refuted in this research, as was noted earlier some of the youngest dropout participants had found the intensity of training difficult. The DMSP proposes that specialisation in one activity – typically characterised by deliberate practice – should occur around the mid-teenage years (e.g. Côté & Hay, 2002; Côté et al., 2003). Some students begin training at the CATs at the age of 10 years, which could indicate that they are specialising or undertaking deliberate practice too early for positive motivational and well-being outcomes to occur. However, one study found no difference in enjoyment levels between young athletes who were specialised in one activity and those who were sampling several (Strachan et al., 2009). It may be that individual levels of student maturity and definitions of enjoyment affect the extent to which he or she can cope with intensive training and deliberate practice. In any case, more research may be needed to clarify the terminology of the DMSP (Baker et al., 2009). For example, most committed and dropout participants danced at other schools as well as the CAT, and participated in other extracurricular activities related to art, music, drama or sport. Such involvement in extracurricular activities may have equipped the young dancers with transferable skills such as musicality and strength that could benefit their dancing (Baker, 2003; Wiersma, 2000). Were these students still sampling, despite their attendance on a selective training programme? What might

'count' as specialisation in dance given the diversity of dance styles students commonly train in even at elite levels? Such questions may be difficult to answer in dance because the nature and requirements of dance are always changing (Schmidt et al., 2005). For example, dancers nowadays are increasingly expected to be proficient in a variety of dance styles and even other artistic and athletic disciplines, meaning that patterns of training may change as the nature of the art form evolves. As such the DMSP in its current format may not be applicable to dance; it is also likely that investigating the backgrounds of young dancers who are still making their journey toward expertise provided insufficient data to fully understand developmental factors and the applicability of the DMSP. To delve further into questions around the model, future research could include interviewing professional dancers about their personal journeys into the profession to establish potential commonalities in their training histories.

9.11 Physical and Perceived Competence

For the purposes of this research, physical competence was defined as components of physical fitness that relate to dance performance. These components were vertical jump height, upper body handgrip strength, hamstring flexibility, external hip rotation and aerobic fitness. No differences emerged at baseline (Time 1) between adhering students and those who later dropped out, and both groups appeared to improve in all of the variables over a one-year period (with the exception of the dropout students' external hip rotation). These improvements were presumably due to dance training and participation in other physical activities such as physical education classes at school (Redding et al., 2011). As a whole these results suggest that physical competence, in terms of baseline measures and change over time, is not important in relation to dance adherence and dropout, in contrast with some previous sport and dance studies (Figueiredo et al., 2009; Hamilton et al., 1997; Ommundsen & Vaglum, 1997) but in support of findings in gymnastics (Claessens & Lefevre, 1998). Given that successful application to a selective scheme might imply that students exhibited similar abilities, such findings are perhaps unsurprising, and indicate that psychological factors are most influential in terms of adherence and dropout. It is important to note that this is a preliminary conclusion only and further research with a larger sample size is warranted.

In terms of perceived competence, some references were made to this in the interviews in Chapters 6 and 7. Two of the committed students explained that dance made them feel confident, which may have been associated with their competence

perceptions and motivation to continue dancing. One dropout participant explained that she had withdrawn from CAT training due to low perceived competence, which supports previous sport literature reporting the association between low perceived competence and dropout (e.g. Fredricks et al., 2002; Gould & Petlichkoff, 1988; Klint & Weiss, 1986; Ommundsen & Vaglum, 1997). Perhaps the student felt unable to demonstrate her competence in a talent setting and chose to withdraw from that environment rather than risk further negative impacts upon her self-perceptions. Research in education (Marsh, 1987, 1993) and gymnastics (Chanal, Marsh, Sarrazin & Bois, 2005) has shown that academic or gymnastics self-concept declines once a young person is placed in a gifted and talented group due to social comparison (i.e. going from being a big fish in a little pond to being a little fish in a big pond). Although this theory has yet to be applied to dance, it stands to reason that some CAT students are the 'star' of their local dance school, but on a selective programme may feel that they are no longer the best dancer. Consequently, some students may experience a decline in their perceived dance competence and decide to withdraw, perhaps remaining in their previous school where they maintain their status as the most competent dancer in the group.

However, with just one student reporting low perceived competence as a dropout reason, competence perceptions did not appear to influence participation behaviour for either committed or dropout participant cohorts at large. This is in contrast with other descriptive research (e.g. Burton & Martens, 1986; Gould et al., 1985; Gould & Petlichkoff, 1988; Klint & Weiss, 1986; Salguero et al., 2003a) and theories including competence motivation theory (Harter, 1978, 1981), achievement goal theory (AGT; Nicholls, 1984, 1989) and SDT (Deci & Ryan, 1985; Ryan & Deci, 2000, 2002). Nevertheless, this is not the first finding of its kind in dance; in fact, the dropout dancers in Bakker's (1991) study reported more positive attitudes towards their own abilities than persisting dancers. In the current research, committed and dropout interviewees alike discussed concerns relating to competence perceptions, but these did not appear to influence their participation behaviour. This suggests that perceived competence *is* important to young dancers in relation to their training goals and progress, but not in relation to why they commit or withdraw. There are several possible reasons for this. Firstly, having been accepted onto a selective scheme may have meant that the participants felt confident in their ability and were therefore not concerned with competence perceptions (Calvo et al., 2010; Feltz, 1988). Butcher et al. (2002) found that perceived competence became less important as a dropout reason moving from novice to elite athlete, while studies of

elite gymnasts demonstrated that dropouts maintained positive competence perceptions (Johns et al., 1990; Klint, 1985). It is possible that some sort of ceiling effect occurs in talent settings, particularly when the cohort already reports relatively high self-esteem (as found in Chapters 5 and 8) and a generally 'healthy' psychological profile (Redding et al., 2011).

Secondly, the young dancers appeared to participate in training predominantly because they enjoyed it. The most common enjoyment sources were self-expression, performing and movement sensations. Notions of task mastery did emerge in the interviews with committed students, but as an enjoyment source rather than a factor which had an impact upon competence perceptions. Given that aspects such as self-expression and performing are unique to aesthetic physical activities, it appears that the young dancers placed greater importance on a personal artistic connection to dance than on demonstrating competence as a reason for committing to training. Thirdly, the nature of CAT training, perceived as highly task-involving (as demonstrated in Chapters 5 and 8), may have been structured to enable all dancers to feel competent. The balance of technical and creative sessions may have also provided a variety of opportunities for the dancers to feel competent and recognise their own strengths in different areas.

It is important to note that while the results of the current research are in contrast to most previous sport research, findings are not entirely consistent in sport. Specifically, research using the SCM has failed to find sufficient empirical evidence to add perceived competence to the model (McDonough & Crocker, 2005; Scanlan et al., 2009; Weiss et al., 2010). As such, further research into the role of perceived competence in commitment, adherence and dropout in a range of domains is recommended. The findings around physical competence also warrant further research, particularly as the longitudinal aspect of this research was limited. Several authors have recommended longitudinal research of this nature (Fraser-Thomas et al., 2008a; Musch & Grondin, 2001; Weiss & Petlichkoff, 1989); however, given that dropout students withdraw from training programmes at various time points, obtaining a large sample size of dropout students over an extended period of time may prove as difficult in the future as it was in Chapter 8.

9.12 Minor Factors

9.12.1 Being labelled talented

All but one of the committed students had been labelled talented at some point during their dance histories. Some researchers warn against labelling students 'talented' or 'successful', as it can decrease motivation by making children feel that their abilities are out of their control and thus not affected by their actions (i.e. entity theory; Dweck, 2000; Dweck, Chi & Hong, 1995). However, in Chapter 6 the students appeared to have reacted positively to this feedback; it boosted their self-confidence and motivation. Indeed, Dweck (1986) states that when children's confidence in their abilities is high, being labelled talented may not have negative motivational effects. The fact that the cohort as a whole reported relatively high self-esteem may have also helped to buffer any potential negative effects of being labelled talented. Furthermore, although the students had been labelled talented, they understood the importance and value of hard work for achieving their goals. Such an incremental view of ability, which enables individuals to feel that their abilities are within their control, may have resulted in participants increasing their effort and persistence in order to develop their fledgling talent (Dweck, 2000; Dweck et al., 1995).

9.12.2 Disordered eating attitudes

Disordered eating attitudes were investigated because a study of elite ballet students revealed that dropouts had more disordered eating attitudes than persisting dancers (Hamilton et al., 1997). Similarly, the dropout students in Chapter 8 reported more disordered eating attitudes than adhering students at Time 1; this difference in scores was approaching significance. However, it is important to note that while the dropouts' mean scores were greater (7.00 ± 8.70) than those of adhering students (4.60 ± 6.09), they were still well below the cut-off point (20) that might indicate the presence of an eating disorder; also, the standard deviation was large suggesting much variability. Thus, dropouts differed from adhering students in terms of sub-clinical attitudes, which may still indicate a problem. It remains to be established why dropout students reported greater disordered eating attitudes than their adhering counterparts. The authors of the ballet study suggested that dropouts had modified their eating behaviours to try to recapture the pre-pubescent physique favoured in ballet (Hamilton et al., 1997). Certainly, many of the most successful contemporary dance companies in the UK employ dancers who exhibit the lean body shape typically seen in classical ballet companies (e.g. Rambert Dance Company, Wayne McGregor Random Dance, Akram Khan Dance Company),

meaning that young contemporary dancers may feel under pressure to adhere to a certain body type and shape. It is possible that dropout participants were more affected by such pressures and modified their eating which caused fatigue, malaise, sleep problems and high levels of self-consciousness, all of which may reduce a dancer's ability to sustain regular dance activity and result in withdrawal (Nordin-Bates et al., 2011; Robson, 2002). It is also possible that some of the causes of disordered eating attitudes, such as family dysfunction or relationship problems outside of dance (Beals, 2004; Robson, 2002), may themselves have led to dropout. Further research could usefully address the ways in which disordered eating attitudes and dropout are associated, perhaps through the use of a qualitative methodology to uncover participants' experiences in their own words.

The results around disordered eating attitudes indicate that schools should create an eating disorders policy that has information on warning signs and strategies for dealing with disordered eating in a sensitive and supportive manner. Support for such students should be provided even if they are withdrawing from a training programme. In the larger talent development project, an eating disorders policy was created with the CATs, which was implemented and added to the student handbooks[8]. CAT staff also received training from the eating disorders charity Beat. Given the positive attitudes toward these initiatives by CAT staff and, in some cases, students and parents, other schools could consider implementing similar initiatives.

9.12.3 Injury, finances and travel

In support of previous research, injury (Baxter-Jones et al., 1993; Bennie & O'Connor, 2006; Butcher et al., 2002; Enoksen, 2011; Klint & Weiss, 1986; Koukouris, 1991; Maffulli et al., 2005), finances (Butcher et al., 2002; Oreck et al., 2000) and travel (Dishman, Sallis & Orenstein, 1985; Trost, Owen, Bauman, Sallis & Brown, 2002) emerged as minor dropout reasons. These were interpreted as minor because they only became important once a participant had already begun to consider withdrawing from CAT training. For example, once participants had decided against a career in dance, they realised that the money set aside for CAT could be better spent on other family members' needs, and/or that spending large amounts of time travelling could be better spent on other activities.

[8] http://www.trinitylaban.ac.uk/dance-science/dance-science-research/the-cat-research-project/cat-project-resources.aspx

9.13 Self-esteem, Anxiety and Maturation

Self-esteem and anxiety were investigated because previous research found that committed artists report greater self-esteem than non-committed ones (Dudek et al., 1991), and dropout athletes experienced greater anxiety than their persisting counterparts (Bussman, 2004). However, neither variable emerged as influential over commitment, adherence and dropout in the PhD research. According to Chapters 5 and 8, self-esteem was on average high, and anxiety low, for both adhering and dropout students. Furthermore, while Musch and Grondin (2001) recommended examining self-esteem and anxiety longitudinally in relation to adherence and dropout, both variables remained stable over time according to both Chapter 8 (one year) and the larger talent development project (two years; Redding et al., 2011). It may be that self-esteem as a global personality trait does not influence participation behaviour, related as it is to several life domains rather than just dance. However, in Chapter 5, the older students (16-18 years) reported significantly lower self-esteem than the younger students (10-15 years); it would be interesting to continue to follow adhering and dropout students to assess whether such differences in self-esteem have an impact on participation behaviour over a longer time period. In terms of anxiety in the studio, it appears that participants did not feel anxious in the learning environment, which is a positive finding given that previous studies have reported high levels of trait anxiety in dancers (Barrell & Terry, 2003; Marchant-Haycox & Wilson, 1992). Even though some participants reported finding the course intense and tiring, this did not appear to manifest itself as anxiety in the studio. Indeed, given participants' low and stable anxiety over time, it is unlikely that this variable would affect their participation behaviour.

Maturation was of interest to explore because sport research with young males found that early maturers were more likely to persist at talent development programmes due to the physical advantages associated with early maturation (Delorme et al., 2009, 2010 Figueiredo et al., 2009; Helsen et al., 1998). The opposite was found in a study of female ballet dancers, which indicated that dropouts had matured earlier than their persisting counterparts (Hamilton et al., 1997). In contrast to most sports, ballet tends to favour the lean physique associated with late maturation (Pickard, 2007a), which may help to explain that study's findings. However, in Chapter 8 no differences emerged between adhering and dropout female students in age of onset of menarche (12.60 ± 1.40 years and 12.68 ± 1.05 years respectively), and both groups matured on time (i.e. between the ages of 11 and 14 years; Brooks-Gunn & Warren, 1985). Contemporary dance

tends to have less restrictive attitudes towards body type and shape than ballet (Hamilton, 1998), suggesting that physique-related concerns were less likely to influence this cohort. The finding that disordered eating attitudes were greater among dropout dancers may be the only indication that physique-related concerns had an impact upon the young dancers. However, it should be noted that age of menarche only was used as an indicator of physical maturation; future research could validate the conclusions here using more in-depth measures of maturation such as Tanner stages (Tanner & Whitehouse, 1976) in both females and males.

9.14 Applicability of Theories Outlined in the Introduction

The PhD studies were not designed to test existing theories and therefore the measures used and results gathered may be insufficient to comment on the theories' applicability to dance. However, theories have been commented upon where relevant throughout this General Discussion, and a brief, more focused, discussion of theories is warranted.

Gould (1987) argued that it was unlikely that one single theory could fully explain the complexity of adherence and dropout. Indeed, none of the theories outlined in the Introduction are capable of accounting for all of the factors reported in this PhD, although aspects of each theory – rather than the theories in their entirety – appeared relevant to commitment, adherence and dropout in dance. As such, a possible way of furthering dance research in this area would be to combine relevant theories to capture as many of these factors as possible.

Firstly, the passion model (Vallerand et al., 2003) and the motivational climate aspect (Ames, 1992) of AGT (Nicholls, 1983, 1989) were shown to be directly applicable in Chapters 5 and 8. The enjoyment, involvement opportunities, attractive alternatives and social support antecedents of the SCM (Scanlan et al., 1993b) appeared relevant, although little support was found for the social constraints or personal investments antecedents. Indeed, these antecedents have also emerged as problematic in some sport studies (Carpenter et al., 1993; Scanlan et al., 1993b, 1993c; Sousa et al., 2007). The relatedness and autonomy components of basic needs theory (within SDT; Deci & Ryan, 1985; Ryan & Deci, 2000, 2002) appeared to show some relevance to findings reported in Chapters 6 and 7, while the young dancers' decision-making processes bore some resemblance to the utility and interest value and (long-term) success expectancy tenets of EVT (Eccles et al., 1983). By combining these theoretical tenets, research could begin to assess the

relative contribution of each factor to commitment, adherence and dropout among young dancers. However, conducting such a study would require a large sample size in order to produce robust statistical results. Furthermore, as dance research in this area is so sparse, tests of each theory are necessary alongside further qualitative explorations in order to truly begin to assess the applicability of the theories in a dance context.

9.14.1 Implications for Talent Models and Talent Identification

Limitations of existing talent models were highlighted in Chapter 4, such as a lack of consistency in measures and the lack of follow-up studies that have been conducted. In addition to these limitations, the results from this PhD research suggest that measures of commitment should be included in talent models. Currently, much talent research and most models include some measure of motivation (e.g. Elfrink-Gemser et al., 2004; Reilly et al., 2000) or task commitment (e.g. Renzulli, 1979). However, it may be advisable for models to consider longer-term commitment, perhaps measured through harmonious passion, as an indicator of adherence to talent development, and potentially future effort and achievement.

To this end, commitment may also be important for talent identification processes as commitment is essential in order for a young dancer to develop his or her talents optimally. Such an approach would presume that young dancers understood at audition what they would be committing to (which could be outlined as part of the audition day), yet would enable selection of young dancers with the psychological commitment, as well as physical talent, necessary for a demanding training programme. Given that in the larger talent development project, all of the physical factors measured improved over time (Redding et al., 2011), and adhering and dropout students did not differ in terms of physical competence (Chapter 8), it appears that physical skills may not need to be honed to a great extent by the audition stage. Instead, greater emphasis could be placed on psychological factors as indicators of commitment and related behaviours such as effort and hard work; in turn, passion and hard work may well be what drives the young person's physical improvement.

Educators may need to consider the role of interviews as key ways in which to determine a young person's drive and desire to be on the programme (provided this is exhibited in a healthy way). How to differentiate harmonious from obsessive passion in such contexts is another question for future research, yet perhaps more

harmoniously passionate young people are able to communicate and express their love of dance as an important, rather than all-consuming, part of their lives. The results of Chapter 5 indicated that talent criteria may need to be adapted according to age; a very young dancer may find it difficult to articulate his or her passion verbally and so other methods could be used such as observations of student behaviour as outlined in the following paragraph. Furthermore, it appears important to interview young dancers and their parents separately (which the CATs currently do) in order to uncover whether the young dancer's passion has resulted from encouragement and/or pressure from 'stage parents' (Hamilton, 1997) or has developed largely because of his or her experiences in dance.

In addition to interviews, observations of student behaviour during auditions may give an indication of a young person's passion and commitment. For example, educators could assess the extent to which the young person is engaged and exerts effort for the entire duration of the audition, and the extent to which he or she responds to feedback. Interestingly, from informal conversations with CAT managers it appears that these recommendations are in line with the CATs' evolving thinking around the audition process. During such conversations, managers recalled selecting physically talented students at audition who were not able to articulate their passion in the interview, and subsequently did not work hard during their involvement in the scheme. Enthusiastic students whose physical skills were honed to a lesser extent had been overlooked in favour of these apparently more talented students, but managers spoke of making different decisions in the future partly in light of the findings reported in the thesis.

Taken together, the results of the PhD studies indicate that talent identification criteria could be modified. The CATs do interview potential students, and characteristics such as "tenacity" and "interest in dance activities" are included in the talent identification criteria, but currently it appears that physical and artistic factors are given more weight in selective scenarios than psychological ones. It would be advisable for the CATs, as well as other selective schemes, to place more emphasis on psychological characteristics of adherence, particularly passion, as part of audition procedures. Doing so could help to ensure that students who genuinely want to be part of the scheme, and who will work hard to improve, are selected.

9.15 Limitations

Despite the contribution of this PhD research to the published literature and other contexts (see The Contribution of this PhD to the Field section), several limitations must be acknowledged. Firstly, in terms of participants, it would have been beneficial to have involved more dropout students in both the interviews in Chapter 7 and the longitudinal aspect of Chapter 8. Recruiting interviewees who had already withdrawn from the scheme proved difficult, and even when offering an incentive it took approximately 12 months to recruit the 10 young people who did participate. This could imply that theoretical saturation was not reached (i.e. new information was still emerging in each interview; e.g. Patton, 2002), although many themes were shared between participants, and the use of quantitative data from the graduate destinations spread-sheet helped to triangulate this data (Moran-Ellis et al., 2006). In Chapter 8, only female participants were analysed because too few male participants had complete data. This is because females constitute around 75% of the CAT cohort; however, future research should endeavour to include male participants for such analyses, because the findings from the regression and paired t-test analyses may currently only be applicable to females. For the longitudinal analysis of Chapter 8, too few dropouts had complete data at both time points, meaning that rather than use a change scores logistic regression (to assess whether change in any of the study variables could predict adherence), a more simple paired samples t-test had to be used, and even this was limited by the small number of dropout students at Time 2. It is perhaps unsurprising that there were few dropouts with data at Time 1 *and* Time 2 (12 months later), because if a student does not enjoy training it is unlikely that he or she will remain in a CAT for over a year before coming to a decision about withdrawal. Perhaps those students who did have full data at both time points dropped out for reasons not related to the course but to other factors such as change in aspirations or time conflicts. Indeed, reasons for dropping out soon after joining the CAT are likely to be different to reasons for dropping out after a longer period of time. This could be an interesting avenue for further research, although the available data in the graduate destinations spread-sheet indicated that dropping out soon after joining a CAT was uncommon.

Secondly, only a selection of multidisciplinary variables was used for Chapters 5 and 8. As the Introduction, Literature Review and Chapter 4 demonstrated, adherence and dropout *and* talent identification and development are large areas; it would have been impossible to incorporate every possible variable cited in the literature into the PhD studies. Moreover, for some variables such as self-

expression, which may be a component of actual competence, reliable measures have yet to be created and thus were not included in the PhD research. Furthermore, it could be argued that physical competence in terms of the physiological measures assessed was not indicative of actual dance talent or competence. For example, vertical jump height and flexibility are certainly related to studio-based skills but also represent measures of components of physical fitness. Again, to a large extent the assessment of physical competence was restricted by the availability of valid measures, although there is preliminary evidence that vertical jump height and upper body muscular strength are related to external judgements of dancers' aesthetic competence (Angioi et al., 2009), supporting the argument that the physical measures were relevant to dance competence and/or talent. Additionally, it may be that some measures selected were less appropriate than other potential variables; for example a questionnaire on perceived competence in dance may have been more appropriate than one on global self-esteem, and a measure of enjoyment sources could have highlighted interesting differences between adhering and dropout participants. The choice of variables was to an extent limited by the design of the larger talent development project: the longitudinal design of the project included frequent data collection waves, meaning that measures could not easily be added or removed. However, all variables assessed were still relevant to the PhD research.

A further methodological limitation was that interview durations for Chapters 6 and 7 were of relatively short duration (lasting up to approximately 45 minutes). In the case of committed participants, 19 students were interviewed which is a relatively large number for qualitative research, and ensured that theoretical saturation was reached (Patton, 2002), yet recruiting a similarly large number of dropout participants was not possible. It is also possible that dropouts were unwilling to discuss sensitive issues during a one-to-one interview scenario. Moreover, given that the graduate destinations spread-sheets were completed during discussions between students and CAT managers, it is possible that students gave socially desirable responses (e.g. they might not have wanted to discuss a dislike of course content with CAT staff). Some dropout reasons such as 'domestic problems' were not defined in the graduate destinations spread-sheet and further work would be required to fully understand these terms. However, the impact of some of these methodological problems may have been minimised through the triangulation of mixed methods results (Moran-Ellis et al., 2006).

In terms of statistical analyses, most of the quantitative results are based on cross-sectional designs which cannot assess causality. Therefore, interpretations of results were made in reference to existing literature, and while such interpretations were in line with previous findings, causality cannot confidently be established. The exception to this is Chapter 8 which used data at one time point to predict later adherence/dropout behaviour, and change over time in the study variables. It should also be noted that many of the quantitative results yielded small effect sizes, indicating that the measures did not account for all possible reasons for adherence and dropout. Given the complexity of commitment, adherence and dropout, this is certainly not surprising and the qualitative results complemented the quantitative data, providing a broad picture of the phenomenon among young dancers.

A final potential limitation is that although many of these findings may well be applicable to a variety of dance contexts, some might apply to talent environments only. For example, elements relating to intense training may not be relevant in recreational settings, meaning that results should be applied to more recreational dance settings with caution. Furthermore, the CATs are a relatively new scheme, typically focused on high-level contemporary dance training alongside other styles and creative and health sessions. The CATs collaborate and work together to produce the best possible outcomes for students and take a keen interest in implementing dance science research findings and recommendations. Therefore, the specific talent context itself may mean that results are unique to this particular environment. However, while many new findings have been generated, results generally supported and extended previous research in sport and dance talent contexts. As such, many of the findings reported here may be applicable to other dance settings.

Chapter 10

General Implications and Conclusion

Generally speaking, in order to develop their talents, students will need physical, psychological, social and financial support (Bennie & O'Connor, 2006), including dance-related support such as nutrition advice and physiotherapy (Hamilton et al., 1997). In terms of commitment, adherence and dropout specifically, recommendations can be made from the PhD studies' results. Practical recommendations have been suggested throughout the General Discussion, the most important of which appear to be maximising enjoyment and passion, encouraging positive peer relationships, making some alterations to course content in terms of challenge, differentiation and providing exciting opportunities, and creating task-involving motivational climates. Indeed, many of these the practical recommendations suggested throughout the General Discussion are related to task-involving motivational climate definitions, for example the focus on self-referenced learning and positive peer relationships. Creation of such a climate may help to safeguard against dropout in and of itself as well as through minimising ego-involving climate elements and facilitating HP development. Task-involving motivational climates are relevant to talent development settings as they can still involve high expectations and discipline, but without the more negative impacts of ego-involving elements. Detailed recommendations for creating a task-involving climate in the dance studio are outlined below in Table 10.1. This is based on recommendations from the literature (Ames, 1992; Brady, 2004), in particular the TARGET model (Epstein, 1989), and the author's experience as a dance teacher.

Table 10.1. Recommendations for creating task-involving motivational climates.

Self-referenced learning	• Help students to set individual goals • Encourage self-awareness • Explain that progress does not necessarily happen linearly • Emphasise that dance talent is comprised of several factors (e.g. technique, creativity), and that each dancer has strengths and weaknesses in different areas • Avoid publicly comparing students
Equal treatment of students	• Rotate positions (e.g. 'front' of studio, teacher position) • Employ differentiation in tasks so that all students are given the opportunity to feel competent • Acknowledge individual characteristics; get to know students personally
Focus on effort rather than success	• Recognise effort and improvement; process as well as product • Avoid always choosing groups based on ability • Encourage students to recognise the effort of their peers
Facilitate autonomy	• Adopt a democratic teaching style • Encourage leadership and decision-making roles • Give some choices, e.g. improvising the arms in a footwork exercise; choosing which sequence to perform; choosing where the front is; choosing music for a phrase; decision-making related to rehearsals and performances • Explain the rationales and objectives of exercises
Treat mistakes as part of the learning process	• Explain that mistakes, taking risks and 'making a mess' can help dancers to uncover hidden movement potential – or help dancers to understand how *not* to do an exercise
Encourage peer collaboration	• Change groupings regularly • Change leaders in groups regularly • Use a buddy or peer mentoring system • Teach students how to give each other constructive feedback

The benefits associated with task-involving motivational climates documented in previous literature such as enjoyment, feelings of connection with others, HP, task persistence and effort, a task goal orientation and perceived competence (Boiché & Sarrazin, 2009; Le Bars et al., 2009; Mageau et al., 2009; Ntoumanis & Biddle, 1999; Redding et al., 2011; Vazou et al., 2006) may further serve to promote commitment or adherence among young talented dancers. In addition, schools may wish to invest in continued professional development for their teachers to ensure that they are constantly reflecting on their methods and developing as practitioners. Being involved in the development of the next generation of dance artists means that teachers and schools themselves must be willing to update their practice in line with the latest pedagogical research; indeed if teachers are passionate about what they do, engaging with continuous professional development will have rewarding outcomes for both teachers and students. Nevertheless, it is important to note that there is little research into the most effective or optimal methods of teaching and instruction when developing talented individuals (Fraser-Thomas & Côté, 2006). Further research to explore such factors is certainly warranted.

10.1 A Note about the Term 'Dropout'

The term 'dropout' carries with it negative connotations, yet most of the dropouts in the PhD studies continued dancing, may still have been passionate about dance, and reported similar enjoyment sources to the committed students. Therefore, dropout tended to be activity-specific rather than domain-general (Gould, 1987), that is, most students had withdrawn from a particular dance programme rather than from dance in general. The fact that most dropouts continued to dance is positive because they should continue to gain enjoyment (e.g. self-expression, emotional release) from dance as well as the health and well-being benefits that dance can provide (Blazy & Amstell, 2010; Connolly et al., 2011; Joynson et al., 2009; Keay & Spence, 2009; Nordin & Hardy, 2009; Quin et al., 2006; Redding et al., 2011). Although reasons relating to the CAT scheme were cited for dropout, other reasons such as change in aspirations and having other commitments indicated that many of the dropout students were simply seeking an activity that suited their identity as they developed through adolescence (Burton & Martens, 1986; Weiss & Petlichkoff, 1989). The possibility that dropping out of dance is a normal response to cognitive and social development as opposed to a consequence of some negative aspects of dance or the dance training environment should always be considered (Johns et al., 1990).

While dance programmes should employ strategies to increase retention rates and enhance or maintain commitment among participants, the focus should be on the quality of the programme in an immediate sense, rather than the eventual outcome (Martens, 1996). If a programme is designed to maximise enjoyment, provide exciting opportunities and facilitate peer relationships, a student will have positive experiences whether or not he or she decides to remain in training. To that end, if a student does decide to withdraw, this would not necessarily represent a 'failure' on the side of the school nor the student. Nonetheless, it continues to be important to research this area so that dropout reasons related to dance courses – such as motivational climates and training content – can be identified and modified in order to prevent unnecessary dropout as well as compromised well-being or other negative outcomes.

10.2 The Contribution of this PhD to the Field

The PhD research has already begun to have an impact upon the dance and research communities. In terms of research impact, Chapters 4, 5 and 7 have either been published or are in press in three peer-reviewed scientific journals with differing foci: dance education; gifted and talented youth; and dance medicine and science. Chapter 6 is currently under review with, and Chapter 8 will be submitted to, sport science journals. This suggests that the research is relevant to a variety of audiences and research fields, having a potentially wide impact. Furthermore, the publication of Chapter 4 in *Research in Dance Education* was selected as part of Taylor and Francis' Arts Education Editors' Choice 2011, demonstrating its relevance to the field of dance education. Findings have also been presented and recognised at six national and international peer-reviewed conferences; in particular, a poster entitled *Commitment to elite dance training: Findings from the UK Centres for Advanced Training* (based on Chapter 6) was presented at the British Psychological Society Annual Conference 2010 in Stratford-upon-Avon and received the first prize for research poster presentations out of approximately 150 posters on an array of topics. Therefore it appears that this research is being recognised by experts not only in dance but also in wider fields.

In terms of practical impact, one of the CATs requested a continuing professional development session on commitment, adherence and dropout for their teachers in 2010. Aspects of the research have been presented at dance teaching conferences including the Youth Dance England conference in 2010 and the National Dance Teachers Association conference in 2011. A break-out group session on the topic

was delivered at the *Passion, Pathways and Potential in Dance* symposium in October 2011 to launch the findings of the larger talent development project. The accompanying research report, *Passion, pathways and potential in dance: An interdisciplinary, longitudinal study into dance talent development*, included a chapter dedicated to commitment, adherence and dropout including research findings and practical implications. The research was introduced in dance magazines such as *Dance UK News* and *The Dancing Times* as part of features about the larger research project. It is also hoped that teachers can use some of the practical applications outlined in the Implications section and throughout the Discussion; to facilitate this, a paper specifically focused on practical implications is being planned. In this way, the research findings are not only reaching academic and scientific audiences, but also dance educators and practitioners who may wish to put the research into practice.

10.3 Future Research

There are a great many potential avenues for future research. While this PhD was the first series of studies to comprehensively study commitment, adherence and dropout among talented young dancers, as is often the case with research, yet more questions have been raised around this complex topic. Suggestions for future research have been made throughout the body of the General Discussion. Perhaps the most important or interesting future research recommendations to move the findings forward are around passion, physical and perceived competence, age-differentiated factors, gender differences and intervention studies. Specifically, studies could examine the development of passion as well as its decline, and the ways in which the types of passion relate to other antecedents of adherence and dropout such as enjoyment sources and teacher behaviour. A greater understanding of physical and perceived competence in dance is also required. Actual and perceived competence are presumably important to dancers in terms of their training goals and progress, but the extent to which this influences their participation decisions and behaviour appears small. It would be of value to further investigate this concept, perhaps by examining competence perceptions quantitatively and qualitatively, and by employing a different battery of physical competence tests.

Another area worthy of more investigation is that of age-differentiated factors influencing participation behaviour. Given the large age range included in the current studies (10-18 years), it stands to reason that 10 year olds might want to

join, or withdraw from, a CAT for reasons different to an 18 year old. Although reasons for committing to the CATs did not differ by age, some differences according to age emerged in the mixed methods study of dropout reasons, which deserve further attention. Future research could investigate differences between adhering and dropout students according to the age groups used in Chapter 5 (10-12, 13-15 and 16-18 years); it would have been interesting to assess that in the current research had participant numbers been greater. For example, examination of age group differences would help to further understand the results reported in Chapters 5 and 8 that older students perceived greater ego-involving elements, that such elements negatively predicted adherence, but that adhering students reported increased ego-involving climate perceptions over time and remained in training. Such research may help educators to provide age-appropriate training opportunities for young people.

The studies did not set out to uncover gender differences, and few differences emerged in Chapters 6 and 7 with the exception of some boys reporting infrequent teasing from male peers about their dance involvement. Females and males did not appear to differ in the extent to which they enjoyed and valued dance, nor their reasons for staying in or leaving training. However, differences might have emerged in Chapter 8 had there been sufficient numbers of males for analysis; future research could usefully address this.

Finally, intervention studies are required to develop evidence-based continuous professional development programmes for dance teachers. For example, studies could focus on maximising enjoyment during technique classes, enhancing HP, or effective differentiation strategies in practical settings. Moreover, intervention studies of motivational climate training could assess whether teacher implementation of task-involving climate elements has an impact upon factors including enjoyment and adherence. Intervention studies in sport have demonstrated that coach training – including the creation of a task-involving motivational climate – can enhance enjoyment, self-esteem and perceived competence, and reduce anxiety and dropout rates among young sport participants (Smoll & Smith, 2002). A current research project in sport is working to improve on previous interventions by employing tenets from both AGT and SDT in order to keep young people involved in sport for longer, amongst other aims such as creating positive sport experiences and enhancing participant well-being (Duda et al., 2011).

It would be valuable to conduct similar studies in dance talent development contexts given the findings generated in the PhD studies.

10.4 Conclusion

The aim of this PhD research was to better understand commitment, adherence and dropout among young talented dancers. Five studies were conducted to address this aim, including investigation of the characteristics of dance talent to understand the participant cohort and the type of environment in which the young dancers trained. Results revealed that commitment to the Centres for Advanced Training (CATs) was facilitated by enjoyment, the social relationships and opportunities on the scheme, and parental support. According to statistical analysis, adherence to the CATs was positively predicted by harmonious passion and negatively by ego-involving motivational climate perceptions. Major reasons for dropping out from the participants' own words were conflicting demands, change in aspirations, course content, difficulty making friends, and lost passion. Minor reasons included injury, financial factors, low perceived competence, and teacher behaviour. Younger students were more likely to cite course-related reasons for dropping out than older students, who were more likely to cite change in aspirations and lost passion. In terms of ability-related factors, physical competence did not appear important in relation to the participation of the talented cohort. This series of studies was the first to comprehensively examine commitment, adherence and dropout in dance from both a psychological (commitment) and behavioural (adherence and dropout) perspective. Furthermore, the use of a multidisciplinary mixed methods design enabled a broad picture of this complex area to be painted. As such these studies addressed a gap in the research literature and represent a considerable step forward in understanding why some young people stay in dance training while others leave.

Several implications have arisen from the results that may help educators to enhance retention rates on their dance programmes. Educators could aim to maximise the enjoyable aspects of dance during all sessions, and facilitate peer relationships through team-building exercises and group work. The creation of a task-involving motivational climate coupled with age- and ability-appropriate differentiation should encourage adherence. Schools could endeavour to provide a variety of inspiring opportunities to give students a taste of the professional world, and parental support could be encouraged by building a community around the school.

It is important to note that dropout is not necessarily as negative as the term implies. Often, young people sample a range of activities during adolescence as their identities develop; dropout can be a consequence of this sampling behaviour rather than solely negative experiences within the activity. Therefore, while enhancing retention rates is a valuable goal, the primary focus of talent development programmes should be on providing positive experiences for all involved, regardless of the eventual outcome.

Appendices

Appendix 1: Consent Form and Information Sheet for Chapters 5 and 8[9]

The Identification and Development of Dance Talent in Young People: An Interdisciplinary Longitudinal Research Project

Please Tick Box

Consent (Agreement) Form *Note: if you want to, you can take part in only **some** parts of the study*		Dancer	Parent / Guardian
1)	I have read the information sheet for the study, and understand what is involved.	☐	☐
2)	**Parents/Guardians only**: my child/teenager has read their information sheet for the study, and understands what is involved.		☐
3)	I understand that taking part is voluntary (that nobody *has to* take part) and that dancers can withdraw (stop) at any time, without having to say why.	☐	☐
4)	I understand that information collected will be kept anonymous (private) as far as possible, but will be compromised (shared) if: a) the dancer wants teachers to see their results *If so, the results will be sent to the CAT* b) the dancer seems to be at risk of a health problem *If so, the results will be sent to the CAT manager (not teachers). The manager will then speak with the dancer and their parents (if the dancer is under 16 years old).*	☐	☐
5)	I understand that participation involves only minor discomfort and risk (no greater than normal dance training).	☐	☐
6)	I understand that taking part, not taking part, or stopping will have no effect on CAT dance training.	☐	☐
7)	I consent (agree) to participation in this study over a 2.5-year period. This involves a series of tests and questionnaires.	☐	☐
8)	I consent (agree) to the research team having access to (being able to see) some of my other information held by the CAT. This includes injury information, individual training plans, and attendance records.	☐	☐

Name of dancer (please print clearly)	Date	Signature
Name of parent (please print clearly)	Date	Signature
Researcher	Date	Signature

[9] The consent form and information sheet used for Chapters 5 and 8 were those used for the larger talent development project.

The Leverhulme Trust

department for children, schools and families

The Identification and Development of Dance Talent in Young People: An Interdisciplinary Longitudinal Research Project

Information sheet

Dear Dancer,

You are invited to take part in a study about dance talent development. The study is being led by a research team that includes Sanna Nordin, Imogen Walker (Jen) and Emma Redding. The research team is based at Laban in London, but will work with all young people at all the Centres for Advanced Training (CATs) around England. Before you decide whether you want to take part, please read this letter. If you have any questions, you can speak to your CAT manager or contact the researchers via email or telephone (see bottom of this letter for contact details).

What is the study about?
You and the other CAT dancers have been identified as being talented or as having exceptional potential in dance. We want to know more about what that means – in other words, what dancers like you are like. We want to see how you develop over time (2.5 years). To do this, we will make regular visits to your CAT and do a series of tests. We will also ask you to complete some questionnaires. The first visit will be in November or December 2008; after that, we will visit two or three times per year until June 2011.

Do I have to take part?
It is entirely up to you and your parent/guardian whether you take part. Even if you say yes and start taking part in the study, you can stop at any time. If you take part or not (or stop), this will not make any difference to your dance training or how you are treated at the school – that will always stay the same.

What will I be asked to do?
We will ask you take part in a series of tests each time we visit. We would like you to do all of them, but you don't have to – if you feel uncomfortable then just say no. The tests are:

1) **A dance fitness test:** in this test, you and a group of your friends will do a dance sequence to music. We will ask you to wear a watch that tells us your heart rate, and write down what your heart rate is at four different times during the test.

2) **Five groups of physical tests:** in these tests, we will look at:
    a. *Growth:* how tall you are, and how long various body parts are (e.g. your arms)
    b. *Jumping:* how high you can jump
    c. *Strength:* how strong you are in your upper body
    d. *Flexibility:* how flexible you are
    e. *Balance:* how easy or difficult you find it to balance

3) **Questionnaires:** in the questionnaires, you get a chance to tell us more about yourself, how you feel about dance, food, and life, and what you think of your dance training both while you are doing it and when you leave (if you within 2.5 years).

You should not worry about any of these tests – it does not matter to us what your results are. Instead, we are interested in what talented dancers like you are like, and how this might change over time as you develop.

We are also interested in injury – for example, how often CAT dancers get injured. To understand injury, we will ask a member of staff at each CAT to write down some information in case you get injured. For example, we are interested in whether you got

injured during CAT training or somewhere else, which body part got injured, and whether you get any treatment.

Will taking part be useful to me?
The tests and questionnaires that we would like to do with you will give us information about what young talented dancers are like and what they think of their training. We will use this information to help dance teachers understand how to best support dancers like you. To do this, we will come back to your CAT and present the group results to the teachers and interested parents. Your CAT leaders will also present the results to you and the other dancers. You also have a right to get your own, individual results – for example, later on you might like to know if your fitness has improved over time. Finally, we will present the information in articles and conference presentations so that anybody who is interested can learn from the findings. For all these reasons, we think that taking part can be useful to dancers like you, but also to teachers and others who want to know more about healthy dance training.

Will it be risky or uncomfortable?
You will *not* be asked to do anything more risky or uncomfortable than you already do in normal dance training. However, you will probably sweat and breathe hard during the fitness test, and you will feel a stretch during the flexibility tests. If you feel at risk during any test, just say so and we will stop straight away. If you want to discuss anything that we ask about in the questionnaires, you can let us know or call the helpline number written on the questionnaires.

Will other people see my results?
We want to keep your results anonymous as far as we can. For this reason, we will put an ID code number (never your name) on your results. Only the researchers will see individual results: your teachers will not know what they are unless you want them to know. The results that we present to teachers, parents, and in reports will only be for groups – not individuals. There are only two exceptions to our rule of anonymity:

1) If you wish to receive your own results, we will need to send them to your CAT.
2) If the results suggest that you are at risk of a health problem, we want to be able to help you. To do that, we will need to speak with your CAT, and they will want to speak with your parents (especially if you are under 16).

Even in these cases, we will send the results to just one member of staff. This staff member will **not** be a teacher but a health professional such as a physiotherapist or dance scientist (for individual results) or the CAT manager (for individuals considered to be at risk).

Who has looked over the study?
Dance research studies are sent to an ethics committee that approve them – in other words, they look over what we plan to do and see if it seems safe and valuable. For this study, the ethics committee at Trinity Laban (a conservatoire with a dance science team) has approved it. If there is anything about the study that worries you, you can complain to one of the researchers directly, or write to us: Emma Redding, Laban, Creekside, London, SE8 3DZ, UK, phone number 020 8691 8600.

We hope that you want to be part of this exciting project!

Imogen Walker MSc, PhD Candidate
i.walker@trinitylaban.ac.uk

Sanna Nordin, PhD, Research Fellow
s.nordin@laban.org

Emma Redding, PhD, Principal Investigator
e.redding@laban.org

Appendix 2: Correlation Tables for Chapter 5.

Table A1. Correlations between physical and demographic variables.

	Hours contemp-orary	Hours ballet	Hours hip hop	Hours creative	Hours non-dance	Total years	VJH (cm)	Arm strength (kg)	Active SLR (°)	Passive SLR (°)
Ballet	-.23**									
Hip hop	.05	-.10								
Creative	.37**	-.32**	.08							
Non-dance	-.12*	-.05	.17**	-.04						
Total years	.11	.06	-.06	12	-.23**					
VJH	.20**	.09	.18**	.08	.08	-.17				
Arm strength	.37**	.05	.12	.18**	-.12	.14*	.51**			
Active SLR	.17**	.16**	.00	.08	-.20**	.31**	-.02	.08		
Passive SLR	.12	.19**	.01	.08	-.23**	.27**	-.06	.03	.80**	
Hip ER	-.06	.27**	-.02	-.30**	-.90	.11	-.08	-.04	.17**	.12

Note: * denotes $p < 0.05$, ** denotes $p < 0.01$.
VJH denotes vertical jump height; SLR denotes hamstring flexibility (straight leg raise); hip ER denotes hip external rotation.

Table A2. Correlations between psychological and demographic variables.

	Hours contemporary	Hours ballet	Hours hip hop	Hours creative	Hours non-dance	Total years	HP	OP	Self-esteem
Ballet	-.23**								
Hip hop	.05	-.10							
Creative	.37**	-.32**	.08						
Non-dance	-.23**	.05	.17**	-.04					
Total years	.11	.06	-.06	.12	-.23**				
HP	.03	-.02	-.07	.09	.03	.13			
OP	.04	.07	.09	.05	.14	.05	.51**		
Self-esteem	-.16*	.03	-.08	-.05	.05	.02	.23**	-.04	
Anxiety	.12	-.08	.03	-.06	.03	-.09	-.12	.12	-.46**

Note: * denotes $p < 0.05$, ** denotes $p < 0.01$.
HP denotes harmonious passion; OP denotes obsessive passion.

Table A3. Correlations between environmental and demographic variables.

	Hours contemporary	Hours ballet	Hours hip hop	Hours creative	Hours non-dance	Total years	Task
Ballet	-.23**						
Hip hop	.05	-.10					
Creative	.37**	-.32**	.08				
Non-dance	-.23**	-.05	.17**	-.04			
Total years	.11	.06	-.06	.12	-.23**		
Task	.02	-.08	-.03	.16*	.09	.02	
Ego	.07	.20**	.01	-.08	-.06	.07	-.44**

Note: *denotes $p < 0.05$, ** denotes $p < 0.01$.

Appendix 3: Consent Form and Information Sheet for Chapter 6

Adherence to elite dance training: an interview study

Please Tick Box

Consent (Agreement) Form *Note: if you want to, you can take part in only **some** parts of the study*		Dancer	Parent / Guardian
1)	I have read the information sheet for the study, and understand what is involved.	☐	☐
2)	**Parents/Guardians only**: my child/teenager has read their information sheet for the study, and understands what is involved.		☐
3)	I understand that taking part is voluntary (that nobody *has to* take part) and that dancers can withdraw (stop) at any time, without having to say why.	☐	☐
4)	I understand that my participation in this study and all responses to questions I give are entirely confidential.	☐	☐
5)	I consent (agree) to participation in this study which will involve a one-on-one, digitally recorded interview. I understand that I can request the presence of an impartial observer during the interview.	☐	☐

Name of dancer (please print clearly)	Date	Signature
Name of parent (please print clearly)	Date	Signature
Researcher	Date	Signature

The Leverhulme Trust

department for children, schools and families

Adherence to elite dance training: an interview study

Dear Dancer,

You are invited to take part in a study about your dance involvement and participation. This study is part of the larger research project investigating dance talent development in all of the CATs nationwide. The nationwide project is led by Dr Emma Redding, but this particular study is led by Imogen Walker, a researcher on the project.

Before you decide whether you want to participate, please read the following information. If you have any queries, please contact Imogen.

What is the purpose of the study?

The purpose of the study is to investigate patterns of dance participation and reasons for participating in dance. As you are training at elite (high) level, we are interested to understand your reasons for continuing in dance training and your hopes for the future. We want to understand why young people take part in dance training, and how they feel about dancing.

Why have I been chosen?

You have been asked to participate in our study because you are training and performing in dance at a high skill level. We are aiming to recruit between 10 and 15 current and former CAT dancers for the study.

Do I have to take part?

It is entirely up to you whether or not you take part. Even if you do agree to participate, you are free to withdraw from the study at any time. Your participation in the study is likely to take around 30 minutes.

What will I be asked to do if I take part?

You will be asked to attend an interview session which will be one-on-one with the researcher (Imogen Walker). She is a trained dancer and dance scientist. She will ask a series of questions about your past and current dance involvement, and your hopes for the future. Your responses to interview questions will be recorded and later transcribed, but your name will never be attached to the transcriptions. In other words, your responses will remain entirely anonymous. The transcripts will only be available to the three main researchers on the project (Imogen Walker, Sanna Nordin and Emma Redding) and will *not* be available to the CAT teachers or managers. You should also be assured that you will not be judged about your responses and we would like you to be completely honest during the interview – there are no right or wrong answers!

What are the benefits of taking part?

The results of the study will be used to better understand how dancers feel about their participation and what factors are involved in their decisions to keep on dancing. This can be used to help people to stay in dance training and will also give us an insight into elite dance talent development.

The information that we obtain will be shared with the dance community to help dancers and teachers to consider important aspects of dance training and how to keep young dancers motivated and involved.

Will my participation be kept confidential?

All information obtained from questionnaires will be kept strictly anonymous. Data will be stored in compliance with the UK Data Protection Act 2003.

What will happen to the results of the study?
The information obtained in the study will be presented in a scientific paper as well as at an international dance science conference. If you wish, you can obtain a copy of the final version of the report by contacting Imogen.

Who has reviewed the study?
The Laban Centre Ethics Committee has approved the study. If you wish to complain or have any concerns about the way you have been approached or treated during the study, you may wish to contact the ethics sub-committee: Laban, London, England SE8 3DZ.

We hope you will decide to take part in this study!

Imogen Walker MSc, PhD Candidate
i.walker@trinitylaban.ac.uk

Sanna Nordin, PhD, Research Fellow
s.nordin@laban.org

Emma Redding, PhD, Principal Investigator
e.redding@laban.org

This information sheet is for you to keep.

Appendix 4: Consent Form and Information Sheet for Chapter 7

Adherence to elite dance training: an interview study

Please Tick Box

Consent (Agreement) Form *Note: if you want to, you can take part in only **some** parts of the study*		Dancer	Parent / Guardian
1)	I have read the information sheet for the study, and understand what is involved.	☐	☐
2)	**Parents/Guardians only**: my child/teenager has read their information sheet for the study, and understands what is involved.		☐
3)	I understand that taking part is voluntary (that nobody *has to* take part) and that dancers can withdraw (stop) at any time, without having to say why.	☐	☐
4)	I understand that my participation in this study and all responses to questions I give are entirely confidential.	☐	☐
5)	I consent (agree) to participation in this study which will involve a one-on-one, digitally recorded interview. I understand that I can request the presence of an impartial observer during the interview.	☐	☐
6)	I consent (agree) to being contacted directly by the researcher and include my telephone number and/or email address below.	☐	☐

Name of dancer (please print clearly) _____ Date _____ Signature _____

Telephone number _____ Email address _____

Name of parent (please print clearly) _____ Date _____ Signature _____

Researcher _____ Date _____ Signature _____

Dear ,

We are writing to you to invite you to take part in a research interview. It is part of a larger project looking at dance talent development that you may have been part of before (you may remember a dance fitness test and some questionnaires, for example). At the moment, we are doing interviews with students both in the CATs and with students who attended a CAT before but aren't training there anymore. Our main interest is in your experiences of dance and dance training (whether or not you are still dancing) so we can understand more about young people's choices and the things that might influence these choices.

We got your name from a list of students at the [insert] CAT and would really like to talk to you. The information sheet that follows this letter will tell you in more detail what participation would involve, but basically you would take part in a 30-minute interview which can be carried out at a place and time that is convenient for you.

People often enjoy taking part in these interviews as it gives them a chance to reflect on their experiences and share their views in a non-judgemental setting. As a 'thank you' for taking part, we would like to offer you a £10 iTunes voucher.

In this pack you will also find:

- An information sheet with more details about the project and how to take part
- A consent form with space for your contact telephone number and/or email address if you are interested in taking part and happy for us to contact you directly
    - **If you are under 16 years, you need a parent or guardian to sign this as well**
- A stamped addressed envelope to return the consent form and your details to Jen if you would like to take part

Thank you for your time in reading this letter. We really hope you will decide to take part in this exciting project!

If you have any questions, please don't hesitate to contact Jen: i.walker@trinitylaban.ac.uk or 0208 691 8600. We hope to hear from you soon!

Imogen Walker MSc, PhD Candidate
i.walker@trinitylaban.ac.uk

Sanna Nordin, PhD, Research Fellow
s.nordin@laban.org

Emma Redding, PhD, Principal Investigator
e.redding@laban.org

Appendix 5: Interview Guide for Chapter 6

1. **Introductory questions**
    - Could you describe for me when you first started dancing?
        i. Types of dance, how often and where
        ii. Who initiated dance training
    - Can you describe any other extra-curricular activities you take part in?
        i. Did you used to?

2. **Feelings about dance**
    - Can you remember if you have ever been told that you are talented in dance?
        i. Who by?
        ii. How did it make you feel?
    - Could you tell me a bit about whether you plan to do anything with dance in your future?
    - Can you describe any worries or concerns you might have about dancing?
        i. Now?
        ii. About the future?
    - Do you dance in other schools?
        i. Can you describe any differences between these two (or more) types of training you are doing?
    - Can you tell me a bit about what is your CAT training like? Have you had any particularly good or bad times?

3. **Changes over time**
    - Can you describe what your main reasons for dancing now are?
        i. Could you describe what it is about dancing that you most like or enjoy? When do you enjoy it the most?
        ii. Do you think you are still dancing for the same reason as when you started?
    - Can you tell me how your dance involvement has changed over time?
        i. Are you doing more hours, styles, performances?
    - Do you think dance has got easier or harder over time?
        i. Dancing itself
        ii. Training
        iii. Getting to dance training
        iv. Fitting dance training in with other commitments such as school exams, chores, friends, etc.

4. **Significant others**
    - Can you describe what sort of role your parents and/or siblings play in your dance involvement?
        i. Did they encourage you?
    - Can you tell me what role you think your teachers play?
    - Can you describe the role of your friends in your dance involvement?
        i. Friends in dance
        ii. Friends outside of dance
    - Could you describe how your dance involvement affects those around you such as your family and friends? (It might not!)

5. **Is there anything else you would like to add?**

Appendix 6: Interview Guide for Chapter 7

1. **Introductory questions**
    - Could you describe for me when you first started dancing?
        i. Types of dance, how often and where
        ii. Who initiated dance training
    - Can you tell me whether you are still dancing elsewhere now?

2. **Feelings about dance**
    - Can you remember if you were ever told that you were talented in dance?
        i. Who by?
        ii. How did it make you feel?
    - Could you tell me a bit about whether you at any point planned to do anything with dance in your future?
    - Can you describe any worries or concerns you had about dancing?
        i. When you were dancing?
        ii. Thinking about the future?
    - Could you describe for me your main reasons for leaving CAT training?
        i. How did it make you feel (the decision)?
    - Can you tell me a bit about what your training was like? Can you remember any particularly good or bad times?
    - Can you describe any other extra-curricular activities you took part in at the time of your dance involvement?
        i. Do you take part in any now?

3. **Changes over time**
    - Can you describe what your main reason for dancing was?
        i. Could you describe what it was about dancing that you most liked or enjoyed? When did you enjoy it the most?
    - Can you tell me whether your dance involvement changed over time?
        i. Were you doing more hours, styles, performances?
    - Do you think dance got easier or harder over time?
        i. Dancing itself
        ii. Training
        iii. Getting to dance training
        iv. Fitting dance training in with other commitments; school, friends

4. **Significant others**
    - Can you describe what sort of role your parents and/or siblings played in your dance involvement?
        i. Did they encourage you?
    - Can you tell me what role you think your teachers played?
    - Can you describe the role of your friends in your dance involvement?
        i. Friends in dance
        ii. Friends outside of dance
    - Can you describe the reactions or actions of significant others to your decision to leave CAT training?
        i. Family (parents, siblings)
        ii. Teachers
        iii. Friends
        iv. Were they supportive?
5. Could you describe how your dance involvement affected those around you such as your family and friends? (It may not have done!)
6. **Is there anything else you would like to add?**

Appendix 7: Correlation Tables for Chapter 8

Table A4. Correlations between demographics variables at Time 1.

	Hours CAT	Hours non-CAT
Hours non-CAT	-.22*	
Hours physical activity	.01	-.04

Note: * denotes $p < 0.01$.

Table A5. Correlation between demographic variables at Time 2.

	Hours CAT	Hours non-CAT
Hours CAT		
Hours non-CAT	-.29*	
Hours physical activity	-.05	.02

Note: * denotes $p < 0.01$.

Table A6. Correlations between physical variables at Time 2 (correlations for Time 1 can be found in Appendix 2).

	VJH	Arm strength	SLR	Hip ER	DAFT3
Arm strength	.52**				
SLR	-.18**	-.14*			
Hip ER	-.11	-.20**	.16**		
DAFT3	-.10	-.02	-.02	-.01	
DAFT5	-.04	.003	.01	-.04	.67**

Note: * denotes $p < 0.05$, ** denotes $p < 0.01$.
VJH denotes vertical jump height; SLR denotes hamstring flexibility (straight leg raise); hip ER denotes hip external rotation; DAFT3 and DAFT5 denote Dance Aerobic Fitness Test results (percentage of maximum heart rate) at Stages 3 and 5 respectively.

Table A7. Correlations between psychological variables at Time 2 (correlations for Time 1 can be found in Appendix 2).

	HP	OP	Task	Ego	EAT	Self-esteem
OP	.33**					
Task	.34**	.05				
Ego	-.12	.17*	-.35**			
EAT	-.17*	.14*	-.10	.22**		
Self-esteem	.30**	-.07	.30**	-.27**	-.39**	
Anxiety	-.20**	.20**	-.18**	.32**	.31**	-.48**

Note: * denotes $p < 0.05$, ** denotes $p < 0.01$.
HP denotes harmonious passion; OP denotes obsessive passion; EAT denotes Eating Attitudes Test.

Appendix 8: Risk Assessment Document

For all researchers and volunteers:

BEFORE you arrive for testing please ensure you

- Know who the lead researcher from Laban is on the day (most likely Sanna or Jen)
- Know who the contact at the CAT is
- Have everyone's mobile numbers (most importantly the lead researcher's)
    - Sanna XXXXXXXXXXXX
    - Jen XXXXXXXXXXXX
    - Emma XXXXXXXXXXXX

ON the day please

- Make sure you are not left alone in a room with the CAT students
- Be aware of any potential risks in the testing area (e.g. objects on floor that students could trip on)
- Be careful if moving heavy pieces of kit or furniture around (ask for help)
- Wear comfortable practice-type clothes (not jeans or high heels!) regardless of which station you are on in case of last-minute changes such as having to DAFT at short notice

IN CASE of CAT student injury please

- Go and get help – find the CAT contact
- Do not attempt to treat or advise the student

REMEMBER

- Treat every student the same
- Always be aware of the welfare of the students
- Alert the lead researcher and/or CAT contact if you think that a student is hurt/injured, sick or distressed
- Students give voluntary consent to participate in the project but are free to discontinue or not participate in a test if they so wish
- If you have any problems with testing, equipment, etc., please just ask Sanna or Jen to help you

References

Abbott, A., & Collins, D. (2004). Eliminating the dichotomy between theory and practice in talent identification and development: considering the role of psychology. *Journal of Sports Sciences*, *22*(5), 395-408.

Abbott, A., & Collins, D. (2002). A theoretical and empirical analysis of a 'state of the art' talent identification model. *High Ability Studies*, *13*(2), 157-178.

Alexandris, K., Zahariadis, P., Tsorbatzoudis, C., & Grouios, G. (2002). Testing the sport commitment model in the context of exercise and fitness participation. *Journal of Sport Behavior*, *25*(3), 217-230.

Allender, S., Cowburn, G., & Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: A review of qualitative studies. *Health Education Research*, *21*(6), 826-835.

Allison, P. D. (2009). Handling missing data. In R. E. Millsap & A. Maydeu-Olivares (Eds.), *The SAGE Handbook of Quantitative Methods in Psychology* (pp. 72-89). Thousand Oaks, CA: Sage Publications Inc.

Almagro, B. J., Sáenz-López, P., & Moreno, J. A. (2010). Prediction of sport adherence through the influence of autonomy-supportive coaching among Spanish adolescent athletes. *Journal of Sports Science and Medicine*, *9*, 8-14.

Alter, J. B. (1997). Why dance students pursue dance: Studies of dance students from 1953 to 1993. *Dance Research Journal*, *29*(2), 70-89.

Ambrose, D. (2003). Barriers to aspiration development and self-fulfilment: interdisciplinary insights for talent discovery. *Gifted Child Quarterly*, *47*, (4), 282-294.

Ames, C. (1992). Achievement goals and the classroom motivational climate. In J. Meece & D. Schunk (Eds.), *Students' perceptions in the classroom: Causes and consequences* (pp. 327-348). Hillsdale, NJ: Erlbaum.

Amorose, A. J. (2002). The influence of reflected appraisals on middle school and high school athletes' self-perceptions of sport competence. *Pediatric Exercise Science*, *14,* 377-390.

Angioi, M., Metsios, G., Koutedakis, Y., & Wyon, M.A. (2009). Fitness in contemporary dance: A systematic review. *International Journal of Sports Medicine*, *30*, 475-484.

Angioi, M., Metsios, G., Twitchett, E., Koutedakis, Y., & Wyon, M.A. (2009). Association between selected physical fitness parameters and aesthetic competence in contemporary dancers. *Journal of Dance Medicine and Science*, *13*(4), 115-123.

Aujla, I. J., Nordin-Bates, S. M., & Redding, E. (in submission). A qualitative

investigation of commitment to dance: Findings from the UK Centres for Advanced Training. *Gifted Child Quarterly.*

Austin, R. (1978). *Natalia Makarova: Ballerina*. London: Dance Books.

Austin, R. (1982). *The art of the dancer*. London: Barry & Jenkins Ltd.

Baker, J. (2003). Early specialisation in youth sport: a requirement for adult expertise? *High Ability Studies*, *14*(1), 85-94.

Baker, J., Cobley, S., & Fraser-Thomas, J. (2009). What do we know about early specialisation? Not much! *High Ability Studies*, *20*(1), 77-89.

Baker, J., Côté, J., & Abernethy, B. (2003). Sport-specific practice and the development of expert decision-making in team ball sports. *Journal of Applied Sport Psychology*, *15*, 12-25.

Baker, J., Côté, J., & Deakin, J. (2005). Expertise in ultra-endurance triathletes early sport involvement, training structure, and the theory of deliberate practice. *Journal of Applied Sport Psychology*, *17*, 64-78.

Baker, J., & Horton, S. (2004). A review of primary and secondary influences on sport expertise. *High Ability Studies*, *15*(2), 211-228.

Bakker, F. C. (1988). Personality differences between young dancers and non-dancers. *Personality and Individual Differences*, *9*(1), 121-131.

Bakker, F. C. (1991). Development of personality in dancers: A longitudinal study. *Personality and Individual Differences*, *12*(7), 671-681.

Baldari, C., & Guidetti, L. (2001). VO_{2max} ventilatory and anaerobic thresholds in rhythmic gymnasts and young female dancers. *Journal of Sports Medicine and Physical Fitness*, *41*(2), 177-182.

Barnett, N. P., Smoll, F. L., & Smith, R. E. (1992). Effects of enhancing coach-athlete relationship on youth sport attrition. *The Sport Psychologist*, *6*(2), 111-127.

Barrell, G., & Terry, P. (2003). Trait anxiety and coping strategies among ballet dancers. *Medical Problems of Performing Artists*, *18*(2), 59-64.

Baum, S. M., Owen, S. V., & Oreck, B. A. (1996). Talent beyond words: identification of potential talent in dance and music in elementary students. *Gifted Child Quarterly*, *40*(2), 93-101.

Baxter-Jones, A. (1995). Growth and development of young athletes: Should competition levels be age related? *Sports Medicine*, *20*, 59-64.

Baxter-Jones, A., Maffulli, N., & Helms, P. (1993). Low injury rates in elite athletes. *Archives of Disease in Childhood*, *68*, 130-132.

Beals, K. A. (2004). *Disordered eating among athletes: A comprehensive guide for health professionals.* Champaign IL: Human Kinetics.

Benn, T. & Walters, D. (2001). Between Scylla and Charybdis. Nutritional education versus body culture and the ballet aesthetic: The effects on the lives of female dancers. *Research in Dance Education*, *2*(2), 139-154.

Bennell, K., Khan, K. M., Matthews B., De Grutyer, E. Cook, M., Holzer K., & Wark, J. D. (1999). Hip and ankle range of motion and hip muscle strength in young novice female ballet dancers and controls. *British Journal of Sports Medicine*, *33*, 340-346.

Bennell, K. L., Khan, K. M., Matthews, B. L., & Singleton C. (2001). Changes in hip and ankle range of motion and hip muscle strength in 8-11 year old novice female ballet dancers and controls: a 12 month follow up study. *British Journal of Sports Medicine*, *35*, 54-59.

Bennie, A. & O'Connor, D. (2006). Athletic transition: an investigation of elite track and field participation in the post-high years. *Change: Transformations in education*, *9,* 59-68.

Black, S. J., & Weiss, M. R. (1992). The relationship among perceived coaching behaviours, perceptions of ability, and motivation in competitive age-group swimmers. *Journal of Sport and Exercise Psychology*, *14*, 309-325.

Blascovich, J., & Tomaka, J. (1991). Measures of self-esteem. In J. P. Robinson, P.R. Shaver & L. S. Wrightsman (Eds*.)*, *Measures of Personality and Social Psychological Attitudes*, *Volume I* (pp. 115-160). San Diego, CA: Academic Press.

Blazy L., & Amstell, S. (2010). *NRG2 Youth Dance and Health Research Report*. Trinity Laban Conservatoire of Music and Dance. 2010. Retrieved from: www.trinitylaban.ac.uk/media/177211/nrg_10%20(2).pdf

Block, J., & Robins, R. W. (1993). A longitudinal study of consistency and change in self-esteem from early childhood to early adolescence. *Child Development, 64*(3), 909-923.

Bloom, B. S. (1985). *Developing talent in young people.* New York: Ballantine.

Boiché, J. C. S., & Sarrazin, P. G. (2007). Self-determination of contextual motivation, inter-context dynamics and adolescents' patterns of sport participation over time. *Psychology of Sport and Exercise*, *8*, 685-703.

Boiché, J., & Sarrazin, P. (2009). Proximal and distal factors associated with dropout versus maintained participation in organised sport. *Journal of Sports Science and Medicine*, *8*, 9-16.

Bonneville-Roussy, A., Lavigne, G. L., & Vallerand, R. J. (2011). When passion leads to excellence: The case of musicians. *Psychology of Music*, *39*(1), 123-39.

Bouchard, C., Ping, A., Rice, T., Skinner, J. S., Wilmore, J.H., Gagnon, J., Pérusse, L., Leon, A. S., & Rao, D. C. (1999). Familial aggregation of VO_{2max} response to exercise training: results from the HERITAGE family study. *Journal of Applied Physiology*, *87*(3), 1003-1008.

Boyce, B.A., Gano-Overway, L.A., & Campbell, A.L. (2009). Perceived motivational climate's influence on goal orientations, perceived competence and practice strategies across the athletic season. *Journal of Applied Sport Psychology*, *21*, 381-394.

Brady, F. (2004). Children's organised sports: A developmental perspective. *Journal of Physical Education, Recreation and Dance*, *75*(2), 35-41.

Brassington, G., & Adam, M. (2004). Mental skills distinguish elite soloist ballet dancers from corps de ballet dancers [Abstract]. *Journal of Dance Medicine and Science*, *7*, 63.

Brettschneider, W. (1999). Risks and opportunities: Adolescents in top-level sport – growing up with the pressures of school and training. *European Physical Education Review*, *5*(2), 121-133.

Brooks, F., & Magnusson, J. (2006). Taking part counts: Adolescents' experiences of the transition from inactivity to active participation in school-based physical education. *Health and Education Research*, *21*(6), 872-883.

Brooks-Gunn, J., & Warren, M. P. (1985). The effects of delayed menarche in different contexts: Dance and nondance students. *Journal of Youth and Adolescence*, *14*, 285-300.

Brown, A.C., Wells, T.J., Schade, M.L., Smith, D.L., & Fehling, P.C. (2007). Effects of plyometric training versus traditional weight training on strength, power, and aesthetic jumping ability in female collegiate dancers. *Journal of Dance Medicine and Science*, *11*(2), 38-44.

Britton, J. (2010). The pursuit of pleasure. *Theatre, Dance and Performance Training*, *1*(1), 36-54.

Buckroyd, J. (2000). *The student dancer: Emotional aspects of the teaching and learning of dance.* London: Dance Books.

Burns, S. (2007). *Mapping dance: Entrepreneurship and professional practice in dance Higher Education*. York: Palatine.

Burns, S., & Harrison, S. (2009). *Dance Mapping: A window on dance 2004-2008.* London: Arts Council England.

Burton, D. (1992). Why young wrestlers 'hang up' their singlet: An exploratory investigation comparing two models of sport attrition. *Journal of Sport Behavior*, 15(*3*), 209-226.

Burton, D., & Martens, R. (1986). Pinned by their own goals: An exploratory investigation into why kids drop out of wrestling. *Journal of Sport Psychology*, *8*, 183-97.

Bussell, D. (1998). *Life in dance*. London: Century.

Burwitz, L., Moore, P. M., & Wilkinson, D. M. (1994). Future directions for performance-related sports science research: An interdisciplinary approach. *Journal of Sport Sciences*, *12*, 93-109.

Bussmann, G. (2004). How to prevent 'dropout' in competitive sport. Retrieved from: www.coachr.org/dropout.htm

Butcher, J., Lindner, K. J., & Johns, D. P. (2002). Withdrawal from competitive youth sport: A retrospective ten-year study. *Journal of Sport Behavior*, *25,* 145-163.

Calvo, G. T., Cervelló, E., Jiménez, R., Iglesias, D., & Murcia, J. A. M. (2010). Using self-determination theory to explain sport persistence and dropout in adolescent athletes. *The Spanish Journal of Psychology*, *13*(2), 677-684.

Camurri, A., Mazzarino, B., Ricchetti, M., Timmers, R., & Volpe, G. (2004). Multimodal analysis of expressive gesture in music and dance performances. In A. Camurri & G. Volpe (Eds.), *Gesture-based communication in human-computer interaction: Fifth international gesture workshop* (pp. 357-358). Genova, Italy: Springer Verlag.

Carbonneau, N., Vallerand, R.J., Fernet, C. & Guay, F. (2008). The role of passion for teaching in intrapersonal and interpersonal outcomes. *Journal of Educational Psychology*, *100*(4), 977-987.

Carlson, R. (1988). The socialization of elite tennis players in Sweden: An analysis of the players' backgrounds and development. *Sociology of Sport Journal*, *5*, 241-256.

Carpenter, P. J., & Coleman., R. (1998). A longitudinal study of elite youth cricketers' commitment. *International Journal of Sport Psychology*, *29*(3), 195-210.

Carpenter, P. J, & Scanlan, T. K. (1998). Changes over time in the determinants of sport commitment. *Pediatric Exercise Science*, *10*, 356-65.

Carpenter, P. J., Scanlan, T. K., Simons, J. P., & Lobel, M. (1993). A test of the sport commitment model using structural equation modeling. *Journal of Sport and Exercise*, *15*(2), 119-133.

Carpentier, J., Mageau, G. A., & Vallerand, R. J. (2011). Ruminations and flow: Why do people with a more harmonious passion experience higher well-being? *Journal of Happiness Studies* [published online pre-print], 1-18.

Carr, S., & Wyon, M. (2003). The impact of motivational climate on dance students' achievement goals, trait anxiety, and perfectionism. *Journal of Dance Medicine and Science*, *7*(4), 105-114.

Carter, R. (1998). *Mapping the mind*. London: Phoenix.

Casper, J. M., & Andrew, D. P. S. (2008). Sport commitment differences among tennis players on the basis of participation outlet and skill level. *Journal of Sport Behaviour*, *31*(3), 201-219.

Casper, J. M., Gray, D. P., & Babkes Stellino, M. (2007). A sport commitment model perspective on adult tennis players' participation frequency and purchase intention. *Sport Management Review*, *10*(3), 253-278.

Cecchini, J. A., Mendez, A., & Muniz, J. (2002). Motives for practicing sport in Spanish schoolchildren. *Psicothema*, *14*(3), 523-531.

Celio, A.A., Bryson, S., Killen, J.D., & Taylor, C.B. (2003). Are adolescents harmed when asked risky weight control behaviour and attitude questions? Implications for consent procedures. *International Journal of Eating Disorders, 34*(2), 251-254.

Cervelló E. M., Escartí, A., & Guzmán, J. F. (2007). Youth sport dropout from the achievement goal theory. *Psicothema*, *19*(1), 65-71.

Chan, T. W., Goldthorpe, J., Keaney, E., & Oskala, A. (2008). *Dance participation and attendance in England: Findings from the Taking Part survey.* London: Arts Council England.

Chanal, J., Marsh, H. W., Sarrazin, P., & Bois, J. (2005). Big-fish-little-pond effects on gymnastics self-concept: Social comparison processes in a physical setting. *Journal of Sport and Exercise Psychology*, *27*(1), 53-70.

Chapman, C. (2010). *Being a composer: An insider's view*. Paper presented at the British Psychological Society Conference, Stratford-upon-Avon, 14th April.

Chmelar, R. D., Schultz, B. B., Ruhling, R. O., Shepherd, T. A., Zupan, M. F., Fitt, S.F. (1988). A physiologic profile comparing levels and styles of female dancers. *The Physician and Sportsmedicine*, *16*(7), 87-95.

Claessens, A. L., & Lefevre, J. (1998). Morphological and performance characteristics as drop-out indicators in female gymnasts. *Journal of Sports Medicine and Physical Fitness, 12*(2), 168-175.

Clippinger, K. S. (2005). Biomechanical considerations in turnout. In R. Solomon, J. Solomon & S.C. Minton (Eds.), *Preventing Dance Injuries (Second Edition)* (pp. 135-150). Champaign, IL: Human Kinetics.

Coakley, J., & White, A. (1992). Making decisions: Gender and sport participation among British adolescents. *Sociology of Sport Journal*, *9*(1), 20-35.

Cohen, J. L., Segal, K. R., Witriol, I., & McArdle, W. D. (1982). Cardiorespiratory responses to ballet exercise and the VO_{2max} of elite ballet dancers. *Medicine and Science in Sports and Exercise*, *14*(3), 212-217.

Cohen, J. L., Segal, K. R., & McArdle, W. D. (1982). Heart rate response to ballet stage performance. *The Physician and Sportsmedicine*, *10*(11), 120-133.

Coll, R. K., & Chapman, R. (2000). Choices of methodology for cooperative education researchers. *Asia-Pacific Journal of Cooperative Education*, *1*(1), 1-8.

Collins, D., Martindale, R., Button, A., & Sowerby, K. (2010). Building a physically active and talent rich culture: An educationally sound approach. *European Physical Education Review*, *16*(1), 7-28.

Cometti, G., Maffiuletti, N. A., Pousson, M., Chatard, J. & Maffulli, N. (2001). Isokinetic strength and anaerobic power of elite, subelite and amateur French soccer players. *International Journal of Sports Medicine*, *22*, 45-51.

Connolly, M., Quin, E., & Redding, E. (2011). Dance 4 your life: Exploring the health and well-being implications of a contemporary dance intervention for female adolescents. *Research in Dance Education*, *12*(1), 53-66.

Costa-Giomi, E. (2004). "I do not want to study piano!" Early predictors of student dropout behaviour. *Bulletin of the Council for Research in Music Education*, *162*, 57-64.

Costa-Giomi, E., Flowers, P. J., & Saski, W. (2005). Piano lessons of beginning students who persist or dropout: teacher behaviour, student behaviour and lesson progress. *Research in Music Education*, *53*(3), 234-247.

Côté, J. (1999). The influence of the family in the development of talent in sport. *The Sport Psychologist*, *13*, 395-417.

Côté, J., Baker, J., & Abernethy, B. (2003). From play to practice: a developmental framework for the acquisition of expertise in team sport. In J. Starkes & K.A. Ericsson (Eds.), *Recent advances in research on sport expertise* (pp. 89-114). Champaign, IL: Human Kinetics.

Côté, J., Baker, J., & Abernethy, B. (2007). Practice and play in the development of sport expertise. In R. Eklund & G. Tenenbaum (Eds.), *Handbook of Sport Psychology, 3rd Edition* (pp. 184-202). Hoboken, NJ: Wiley.

Côté, J., & Hay, J. (2002). Children's involvement in sport: A developmental perspective. In J.M. Silva & D.E. Stevens (Eds.), *Psychological foundations of sport* (pp. 484-502). Boston, MA: Allyn & Bacon.

Côté, J., Horton, S., MacDonald, D., & Wilkes, S. (2009). The benefits of sampling sports during childhood. *Physical and Health Education*, Winter, 6-11.

Côté, J., Lidor, R., & Hackfort, D. (2009). ISSP Position stand: To sample or to specialize? Seven postulates about youth sport activities that lead to continued participation and elite performance. *International Journal of Sport and Exercise Psychology, 9*, 7-17.

Cox, A. E., & Whaley, D. E. (2004). The influence of task value, expectancies for success, and identity on athletes' achievement behaviors. *Journal of Applied Sport Psychology*, *16,* 103–117.

Critien, N., & Ollis, S. (2006). Multiple engagement of self in the development of talent in professional dancers. *Research in Dance Education*, *7*(2), 179-200.

Crookshanks, D. (2007). Normative dance-specific musculoskeletal parameters for young female dancers in Australia. In R. Solomon & J. Solomon (Eds.), *Proceedings of the 17th Annual Meeting of the International Association for Dance Medicine and Science* (pp. 249-252). CA: IADMS.

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper and Row.

Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success and failure*. New York: Cambridge University Press.

Cumming, J., & Hall, C. (2002). Deliberate imagery practice: Examining the development of imagery skills in competitive athletes. *Journal of Sport Sciences*, *20*, 137-145.

Cumming, S. P., Standage, M., Gillison, F. B., Dompier, T. P., & Malina, R. M. (2009). Biological maturity status, body size and exercise behaviour in British youth: A pilot study. *Journal of Sport Sciences*, *27*(7), 677-686.

Dahlström, M., Inasio, J., Jansson, E., & Kaijser, L. (1996). Physical fitness and physical effort in dancers: A comparison of four major dance styles. *Impulse*, *4*, 193-209.

Dance UK. *Dance Facts*. 2009. Retrieved from: www.danceuk.org/resources/dance-facts/

Davidson, J. W., Howe, M. J. A., Moore, D. G., & Sloboda, J.A. (1996). The role of parental influences in the development of musical performance. *British Journal of Developmental Psychology*, *14*, 399-412.

De Bruin, A. B. H., Rikers, R. M. J. P., & Schmidt, H. G. (2007). The influence of achievement motivation and chess-specific motivation on deliberate practice. *Journal of Sport and Exercise Psychology*, *29*(5), 561-583.

Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behaviour.* New York: Plenum.

Deci, E.L., & Ryan, R.M. (2000). The "what" and "why" of goal pursuits: human

needs and the self-determination of behaviour. *Psychological Inquiry*, *11*(4), 227-268.

Deighan, M. A. (2005). Flexibility in dance. *Journal of Dance Medicine and Science*, *9*(1), 13-17.

Delorme, N., Boiché, J., & Raspaud, M. (2009). The relative age effect in elite sport: The French case. *Research Quarterly for Exercise and Sport*, *80*(2), 336-344.

Delorme N., Boiché, J., *&* Raspaud, M. (2010). Relative age effect in elite sports*:* Methodological bias or real discrimination? *European Journal of Sports Science, 10, 58-58.*

Denzin, N. K., & Lincoln, Y. S. (1998). *Collecting and interpreting qualitative research*. Thousand Oaks, CA: Sage Publications.

Department for Children, Schools and Families. (2008). Who is gifted and talented? Retrieved from: www.standards.dfes.gov.uk/giftedandtalented.

Desfor, F. G. (2003). Assessing hypermobility in dancers. *Journal of Dance Medicine and Science*, *7*(1), 17-22.

Dishman, R. K., Sallis, J. F., & Orenstein, D. R. (1985). The determinants of physical activity and exercise. *Public Health Report*, *100*(2), 158-171.

Donahue, E. G., Rip, B., & Vallerand, R. J. (2009). When winning is everything: On passion, identity and aggression in sport. *Psychology of Sport and Exercise*, *10*, 526-534.

Donders, A. R. T., van der Heijden, G. J. M. G., Stijnen, T., & Moons, K. G. M. (2006). Review: A gentle introduction to imputation of missing values. *Journal of Clinical Epidemiology, 59*, 1087-1091.

Douthitt, V. (1994). Psychological determinants of adolescent exercise adherence. *Adolescence*, *29,* 711-722.

Dowler, G. (2010). The Russian realist. *Dancing Times, 100*(1198), 15-19.

Duda, J. L. (2001). Achievement goal research in sport: Pushing the boundaries and clarifying some misunderstandings. In G. C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 129-182). Leeds: Human Kinetics.

Duda, J. L., Chi, L., Newton, M. L., Walling, M.D., & Catley, D. (1995). Task and ego orientation and intrinsic motivation in sport. *International Journal of Sport Psychology*, *26*, 40-63.

Duda, J. L., Quested, E., Appleton, P., Ntoumanis, N., Bracey, S., Merrett, C., & Fenton, S. (2011). The Promoting Adolescent Physical Activity Project: Toward healthy sport experiences for kids. Retrieved from: www.projectpapa.org/home.

Dudek, S. Z., Bernèche, R., Bérubé, H. & Royer, S. (1991). Personality determinants of the commitment to the profession of art. *Creativity Research Journal*, *4*(4), 367-389.

Durand-Bush, N., & Salmela, J.H. (2001). The development of talent in sport. In R. N.Singer, H.A. Hausenblas & C. Janelle (Eds)., *Handbook of sport psychology second edition* (pp. 269-287). New York: John Wiley & Sons.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychology*, *41*(10), 1040-1048.

Dweck, C. S. (2000). *Self-theories: Their role in motivation, personality and development*. Philadelphia PA: Psychology Press.

Dweck, C. S., Chi, C., & Hong, Y. (1995). Implicit theories and their role in judgements and reactions: A word from two perspectives. *Psychological Inquiry*, *6*(4), 265-285.

Eccles, J. S., Adler. T. E., Futterman, R., Goff, S. B., Kazcala, C. M., Meece, J. L., & Midgley, C. (1983). Expectancies, values and academic behaviours. In J.T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75-146). San Francisco: Freeman.

Eccles, J.S., & Barber, B. (1999). Student council, volunteering, basketball or marching band: What kind of extracurricular involvement matters? *Journal of Adolescent Research*, *4*, 10-34.

Elferink-Gemser, M. T., Visscher, C., Lemmink, K. A. P. M., & Mulder, T. W. (2004). Relation between multidimensional performance characteristics and level of performance in youth field hockey players. *Journal of Sports Sciences*, *22*, 1053-1063.

Ellis, N. (2010). Who do you think I am? *Dance UK News*, *77*, 25.

Enoksen, E. (2011). Dropout rate and dropout reasons among promising Norwegian track and field athletes: A 25-year study. *Scandinavian Sport Studies Forum, 2,* 19-43.

Epstein, J. (1989). Family structures and student motivation: A developmental perspective. In C. Ames & R. Ames (Eds.), R*esearch on motivation in education Vol. 3* (pp. 259-295). New York: Academic Press.

Ericsson, K. A., and N. Charness. (1994). Expert performance: its structure and acquisition. *American Psychologist*, *49*, 725–747.

Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, *100*(3), 363-406.

Feltz, D. (1988). Self-confidence and sports performance. *Exercise and Sport*

Science Reviews, *16*, 423-457.

Feltz, D. L., & Ewing, M. E. (1987). Psychological characteristics of elite young athletes. *Medicine and Science in Sports and Exercise*, *19*(5), 98-105.

Ferreira, M., and K. L. Armstrong. (2002). An investigation of the relationship between parents' causal attributions of youth soccer dropout, time in soccer organisation, affect towards soccer and soccer organisation, and post-soccer dropout behaviour. *Sport Management Review*, *5*(2), 149-178.

Field, L. (2011). All in the mind? Thoughts on a holistic approach to training young professionals. *Dance UK News*, *80*, 13.

Figueiredo, A. J., Gonçalves, C. E., Coelho E Silva, M. J., & Malina, R. M. (2009). Characteristics of youth soccer players who drop out, persist or move up. *Journal of Sport Sciences*, *27*(9), 883-891.

Flett, G. L., & Hewitt, P.L. (2006). Positive versus negative perfectionism in psychopathology: A comment on Slade and Owen's dual process model. *Behavior Modification*, *30*(4), 472-495.

Fox, K. R. (1998). Advances in the measurement of the physical self. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 295-310). Morgantown, VW: Fitness Information Technology.

Fox, K. R., & Wilson, P. M. (2008). Self-perceptual systems and physical activity. In T. Horn (Ed.)., *Advances in sport psychology third edition* (pp. 49-63). Champaign, IL: Human Kinetics.

Fraser-Thomas, J., & Côté, J. (2006). Youth sports: Implementing findings and moving forward with research. *Athletic Insight*, *8*(3), 12-27.

Fraser-Thomas, J., & Côté, J. (2009). Understanding adolescents' positive and negative developmental experiences in sport. *The Sport Psychologist*, *23,* 3-23.

Fraser-Thomas, J., Côté, J., & Deakin, J. (2008a). Understanding dropout and prolonged engagement in adolescent competitive sport. *Psychology of Sport and Exercise*, *9*(5), 645-62.

Fraser-Thomas, J., Côté, J., & Deakin, J. (2008b). Examining adolescent sport dropout and prolonged engagement from a developmental perspective. *Journal of Applied Sport Psychology*, *20*(3), 318-333.

Fraser-Thomas, J., Côté, J., & MacDonald, D. J. (2010). Community size in youth sport settings: Examining developmental assets and sport withdrawal. *Physical and Health*, *2*(2), 1-9.

Fredricks, J. A., Alfeld-Lido, C. J., & Eccles, J.S. (2010). Developing and fostering passion in academic and non-academic domains. *Gifted Child Quarterly*,

54(1), 18-30.

Fredricks, J. A., Alfeld-Lido, C. J., Hruda, L. Z., Eccles, J. S., Patrick, H., & Ryan, A. M. (2002). A qualitative exploration of adolescents' commitment to athletics and the arts. *Journal of Adolescent Research*, *17*(1), 68-97.

Gabriele, J.M., Gill, D.L., & Adams, C.E. (2011). The roles of want to commitment and have to commitment in explaining physical activity behaviour. *Journal of Physical Activity and Health, 8,* 420-428.

Gagné, F. (1985). Giftedness and talent: re-examining a re-examination of the definitions. *Gifted Child Quarterly*, *29*, 103-112.

Gagné, F. (2004). Transforming gifts into talents: The DMGT as a developmental theory. *High Ability Studies*, *15*(2), 119-147.

Gagné, F. (2007). Ten commandments for academic talent development. *Gifted Child Quarterly*, *51*(2), 93-118.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.

Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The eating attitudes test: Psychometric features and clinical correlates. *Psychological Medicine*, *12*, 871–878.

Gentry, M., Steenbergen-Hu, S., & Choi, B. (2011). Student-identified exemplary teachers: Insights from talented teachers. *Gifted Child Quarterly*, *55*(2), 111-125.

Giacobbi, P. R., Whitney, J., Roper, E., & Butryn, T. (2002). College coaches' views about the development of successful athletes: A descriptive exploratory investigation. *Journal of Sport Behavior*, *25*, 164-181.

Gibbons, E. (2007). *Teaching dance: The spectrum of styles*. Bloomington IN: AuthorHouse.

Gill, D. L., Cross, J. B., & Huddleston, S. (1983). Participation motivation in youth sports. *International Journal of Sport Psychology*, *14,* 1-14.

Gould, D. (1987). Understanding attrition in youth sport. In D. Smith & M. Bar-Eli (Eds.), *Essential readings in sport and exercise psychology* (pp. 402-412). Champaign IL: Human Kinetics.

Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology*, *14*(3), 172-204.

Gould, D., Feltz, D., Horn, T., & Weiss, M. (1982). Reasons for attrition in competitive youth swimming. *Journal of Sport Behavior*, *5*, 155-65.

Gould, D., Feltz, D., & Weiss, M. (1985). Motives for participating in competitive

youth swimming. *International Journal of Sport Psychology*, *16*(2), 126-140.

Gould, D., Guinan, D., Greenleaf, C., Medbery, R., & Peterson, K. (1999). Factors affecting Olympic performance: Perceptions of athletes and coaches from more and less successful teams. *The Sport Psychologist*, 13, 371-394.

Gould, D., Lauer, L., Rolo, C., Jannes, C., & Pennisi, N. (2006). Understanding the role parents play in tennis success: A national survey of junior tennis coaches. *British Journal of Sports Medicine*, *40*, 632-636.

Gould, D., & Maynard, I. (2009). Psychological preparation for the Olympic Games. *Journal of Sport Sciences*, *27*(13), 1393-1408.

Gould, D., & Petlichkoff, L. (1988). Participation motivation and attrition in young athletes. In F. L. Smoll, R. A. Magill & M. J. Ash (Eds.), *Children in sport third edition* (pp. 161-178). Champaign IL: Human Kinetics.

Gould, D., Udry, E., Tuffey, S., & Loehr, J. (1996). Burnout in competitive junior tennis players: A quantitative psychological assessment. *The Sport Psychologist*, *10*(4), 322-340.

Grahame, R., & Jenkins, J.M. (1972). Joint hypermobility—asset or liability? A study of joint mobility in ballet dancers. *Annals of the Rheumatic Diseases*, *31*, 109-111.

Green, B. C. (2005). Building sport programs to optimise athlete recruitment, retention and transition: Toward a normative theory of sport development. *Journal of Sport Management*, *19*, 233-253.

Gregg, M., Hall, C., & Nederhof, E. (2005). The imagery ability, imagery use and performance relationship. *The Sport Psychologist*, *19*, 93-99.

Grossman, G. (2003). Measuring dancer's active and passive turnout. *Journal of Dance Medicine and Science*, *7*(2), 49-55.

Guba, E. G. (1990). *The paradigm dialog*. Newbury Park, CA: Sage Publications.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). Thousand Oaks, CA: Sage.

Guillet, E., Sarrazin, P., Carpenter, P.J., Trouilloud, D., & Cury, F. (2002). Predicting persistence or withdrawal in female handballers with Social Exchange theory. *International Journal of Psychology*, *37*(2), 92-104.

Guillet, E., Sarrazin, P., & Fontayne, P. (2000). "If it contradicts my gender role, I'll stop!" Introducing survival analysis to study the effects of gender typing on time of withdrawal from sport practice: A 3-year study. *European Review of Applied Psychology*, *50*(4), 417-421.

Guillet, E., Sarrazin, P., Fontayne, P., & Brustad, R. J. (2006). Understanding

female attrition in a stereotypical male sport within the framework of Eccles's Expectancy-value model. *Psychology of Women Quarterly*, *30*, 358-68.

Gupta, A., Fernihough, B., Bailey, G., Bombeck, P., Clarke, A., & Hopper, D. (2004). An evaluation of differences in hip external rotation strength and range of motion between female dancers and non-dancers. *British Journal of Sports Medicine*, *38*, 778-783.

Gustin, W. C. (1985). The development of exceptional research mathematicians. In B.S. Bloom (Ed.), *Developing talent in young people* (pp. 270-331). New York: Ballatine Books.

Haight, H. J. (1998). Morphologic, physiologic, and functional interactions in elite female ballet dancers. *Medical Problems of Performing Artists*, *13*(1), 4-13.

Hallam, S. (1998). The predictors of achievement and dropout in instrumental tuition. *Psychology of Music*, *26*, 116-132.

Hamer, K. (Producer). (2010). *Ballet School* [Television series]. BBC Wales.

Hamilton, L. H. (1997). The emotional costs of performing: Interventions for the young artist. *Medical Problems of Performing Artists*, *12*(3), 67-71.

Hamilton, L. H. (1998). *Advice for dancers*. San Francisco: Jossey-Bass.

Hamilton, W. G., Hamilton, L. H., Marshall, P., & Molnar, M. (1992). A profile of the musculoskeletal characteristics of elite professional dancers. *American Journal of Sports Medicine*, *20*(3), 267-273.

Hamilton, L. H., Hamilton, W. G., Warren, M. P., Keller, K., & Molnar, M. (1997). Factors contributing to the attrition rate in elite ballet students. *Journal of Dance Medicine and Science*, *1*(4), 131-138.

Hanna, J. L. (1988). *Dance and stress: Resistance, reduction and euphoria*. New York: AMS Press.

Hanrahan, S. (2005). On stage: Mental skills training for dancers. In M.B. Andersen (Ed.), *Sport psychology in practice* (pp. 109-128). Champaign, IL: Human Kinetics.

Hanrahan, S., & Vergeer, I. (2000). Multiple uses of mental imagery by professional dancers. *Imagination, Cognition and Personality*, *20*(3), 231-255.

Hardy, C. M. (2008). *Sources of stress, coping resources and support: An insight into the interior world of the professional contemporary dancer*. (Unpublished Master's thesis). London: Laban.

Haroutounian, J. (2000). Perspectives of musical talent: a study of identification criteria and procedures. *High Ability Studies*, *11*(2), 137-160.

Harter, S. (1981). A model of intrinsic mastery motivation in children: Individual

differences and developmental change. In W. A.Collins (Ed.), *Minnesota sypmosium on child psychology* (Vol. 14, pp. 215-255). Hillsdale, NJ: Erlbaum.

Harter, S. (1987). The determinants and mediational role of global self-worth in children. In N. Eisenberg (Ed.), *Contemporary topics in developmental psychology* (pp. 219-242). New York: Wiley.

Harwood, C., Spray, C. M., & Keegan, R. (2008). Achievement goal theories in sport. In T. Horn (Ed.), *Advances in sport psychology third edition* (pp. 157-186). Champaign, IL: Human Kinetics, 157-186.

Hassandra, M., Goudas, M., & Chroni, S. (2003). Examining factors associated with intrinsic motivation in physical education: a qualitative approach. *Psychology of Sport and Exercise*, *4*, 211-223.

Hedstrom, R., & Gould, D. (2004). Research in youth sports: Critical issues status. In *White paper summaries of existing literature*. Retrieved from http://hollistonsoccer.net/image/web/coaches/CriticalIssuesYouthSports%20%282%29.pdf

Hefferon, K. M., & Ollis, S. (2006). 'Just clicks': An interpretive phenomenological analysis of professional dancers' experience of flow. *Research in Dance Education*, *7*(2), 141-159.

Hein, V., Muur, M., & Koka, A. (2004). Intention to be physically active after school graduation and its relationship to three types of intrinsic motivation. *European Physical Education Review*, *10*(1), 5-19.

Helsen, W. F., Starkes, J. L., & Hodges, N. J. (1998). Team sports and the theory of deliberate practice. *Journal of Sport and Exercise Psychology*, *20*, 12-34.

Helsen, W. F., Starkes, J. L., & Van Winckel, J. (1998). The influence of relative age on success and dropout in male soccer players*. American Journal of Human Biology*, *10*, 791-798.

Helsen, W. F., Van Winckel, J., & Williams, A. (2005). The relative age effect in youth soccer across Europe. *Journal of Sport Sciences*, *23*(6), 629-636.

Hill, G. (1993). Youth participation of professional baseball players. *Sociology of Sport Journal*, *10*(1), 107-114.

Hills, L. (2008). *Women's Sport and Fitness Foundation Guidance Note: Teenage girls and dropout*. Leicestershire: The Youth Sport Trust.

H.M. Government (2009). *Be Active, Be Healthy: A Plan for Getting the Nation Moving*. Retrieved from: www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_094359.pdf

Hodge, K., & Petlichkoff, L. (2000). Goal profiles in sport motivation: a cluster analysis. *Journal of Sport and Exercise Psychology*, *22*, 256-272.

Holmes, P. (2011). An exploration of musical communication through expressive use of timbre: The performer's perspective. *Psychology of Music* [published online pre-print], 1-23.

Holt, N. L., & Dunn, J. G. H. (2004). Toward a Grounded Theory of the psychosocial competencies and environmental conditions associated with soccer success. *Journal of Applied Sport Psychology*, *16*, 199-219.

Horn, T. S., & Amorose, A.J. (1998). Sources of competence information. In J.L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 49-63). Morgantown, WV: Fitness Information Technology.

Horn, T. S., & Weiss, M. R. (1991). A developmental analysis of children's self-ability judgements in the physical domain. *Pediatric Exercise Science*, *3*, 310-326.

Howe, M. J. A., Davidson, J. W., & Sloboda, J.A. (1998). Innate talents: reality or myth? *Behavioural and brain sciences*, *21*, 399-442.

Jackson, S .J., & Eklund, R. C. (2004). *The flow scales manual*. Morgantown, VW: Fitness Information Technology.

Jago, R., Davis, L., McNeill, J., Sebire, S. J., Haase, A., Powell, J., & Cooper, A. R. (2011). Adolescents girls' and parents' views on recruiting and retaining girls into an after-school dance intervention: Implications for extra-curricular activity provision. *International Journal of Behavioural Nutrition and Physical Activity*, *8*, 1-9.

Johns, D.P., Lindner, K.J., & Wolko, K. (1990). Understanding attrition in female competitive gymnastics: applying social exchange theory. *Sociology of Sport Journal*, *7*, 154-71.

Johnson, M. B., Tenenbaum, G., & Edmonds, W. A. (2006). Adaptation to physically and emotionally demanding conditions: the role of deliberate practice. *High Ability Studies*, *17*(1), 117-136.

Johnson, M. B., Tenenbaum, G., Edmonds, W. A., & Castillo, Y. (2008). A comparison of the developmental experiences of elite and sub-elite swimmers: Similar developmental histories can lead to differences in performance level. *Sport, Education, and Society*, *13*(4), 453-475.

Johnson, R.B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Education Research*, *33*(7), 14-26.

Jones, G., Hanton, S., & Connaughton, D. (2007). A framework of mental toughness in the world's best performers. *Sport Psychologist*, *21,* 243-264.

Jowett, S. & Poczwardowski, A. (2007). Understanding the coach-athlete relationship. In S. Jowett & D. Lavallee (Eds.), *Social psychology in sport* (pp 3-14). Champaign IL: Human Kinetics.

Joynson, K., Hui, A., & Stickley, T. (2009). *An evaluation of the development of Young@Heart, a dance project for older people*. Nottingham: Dance4.

Kadel, N. J., Donaldson-Fletcher, E. A., Gerberg, L. F. & Micheli, L. J. (2005). Anthropometric measurements of young ballet dancers: examining body composition, puberty, flexibility, and joint range of motion in comparison with non-dancer controls. *Journal of Dance Medicine and Science*, *9*(3&4), 84-90.

Kamin, S., Richards, H., & Collins, D. (2007). Influences on the talent development process of non-classical musicians: psychological, social and environmental influences. *Music Education Research*, 9(3), 449-468.

Kanters, M. A., Bocarro, J., & Casper, J. (2008). Supported or pressured? An examination of agreement among parents and children on parent's role in youth sports. *Journal of Sport Behavior*, *31*, 64-80.

Kay, T. (2000). Sporting excellence: A family affair? *European Physical Education Review*, *6*(2), 151-169.

Keay, J., & Spence, J. (2009). *Essentially Dance pilot project evaluation report*. London: Roehampton University.

Keegan, R. J., Harwood, C. G., Spray, C. M., & Lavallee, D. E. (2009). A qualitative investigation exploring the motivational climate in early-career sports participants: Coach, parent and peer influences on sport motivation. *Psychology of Sport and Exercise*, *10*(3), 361-372.

Keegan, R., Spray, C., Harwood, C., & Lavallee, D. (2010). The motivational atmosphere in youth sport: coach, parent and peer influences on motivation in specialising sport participants. *Journal of Applied Sport Psychology*, *22*, 87-105.

Kelley, H. H., & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence.* New York: Wiley.

Kenny, D. T., & Osborne, M. S. (2006). Music performance anxiety: New insights from young musicians. *Advances in Cognitive Psychology*, *2*(2-3), 103-112.

Khan, K., Bennell, K., Ng, S., Matthews, B., Roberts, P., Nattrass, C., Way, S., & Brown, J. (2000). Can 16-18 year old elite ballet dancers improve their hip and ankle range of motion over a 12-month period? *Clinical Journal of Sport Medicine*, *10*, 98-103.

Khan, K., Roberts, P., Nattrass, C., Bennell, K., Mayes, S., Way, S., Brown, J., McMeeken, J., & Wark, J. (1997). Hip and ankle range of motion in elite

classical ballet dancers and controls. *Clinical Journal of Sport Medicine*, *7*, 714-179.

Kelly, A.B., & Halford, K. (2007). Responses to ethical challenges in conducting research with Australian adolescents. *Australian Journal of Psychology, 59*(1), 24-33.

Kirk, D. (2005). Physical education, youth sport and lifelong participation: the importance of early learning experiences. *European Physical Education Review*, *11*(3), 239-255.

Kjønniksen, L., Anderssen, N. & Wold, B. (2009). Organized youth sport as a predictor of physical activity in adulthood. *Scandinavian Journal of Medicine & Science in Sports*, *19*, 646–654.

Kirkendall, D. T., & Calabrese, L. H. (1983). Physiological aspects of dance. *Clinics in Sports Medicine*, *2*(3), 525-537.

Klausen, K., Schibye, B., Jespersen, B., & Jensen, K. (1989). A longitudinal study of changes in physical performance of 10 to 15 year old girls and boys. In S. Oseid & K. H. Carlsen (Eds.), *International series on sport sciences volume 19* (pp. 113-121). Champaign, IL: Human Kinetics.

Klemp, P., & Learmonth, I. D. (1984). Hypermobility and injuries in a professional ballet company. *British Journal of Sports Medicine*, *18*, 143-148.

Klint, K. A. (1985). *Participation motives and self-perceptions of current and former athletes in youth gymnastics*. (Unpublished Master's thesis). Eugene: University of Oregon.

Klint, K., & Weiss, M. (1986). Dropping in and dropping out: participation motives of current and former youth gymnasts. *Canadian Journal of Applied Sport Science*, *11*(2), 106-14.

Klint, K. A., & Weiss, M. R. (1987). Perceived competence and motives for participating in youth sports: A test of Harter's Competence Motivation Theory. *Journal of Sport Psychology*, *9*, 55-65.

Knott, M. (2005). Identifying the gifted and talented dancer led by Lorna Sanders. *Dance Matters*, *42*, 19.

Kogan, N. (2002). Careers in the performing arts: A psychological perspective. *Creativity Research Journal*, *14*(1), 1-16.

Koukouris, K. (1991). Quantitative aspects of the disengagement process of advanced and elite Greek male athletes from organised competitive sport. *Journal of Sport Behaviour*, *14*(4), 227-246.

Koutedakis, Y., & Jamurtas, A. (2004). The dancer as a performing athlete: physiological considerations. *Sports Medicine*, *34*(10), 651-661.

Koutedakis, Y., Pacy, P., Sharp, N. C. C., & Dick, F. (1996). Is fitness necessary for dancers? *Dance Research*, *14*(2), 105-118.

Koutedakis, Y., & Sharp, C. (1999). *The fit and healthy dancer*. Chichester: John Wiley and Sons.

Koutedakis, Y., Stavropoulos-Kalinoglou, A. & Metsios, G. (2005). The significance of muscular strength in dance. *Journal of Dance Medicine and Science*, *9*(1), 29-34.

Krane, V., Andersen, M. B. and Strean, W. B. (1997). Issues of qualitative research methods and presentation. *Journal of Sport and Exercise Psychology*, *19*, 213-218.

Krasnow, D., & Chatfield, S. (2009). Development of the "Performance Competence Evaluation Measure": Assessing qualitative aspects of dance performance. *Journal of Dance Medicine and Science*, *13*(4), 101-107.

Krauss, S.E. (2005). Research paradigms and meaning making: A primer. *Qualitative Report*, *10*(4), 758-70.

Krinanthi, G., Konstantinos, M., & Andreas, G. (2010). Self-determination and sport commitment: An evaluation by university intramural participants. *International Journal of Fitness, 6*(1), 41-52.

Lacaille, N., Koestner, R., & Gaudreau, P. (2007). On the value of intrinsic rather than traditional achievement goals for performing artists: a short-term prospective study. *International Journal of Music Education*, *25*(3), 245-257.

Lacaille, N., Whipple, N., & Koestner, R. (2005). Re-evaluating the benefits of performance goals: The relation of goal type to optimal performance for musicians and athletes. *Medical Problems of Performing Artists*, *20*, 11-16.

Lafrenière, M., Jowett, S., Vallerand, R. J., Donahue, E. G., & Lorimer, R. (2008). Passion in sport: On the quality of the coach-player relationship. *Journal of Sport and Exercise Psychology, 30 541-560.*

Landers, D. M. (1982). Whatever happened to theory testing in sport? In L. M. Wankel & R. B. Wilberg (Eds.), *Proceedings of the annual conference of the Canadian Society for Psychomotor Learning and Sport Psychology* (pp. 88-104). Edmonton: University of Alberta.

Law, M. P., Côté, J., & Ericsson, K. A. (2007). Characteristics of expert development in rhythmic gymnastics: A retrospective study. *International Journal of Sport and Exercise Psychology*, *5*, 82-103.

Laws, H. (2005). *Fit to dance 2: Report of the second national inquiry into dancers' health and injury in the UK.* London: Dance UK.

Le Bars, H., Gernigon, C., & Ninot, G. (2009). Personal and contextual determinants

of elite young athletes' persistence or dropping out over time. *Scandinavian Journal of Medicine and Science in Sports*, *19*, 274-285.

Lee, S. A. (2001). Adolescent issues in a psychological approach to dancers. *Journal of Dance Medicine and Science*, *5*(4), 121-126.

Leo, F. M., Sánchez, P. A., Sánchez, D., Amado, D., & García Calvo, T. (2009). Influence of the motivational climate created by coach in the sport commitment in youth basketball players. *Revista de Psicología del Deporte*, *18*, 375-378.

Legg, S., Mackie, H., & Park, N. (2005). Characteristics of twelve New Zealand champion Olympic class sailors. *New Zealand Journal of Sports Medicine*, *33*(2), 58-60.

Lidor, R., Côté, J., & Hackfort, D. (2009). ISSP Position Stand: To test or not to test? The use of physical skills tests in talent detection and in early phases of sport development. *Interantional Journal of Sport and Exercise Psychology*, *7*, 131-146.

Lindner, K. J., Caine, D. J., & Johns, D. P. (1991). Withdrawal predictors among physical and performance characteristics of female competitive gymnasts. *Journal of Sport Sciences*, *9*, 259-272.

Lloyd, J., & Fox, K. R. (1992). Achievement goals and motivation to exercise in adolescent girls: A preliminary intervention study. *British Journal of Physical Education Research Supplement*, *11*, 12-16.

Lloyd, P., Mayes, A., Manstead, A. S. R., Mendell, P. R., & Wagner, H. L. (1999). *Introduction to psychology: An integrated approach*. London: Fontana.

Londino, L. J. (2006). *Tiger Woods: A biography*. Westport, Conn.: Greenwood Press.

Loughead, T. M., Colman, M. M., & Carron, A. V. (2001). Investigating the mediational relationship of leadership, class cohesion, and adherence in an exercise setting. *Small Group Research*, *32*, 558-575.

Lukwu, R. M., & Guzmán, J. F. (2011). Sport commitment and adherence: A social-cognitive analysis. *Revista Internacional de Ciencas del Deporte*, *25*(7), 277-286.

MacNamara, A., Button, A., & Collins, D. (2010a). The role of psychological characteristics in facilitating the pathway to elite performance. Part I: Identifying mental skills and behaviours. *The Sport Psychologist*, *24*, 52-73.

MacNamara, A., Button, A., & Collins, D. (2010b). The role of psychological characteristics in facilitating the pathway to elite performance. Part II: Examining environmental and stage-related differences in skills and

behaviours. *The Sport Psychologist*, *24*, 74-96.

Macnamara, A., & Collins, D. (2009). More than the 'X' factor! A longitudinal investigation of the psychological characteristics of developing excellence in musical development. *Music Education Research*, *11*(3), 377-392.

Macnamara, A., Holmes, P., & Collins, D. (2008). Negotiating transitions in musical development: the role of psychological characteristics of developing excellence. *Psychology of Music*, *36*(3), 335-352.

Maffulli, N., Baxter-Jones, A. D. G., & Grieve, A. (2005). Long term sport involvement and sport injury rate in elite young athletes. *Archives of Disease in Childhood*, *90*, 525-527.

Maffulli, N., King, J. B., & Helms, P. (1994). Training in elite young athletes (the training of young athletes (TOYA) study): injuries, flexibility and isometric strength. *British Journal of Sports Medicine*, *28*(2), 123-135.

Mageau, G. A., & Vallerand, R. J. (2007). The moderating effect of passion on the relation between activity engagement and positive affect. *Motivation and Emotion*, *31*, 312-321.

Mageau, G. A., Vallerand, R. J., Charest, J., Salvy, S. J., Lacaille, N., Bouffard, T., & Koestner, R. (2009). On the development of harmonious and obsessive passion: the role of autonomy support, activity specialisation and identification with the activity. *Journal of Personality*, *77*(3), 601-646.

Mageau, G. M., Vallerand, R. J., Rousseau, F. L., Ratelle, C. F., & Provencher, P. J. (2005). Passion and gambling: Investigating the divergent affective and cognitive consequences of gambling. *Journal of Applied Social Psychology*, *35*, 100-118.

Mahoney, J. L., & Cairns, R. B. (1997). Do extracurricular activities protect against early school dropout? *Developmental Psychology*, *33*(2), 241-253.

Mahoney, M. J., Gabriel, T. J., & Perkins, T. S. (1987). Psychological skills and exceptional athletic performance. *The Sport Psychologist*, *1*, 181-199.

Malina, R. M. (1994). Physical growth and biological maturation of young athletes. *Exercise and Sport Sciences Reviews*, *22*(1), 280-284.

Mallett, C. J., & Hanrahan, S. J. (2004). Elite athletes: why does the 'fire' burn so brightly? *Psychology of Sport and Exercise*, *5*, 183-200.

Marchant-Haycox, S. E., & Wilson, G. D. (1992). Personality and stress in performing artists. *Personality and Individual Differences*, *13*(10), 1061-1068.

Marsh, H. W. (1987). The big-fish-little-pond effect on academic self-concept. *Journal of Educational Psychology*, *79*, 280-295.

Marsh, H. W. (1989). Age and sex effects in multiple dimensions of self-concept: pre-adolescence to early-adulthood. *Journal of Behavioural Medicine*, *20*, 67-83.

Marsh, H. W. (1993). Academic self-concept: Theory, measurement and research. In J. Suls (Ed.), *Psychological Perspectives on the Self Vol. 4* (pp. 59-98). Hillsdale, NJ: Erlbaum.

Martens, R. (1975). The paradigmatic crisis in American personology. *Sportwissenschaft*, *5*, 9-24.

Martens R. (1996). Turning kids on to physical activity for a lifetime. *Quest*, *48*, 303-10.

Martindale, R. J. J., Collins, D., & Daubney, J. (2005). Talent development: a guide for practice and research in sport. *Quest*, *57*(4), 353-375

McCarthy, P. J. & Jones, M. V. (2007). A qualitative study of sport enjoyment in the sampling years. *The Sport Psychologist*, *21*, 400-416.

McCormack, M., Briggs, J., Hakim, A., & Grahame, R. (2004). Joint laxity and the benign joint hypermobility syndrome in student and professional ballet dancers. *The Journal of Rheumatology*, *31*(1), 173-178.

McCullagh, P., Matzkanin, K. T., Shaw, S.D., & Maldonado, M. (1993). Motivation for participation in physical activity: a comparison of parent-child perceived competencies and participation motives. *Pediatric Exercise Science*, *5*, 224-233.

McDonough, M. H., & Crocker, P. R. E. (2005). Sport participation motivation in young adolescent girls: The role of friendship quality and self-concept. *Research Quarterly for Exercise and Sport*, *76*(4), 456-467.

McPherson, B., Marteniuk, R., Tihanyi, J., & Clark, W. (1980). The social system of age group swimmers: The perceptions of swimmers, parents and coaches. *Canadian Journal of Applied Sport Psychology*, *5,* 142-145.

McPherson, G., & Davidson, J. (2002). Musical practice: Mother and child interactions during the first year of learning an instrument. *Music Educatio Research*, *4*(1), 141-156.

Mellalieu, S. D., Hanton, S., & O'Brien, M. (2004). Intensity and direction of competitive anxiety as a function of sport type and experience. *Scandinavian Journal of Medicine Science and Sports*, *14*, 326-334.

Mennesson, C. (2009). Being a man in dance: Socialisation modes and gender identities. *Sport in Society*, *2*, 174-195.

Mersch, F. & Stoboy, H. (1989). Strength training and muscle hypertrophy in children. In S. Oseid & K. H. Carlsen (Eds.), *International series on sport*

sciences volume 19 (165-181). Champaign, IL: Human Kinetics.

Micheli, L. J., Gerbino, P. G., Solomon, R., & Solomon, J. (1999). Dance medicine. *Harvard Orthopaedic Journal*, *1*(1), 67-70.

Milliken, L. A., Faigenbaum, A. D., Loud, R. L., & Westcott, W. (2008). Correlates of upper and lower body muscular strength in children. *Journal of Strength and Conditioning Research*, *22*, 1339-1346.

Minton, S., & McGill, K. (1998). A study of the relationships between teacher behaviours and student performance on a spatial kinaesthetic awareness test. *Dance Research Journal*, 30(2), 39-52.

Mittleman, K. D., Keegan, M., & Collins, C. L. (1992). Physiological, nutritional and training profile of university modern dancers. *Medical Problems of Performing Artists*, *7*(3), 92-96.

Molinero, O., Salguero, A., Alvarez, E., & Marquez, S. (2009). Reasons for dropout in youth soccer: a comparison with other team sports. *European Journal of Human Movement*, *22*, 21-30.

Molinero, O., Salguero, A., Tuero, C., Alvarez, E., & Marquez, S. (2006). Dropout reasons in young Spanish athletes: Relationship to gender, type of sport and level of competition. *Journal of Sport Behavior*, *29*(3), 255-69.

Monsaas, J.A. (1985). Learning to be a world-class tennis player. In B.S. Bloom (Ed.), *Developing talent in young people* (pp. 211-269). New York: Ballatine Books.

Moran-Ellis, J., Alexander, V. D., Cronin, A., Dickinson, M., Fielding, J., Sleney, J., & Thomas, H. (2006). Triangulation and integration: processes, claims and implications. *Qualitative Research*, *6*(1), 45-9.

Morris, T. (2000). Psychological characteristics and talent identification in soccer. *Journal of Sports Sciences*, *18*, 715-726.

Morrow, V. (2008). Ethical dilemmas in research with children and young people about their social environments. *Children's Geographies, 6*(1), 49-61.

Morrow, V., & Richards, M. (1996). The ethics of social research with children: An overview. *Children and Society, 10*, 90-105.

Musch, J., & Grondin, S. (2001). Unequal competition as an impediment to personal development: A review of the relative age effect in sport. *Developmental Review*, *21*, 147-167.

National Association for Sport and Physical Education Position Statement (2010). *Guidelines for participation in youth sports: Specialisation versus multiple-sport participation*. Reston, VA: American Alliance for Health, Physical Education, Recreation and Dance.

Neil, R., Fletcher, D., Hanton, S., & Mellalieu, S.D. (2007). Reconceptualising competition stress in sport performers. *Sport & Exercise Psychology Review*, *3*, 23-29.

Neumärker, K. J., Bettle, N., Neumärker, U., & Bettle, O. (2000). Age-and gender-related psychological characteristics of adolescent ballet dancers. *Pschopathology*, *33*, 137-142.

Newman, B. (2009). Outstander achiever. *Dancing Times*, *99*(1184), 15-17.

Newton, M., Duda, J. L., & Yin, Z. (2000). Examination of the psychometric properties of the Perceived Motivational Climate in Sport Questionnaire–2 in a sample of female athletes. *Journal of Sport Sciences*, *18*, 275–290.

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review*, *91*, 328-346.

Nicholls, J. G. (1989). *The competitive ethos and democratic education.* Cambridge, MA: Harvard University Press.

Nieminen, P. (1998a). Motives for dancing among Finnish folk dancers, competitive ballroom dancers, ballet dancers and modern dancers. *Physical Education and Sport Pedagogy*, *3*(1), 22-34.

Nieminen, P. (1998b). Participation motives in relation to background and involvement variables among Finnish non-professional dancers. *Dance Research Journal*, *30*(2), 53-70.

Nieuwenhuis, C. F., Spamer, E. J., & Van Rossum, J. H. A. (2002). Prediction function for identifying talent in 14- to 15-year old female field hockey players. *High Ability Studies*, *13*(1), 21-33.

Noh, Y. E., Morris, T., & Andersen, M. B. (2007). Psychological intervention programs for reduction of injury in ballet dancers. *Research in Sports Medicine: An International Journal*, *15*(1), 13-32.

Noice, T., & Noice, H. (2002). The expertise of professional actors: a review of recent research. *High Ability Studies*, *13*(1), 7-19.

Nordin, S. M. & Hardy, C. (2009). *Dance4Health: A research-based evaluation of the impact of seven community dance projects on physical health, psychological wellbeing and aspects of social inclusion*. Warwickshire: County Arts Service.

Nordin, S. M., & Cumming, J. (2005). Professional dancers describe their imagery: Where, when, what, why and how. *The Sport Psychologist*, *19*, 396-416.

Nordin, S. M., & Cumming, J. (2006a). The development of imagery in dance: Part I. Qualitative data from professional dancers. *Journal of Dance Medicine and*

Science, *10*(1&2), 21-27.

Nordin, S. M., & Cumming, J. (2006b). The development of imagery in dance: Part II. Quantitative data from a mixed sample of dancers. *Journal of Dance Medicine and Science*, *10*(1&2), 28-34.

Nordin, S. M., & Cumming, J. (2006c). Measuring the content of dancers' images: Development of the Dance Imagery Questionnaire (DIQ). *Journal of Dance Medicine and Science*, *10*(3&4), 85-98.

Nordin, S. M., & Cumming, J. (2007). Where, when, and how: A quantitative account of dance imagery. *Research Quarterly for Exercise and Sport*, *78*(4), 390-395.

Nordin, S. M, & Cumming, J. (2008). Exploring common ground: Comparing the imagery of dancers and aesthetic sport performers. *Journal of Applied Sport Psychology*, *20*(4), 375-391

Nordin-Bates, S. M., Cumming, J., Aways, D. & Sharp, L. (2011). Imagining yourself dancing to perfection? Cognitive correlates of perfectionism among ballet and contemporary dancers. *Journal of Clinical Sport Psychology, 5*, 58-76.

Nordin-Bates, S. M., Quested, E., Walker, I. J., & Redding, E. (2012). Climate change in the dance studio: findings from the UK Centres for Advanced Training. *Sport, Exercise and Performance Psychology*, *1*(1), 3-16.

Nordin-Bates, S. M., Walker, I. J., Jola, C., Hardy, C., Irvine, S. J., Laws, H., & Blevins, P. (2011). Injury, imagery and self-esteem in dance: Healthy minds in injured bodies? *Journal of Dance Medicine and Science*, *15*(2), 76-85.

Nordin-Bates, S. M., Walker, I. J., & Redding, E. (2011). Correlates of disordered eating attitudes among male and female young talented dancers: Findings from the UK Centres for Advanced Training. *Eating Disorders: The Journal of Treatment and Prevention*, *19*(3), 211-233.

Ntoumanis, N., & Biddle, S. J. H. (1999). A review of motivational climate in physical activity. *Journal of Sport Sciences*, *17*, 643-665.

Ntoumanis, N., Vazou, S., & Duda, J. L. (2007). Peer-created motivational climate. In S. Jowett & D. Lavallee (Eds.), *Social psychology in sport* (pp. 146-155). Champaign, IL: Human Kinetics.

O'Donoghue, P., & Jones, E. L. (2007). *Motivated behaviour in a university dance environment*. Paper presented at the 17th Annual Meeting of the International Association of Dance Medicine and Science, October 25-27, in Canberra, Australia.

Olsen, H. (1995). Quantitative "versus" qualitative research: The wrong question. Retrieved from http://www.ualberta.ca/dept/slis/cais/olson.htm

Ommundsen, Y., & Vaglum, P. (1997). Competence, perceived importance of

competence and dropout from soccer: A study of young players. *Scandanavian Journal of Medicine and Science in Sports*, *7*(6), 373-83.

Oreck, B. (2005). A powerful conversation: Teachers and artists collaborate in performance-based assessment. *Teaching Artist Journal*, *3*(4), 220-227.

Oreck, B., Baum, S., & McCartney, H. (2000). *Artistic talent development for urban youth: The promise and the challenge.* Research monograph for the National Research Center on the Gifted and Talented at the University of Connecticut, Storrs.

Oreck, B., Owen, S., & Baum, S. (2004). Validity, reliability and equity issues in an observational talent assessment process in the performing arts. *Journal for the Education of the Gifted*, *27*(2), 62-94.

Orlick, T. (1992). The psychology of personal excellence. *Contemporary Thought on Performance Enhancement*, *1*, 109-122.

Orlick, T., & Partington, J. (1988). Mental links to excellence. *The Sport Psychologist*, *2*, 105-130.

Ortega, F. B., Ruiz, J. R., Castillo, M. J., & Sjöström, M. (2008). Physical fitness in childhood and adolescence: A powerful marker of health. *International Journal of Obesity*, *32*, 1-11.

Padfield, J. A., Eisenman, P. A., Luetkemeier, M. J., & Fitt, S. S. (1993). Physiological profiles of performing and recreational early adolescent female dancers. *Pediatric Exercise Science*, *5*, 51-59.

Papaioannou, A., Bebetsos, E., Theodorakis, Y., Christodoulidis, T., & Kouli, O. (2006). Causal relationships of sport and exercise involvement with goal orientations, perceived competence and intrinsic motivation in physical education: A longitudinal study. *Journal of Sport Sciences*, *24*(4), 367-382.

Pallant, J. (2007). SPSS Survival Manual, 3rd Edition. Berkshire: Open University Press.

Patrick, H., Ryan, A. M., Alfeld-Lido, C., Fredricks, J. A., Hruda, L. Z., & Eccles, J. S. (1999). Adolescents' commitment to developing talent: the role of peers in continuing motivation for sports and the arts. *Journal of Youth and Adolescence*, *28*(6), 741-763.

Patton, M. Q. (2002). *Qualitative Evaluation and Research Methods*. Thousand Oaks, CA: Sage.

Peduzzi, P., Concato, J., Kemper, E., Holford, T. R., & Feinstein, A. R. (1996). A simulation study of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology*, *49*, 1373-1379.

Pelletier L. G., Fortier, M. S., Vallerand, R. J., & Brière, N. M. (2001). Associations

among perceived autonomy support, forms of self-regulation, and persistence: A prospective study. *Motivation and Emotion*, *25*(4), 279-306.

Pelletier, L. G., & Sarrazin, P. (2007). Measurement issues in Self-Determination Theory and sport. In M. S. Hagger & N. L. D. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 143-152). Champaign IL: Human Kinetics.

Penedo, F. J., & Dahn, J.R. (2005). Exercise and well-being: A review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry*, *18*(2), 189-93.

Pensgaard, A. M., & Roberts, G. C. (2002). Elite athletes' experiences of the motivational climate: The coach matters. *Scandinavian Journal of Medicine and Science in Sports*, *12*(1), 54-59.

Philippe, F., Vallerand, R. J., Houlfort, N., Lavigne, G. L., & Donahue, E. G. (2010). Passion for an activity and quality of interpersonal relationships: The mediating role of emotions. *Journal of Personality and Social Psychology*, *98*(6), 917-932.

Philippe, F., Vallerand, R. J., Lavigne, G. (2009). Passion does make a difference in people's lives: A look at well-being in passionate and non-passionate individuals. *Applied Psychology: Health and Well-Being*, *1*, 3-22.

Phillips, C. (1999). Strength training of dancers during the adolescent growth spurt. *Journal of Dance Medicine and Science*, *3*(2), 66-72.

Phillips, N., & Lindsay, G. (2006). Motivation in gifted students. *High Ability Studies*, *17*(1), 57-73.

Pickard, A. (2006). *Sustaining motivation – fostering excellence from the perspective of young talented dancers*. Paper presented at the Dance UK Healthier Dancer Conference, In the Balance, 10 October, in Birmingham.

Pickard, A. (2007a). Girls, bodies and pain: Negotiating the body in ballet. In I. Wellard (Ed.), *Rethinking gender and youth sport* (pp. 38-50). London: Routledge.

Pickard, A. (2007b). *'My hobby has become my ambition': Motivating factors from the perspective of young talented dancers*. Paper presented at the From Cognition to Conditioning: the One-day UK Dance Science Forum, 19 February, in London, England.

Pickard, A., & Bailey, R. (2009). Crystallising experiences among young elite dancers. *Sport, Education and Society*, *14*(2), 165-181.

Pienaar, A. E., Spamer, M. J., & Steyn, H. S. (1998). Identifying and developing rugby talent among 10-year-old boys: A practical model. *Journal of Sports*

Sciences, *16*, 691-699.

Pummell, B., & Lavallee, D. (2009). *Development of a model of junior-to-senior transition*. Paper presented at the 12th International Society of Sport Psychology World Congress of Sport Psychology, 17-21 June, in Marrakech, Morocco.

Punch, M. (1994). Politics and ethics in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 83-97). Thousand Oaks, CA: Sage.

Pitts, S., Davidson, J., & McPherson, G. (2000). Models of success and failure in instrumental learning: Case studies of young players in the first 20 months of learning. *Bulletin of the Council for Research in Music Education*, *146,* 51-69.

Quested, E., & Duda, J. L. (2009). Perceptions of the motivational climate, need satisfaction and indices of well- and ill-being among hip hop dancers. *Journal of Dance Medicine and Science*, *13*(1), 10-19.

Quested, E., & Duda, J. L. (2010). Exploring the social-environmental determinants of well- and ill-being in dancers: A test of basic needs theory. *Journal of Sport and Exercise Psychology*, *32*(1), 39-60.

Quick, S., Dalziel, D., Thornton, A., & Rayner, S. (2008). *School sports survey 2007/2008*. Department for Children, Schools and Families. Retrieved from: www.education.gov.uk/publications/eOrderingDownload/DCSF-RW063.pdf

Quin, E., Frazer, L., & Redding, E. (2007). The health benefits of creative dance: Improving children's physical and psychological well-being. *Education and Health*, *25*(2), 31-3.

Raedeke, T. D. (1997). Is athlete burnout more than just stress? A sport commitment perspective. *Journal of Sport and Exercise Psychology*, *19*, 396-417.

Rafferty, S., & Wyon, M. (2006). Application of the Leadership Scale for Sports to dance technique teaching. *Journal of Dance Medicine and Science*, *10*(1-2), 6-13.

Ramphal, V., & Alake, O. (2010). *Developing progression routes for young Kathak and Bharatanatyam dancers: A research report*. Birmingham: Centre for Advanced Training for South Asian and Contemporary Dance.

Redding, E., Blazy, L., Quin, E. & Connolly, M. K. (2011). *Scientific research:*

Dance and wellbeing for young people. Paper presented at From motivation to movement: Toward an empirical understanding of dance in health. University of Bedforshire, 25 June.

Redding, E., Nordin-Bates, S. M., & Walker, I. J. (2011). *Passion, pathways and potential in dance: An interdisciplinary longitudinal study into dance talent development.* Retrieved from: www.trinitylaban.ac.uk/passion

Régnier, G., & Salmela, J. (1987). Predictors of success in Canadian male gymnasts. In B. Petiot, J. H. Salmela & T. B. Hoshizaki (Eds.)., *World Identification Systems for Gymnastic Talent* (pp. 143-150). Montreal: Sport Psyche Editions.

Reilly, T., Williams, A. M., Nevill, A., & Franks, A. (2000). A multidisciplinary approach to talent detection in soccer. *Journal of Sports Sciences*, *18*, 695-702.

Renzulli, J. (1978). What makes giftedness? Reexamining a definition. *Phi Delta Kappan*, *60*, 180-184.

Rimmer, J. H., Jay, D., & Plowman, S. A. (1994). Physiological characteristics of trained dancers and intensity level of ballet class and rehearsal. *Impulse*, *2*, 97-105.

Rip, B., Fortin, S., & Vallerand, R. J. (2006). The relationship between passion and injury in dance students. *Journal of Dance Medicine and Science*, *10*(1-2), 14-20.

Robertson-Wilson, J., Baker, J., Derbyshire, E., & Côté, J. (2003). Childhood physical activity involvement in active and inactive females. *Avante*, *9*(1), 1-8.

Robinson, T. T, & Carron, A. V. (1982). Personal and situational factors associated with dropping out versus maintaining participation in competitive sport. *Journal of Sport Psychology*, *4*, 364-78.

Robson, B. E. (2001). Adolescent development: how dancers compare with the typical teenager. *Medical Problems of Performing Artists*, *16*(3), 109-114.

Robson, B. E. (2002). Disordered eating in high school dance students: Some practical considerations. *Journal of Dance Medicine and Science*, *6*(1), 7-13.

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press.

Ruiz, J. R., Ortega, F. B., Gutierrez, A., Meusel, D., Sjostrom, M., & Castillo, M. J. (2006). Health-related fitness assessment in childhood and adolescence: a European approach based on the AVENA, EYHS and HELENA studies. *Journal of Public Health*, *14*(5), 269-277.

Rusbult, C. E. (1980). Commitment and satisfaction in romantic associations: A test

of the investment model. *Journal of Experimental Social Psychology*, *16*(2), 172-186.

Rutt-Leas, R., &. Chi, M. T. H. (1993). Analysing diagnostic expertise of competitive swimming coaches. In J.L. Starkes & F. Allard (Eds.), *Cognitive issues in motor expertise* (pp. 75-94). Amsterdam: Elsevier Science Publishing.

Ryan, R. M., & Deci, E. L. (2000). Self determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68-78.

Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory: An organisimic-dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination theory research* (pp.3-33). Rochester, NY: University of Rochester Press.

Ryan, R. M., Frederick, C. M., Lepes, D., Rubio, N., & Sheldon, K. M. (1997). Intrinsic motivation and exercise adherence. *International Journal of Sport Psychology*, *28*, 335-354.

Ryba, T. (2007). Cartwheels on ice: A phenomenological exploration of children's enjoyment in competitive figure skating. *Athletic Insight*, *9*(2). Retrieved from www.athleticinsight.com/Vol9Iss2/IcePDF.pdf

Ryska T. D., Hohensee, D., Cooley, D., & Jones, C. (2002). Participation motives in predicting sport dropout among Australian youth gymnasts. *North American Journal of Psychology*, *4*(2), 199-210.

Salguero, A., Gonzalez-Boto, R., Tuero, C., & Marquez, S. (2003a). Development of a Spanish version of the Participation Motivation Inventory for young competitive swimmers. *Perceptual and Motor Skills*, *96*(2), 637-646.

Salguero, A., Gonzalez-Boto, R., Tuero, C., & Marquez, S. (2003b). Identification of dropout reasons in young competitive swimmers. *Journal of Sport Medicine and Physical Fitness*, *43*(4), 530-34.

Sanders, L. (2006). *Gifted and talented dancers: A resource booklet for teachers*. Commissioned by the Dance Network.

Sapp, M., & Haubenstricker, J. (1978). *Motivation for joining and reasons for not continuing in youth sport programs in Michigan*. Paper presented at the American Alliance for Health, Physical Education, Recreation and Dance annual conference, Kansas City, MO, April.

Sarrazin, P., Vallerand, R., Guillet, E., Pelletier, L., & Cury, F. (2002). Motivation and dropout in female handballers: A 21-month prospective study. *European Journal of Social Psychology*, *32*(3), 395-418.

Scanlan, T. K., Carpenter, P. J., Lobel, M., & Simons, J. P. (1993a). Sources of

enjoyment for youth sport athletes. *Pediatric Exercise Science*, *5*, 275-285.

Scanlan, T. K., Carpenter, P. J., Schmidt, G. W., Simons, J. P., & Keeler, R. (1993b). An introduction to the sport commitment model. *Journal of Sport & Exercise Psychology*, *15*, 1-15.

Scanlan, T. K., & Lewthwaite, R. (1986). Social psychological aspects of competition for male youth sport participants: IV. Predictors of enjoyment. *Journal of Sport Psychology*, *8*(1), 25-35.

Scanlan, T. K., Russell, D. G., Beals, K. P., & Scanlan, L. A. (2003). Project on elite athlete commitment (PEAK): II. A direct test and expansion of the sport commitment model with elite amateur sportsmen. *Journal of Sport and Exercise Psychology*, *25*(3), 377-401.

Scanlan, T. K., Russell, D. G., Magyar, T. M., & Scanlan, L. A. (2009). Project on elite athlete commitment (PEAK): III. An examination of the external validity across gender, and the expansion and clarification of the sport commitment model. *Journal of Sport and Exercise Psychology*, *31*, 685-705.

Scanlan, T. K., Simons, J. P., Carpenter, P. J., Schmidt, G. W., & Keeler, R. (1993c). The sport commitment model: Measurement development for the youth-sport domain. *Journal of Sport and Exercise Psychology*, *15*, 16-28.

Scanlan, T. K., Stein, G. L., & Ravizza, K. (1989). An in-depth study of former elite figure skaters: II. Sources of enjoyment. *Journal of Sport and Exercise Psychology*, *11*(1), 65-83.

Schantz, P. G., & Åstrand, P. (1984). Physiological characteristics of classical ballet. *Medicine and Science in Sports and Exercise*, *16*(5), 472-476.

Scheerder, J., Thomis, M., Vanreusel, B., Lefevre, J., Renson, R., Vanden Eynde, B., & Beunen, G. P. (2006). Sports participation among females from adolescence to adulthood: A longitudinal study. *International Review for the Sociology of Sport*, *41*(3), 413-430

Schmidt, B., Jarvis, C., & Slayford, V. (2005). Constructing a pyramid of progression for talent in dance: Dancers of the future – what are we looking for in the search for exceptionally talented young dancers? *The National Academy for Gifted and Talented Youth*. Retrieved from: www.ygt.dcsf.gov.uk/FileLinks/362_dr_ben_schmidt.pdf.

Schmidt, G. W., & Stein, G. L. (1991). Sport commitment: A model integrating enjoyment, dropout and burnout. *Journal of Sport and Exercise Psychology*, *8*, 254-265.

Schnitt, J. M., & Schnitt, D. (1987). Psychological issues in a dancer's career. In .J. Ryan & R. E. Stephens (Eds.), *Dance medicine: A comprehensive guide* (pp.

334-349). Chicago: Pluribus Press.

Scully, D., Kremer, J., Meade, M. M., Graham, R., & Dudgeon, K. (1998). Physical exercise and psychological well-being: A critical review. *British Journal of Sports Medicine*, *32*, 111-120.

Seale, C. (1999). Quality in qualitative research. *Qualitative Inquiry*, *5*(4), 4665-478.

Sefton, J. M. M, & Fry, D. A. P. (1981). *A report on participation in competitive swimming*. Saskaton, Canada: Canadian Amateur Swimming Association.

Shakib, S. (2003). Female basketball participation: Negotiating the conflation of peer status and gender status from childhood through puberty. *American Behavioural Scientist*, *46*(10), 1405-1422.

Shapiro, M., Schneider, B. H., Shore, B. M., Margison, J. A., & Udvari, S. J. (2009). Competitive goal orientations, quality, and stability in gifted and other adolescents' friendships: A test of Sullivan's Theory about the harm caused by rivalry. *Gifted Child Quarterly*, *53*, 71-88.

Shick, J., Stoner, L. J., & Jette, N. (1983). Relationship between modern-dance experience and balancing performance. *Research Quarterly for Exercise and Sport*, *54*(1), 79-82.

Shoenfelt, E. L. (1996). Goal setting and feedback as a post-training strategy to increase the transfer of training. *Perceptual and Motor Skills*, *83*, 176-178.

Siddall, J. (2010). *Dance in and beyond schools: An essential guide to dance teaching and learning*. London: Youth Dance England.

Simon, H. A., & Chase, W.G. (1973). Skill in chess. *American Scientist*, *61*, 394-403.

Singer, R., & Janelle, C. (1999). Determining sport expertise: From genes supremes. *International Journal of Sport Psychology*, *30*, 117-150.

Sloboda, J. A. (2000). Individual differences in musical performance. *Trends in Cognitive Sciences*, *4*(10), 397-403.

Sloboda, J. A., Davidson, J. W., Howe, M. J. A., & Moore, D. G. (1996). The role of practice in the development of performing musicians. *British Journal of Psychology*, *87*, 287-309.

Smith, A. L. (2007). Youth peer relationships in sport. In S. Jowett & D. Lavallee (Eds.), *Social psychology in sport* (pp 41-54). Champaign IL: Human Kinetics.

Smith, R. E. (1986). Toward a cognitive-affective model of athletic burnout. *Journal of Sport Psychology*, *8*, 36-50.

Smith, R. E., Smoll, F. L., & Cumming, S.P. (2007). Effects of a motivational climate intervention for coaches on young athletes' sport performance anxiety.

Journal of Sport and Exercise Psychology, *29*, 35-59.

Smith, R. E., Smoll, F. L., Cumming, S. P., & Grossbard, J. R. (2006). Measurement of multidimensional sport performance anxiety in children and adults: The Sport Anxiety Scale-2. *Journal of Sport and Exercise Psychology*, *28*, 479-501.

Smoll, F. L., & Smith, R. E. (2002). Coaching behavior research and intervention in youth sports. In F. L. Smoll & R. E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp. 211-231). Dubuque, IA: Kendall/Hunt.

Smoll, F. L., Smith, R. E., Barnett, N. P., & Everett, J. J. (1993). Enhancement of children's self-esteem through social support training for youth sport coaches. *Journal of Applied Psychology*, *78*, 602-610.

Smyth, M. M., & Pendleton, L. R. (1994). Memory for movement in professional ballet dancers. *International Journal of Sport Psychology*, *25*, 282-294.

Soberlak, P., & Côté, J. (2003). The developmental activities of elite ice hockey players. *Journal of Applied Sport Psychology*, *15*, 41-49.

Solomon, G. B. (2001). Performance and personality impression cues as predictors of athletic performance. *International Journal of Sport Psychology*, *31,* 88-100.

Solomon, G. B., DiMarco, A. M., Ohison, C. J., & Reece, S. D (1998). Expectations and coaching experience: Is more better? *Journal of Sport Behavior*, *21,* 444-455.

Solomon, G. B., Striegel, D. A., Eliot, J. F., Heon, S. N., Maas, J. L., & Wayda, V. K. (1996). The self-fulfilling prophecy in college basketball: Implications for effective coaching. *Journal of Applied Sport Psychology*, *8,*44-59.

Sosniak, L. A. (1985). Learning to be a concert pianist. In B. S. Bloom (Ed.), *Developing talent in young people* (pp. 19-67). New York: Ballatine Books.

Sousa, C., Torregrosa, M., Viladrich, C., Villamarin, F., & Cruz, J. (2007). The commitment of young soccer players. *Psicotherma*, *19*(2), 256-262.

Sparkes, A. C. (1998). Validity in qualitative inquiry and the problem of criteria: Implications for sport psychology. *Sport Psychologist*, *12*, 363-386.

Starkes, J. L., Caicco, M., Boutilier, C., & Sevsek, B. (1990). Motor recall of experts for structured and unstructured sequences in creative modern dance. *Journal of Sport and Exercise Psychology*, *12*, 317-321.

Starkes, J. L., Deakin, J. M., Lindley, S., & Crisp, F. (1987). Motor versus verbal recall of ballet sequences by young expert dancers. *Journal of Sport Psychology*, *9*, 222-230.

Stein, G. L., & Scanlan, T. K. (1992). Goal attainment and non-goal occurrences as underlying mechanisms to an athlete's sources of enjoyment. *Pediatric Exercise Science*, *4*, 150-165.

Steinberg, N., Hershkovitz, I., Peleg, S., Dar, G., Masharawi, Y., Heim, M., & Siev-Ner, I. (2006). Range of joint movement in female dancers and nondancers aged 8-16 years: Anatomical and clinical implications. *The American Journal of Sports Medicine*, *34*(5), 814-823.

Stinson, S. W. (1997). A question of fun: Adolescent engagement in dance education. *Dance Research Journal*, *29*(2), 49-69.

Stinson, S. W., Blumenfeld-Jones, D., & Van Dyke, J. (1990). An interpretive study of meaning in dance: Voices of young women dance students. *Dance Research Journal*, *22*(2), 13-22.

Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and Social Psychology Review*, *10*(4), 295-319.

Subotnik, R. F., Olszewski-Kubilius, P., & Arnold, K. D. (2003). Beyond Bloom: Revisiting environmental factors that enhance or impede talent development. In J. H. Borland (Ed.), *Rethinking gifted education: Education and psychology of the gifted series* (pp. 227-238). New York: Teachers College Press.

Strachan, L., Côté, J., & Deakin, J. (2009). "Specialisers" versus "samplers" in youth sport: Comparing experiences and outcomes. *The Sport Psychologist*, *23*, 77-92.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics (6th Ed)*. New York: Allyn & Bacon.

Talbot-Honeck, C. & Orlick, T. (1998). The essence of excellence among elite classical musicians. *Journal of Excellence*, *1*, 66-81.

Tanner, J. M., & Whitehouse, R. H. (1976). Clinical longitudinal standards for height, weight, height velocity, weight velocity, and stages of puberty. *Archives of Disease in Childhood*, *51,* 170-179.

Tenebaum, G., Weinberg, R. S., Pinchas, S., Elbaz, G., & Bar-Eli, M. (1991). Effect of goal proximity and goal specificity on muscular endurance performance: A replication and extension. *Journal of Sport and Exercise Psychology*, *13*, 174-187.

Thibault, J. W., & Kelley, H. H. (1959). *The social psychology of groups*. New York: John Wiley.

Thomas, J. R., & Nelson, J. R. (2001). *Research methods in physical activity*

(Fourth edition). Champaign, IL: Human Kinetics.

Thompson, W. R. (2009). Providing structured health and physical activity programs in urban environments. *Journal of Physical Education, Recreation and Dance*, *80*(8), 32-34.

Tong, R. J., & Wood, G. L. (1997). A comparison of upper body strength in collegiate rugby players. In T. Reilly, J. Bangsbo & M. Hughes, (Eds.), *Science and football III: Proceedings of the third world congress of science and football* (pp. 16-20). London: Spon Press.

Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. (2002). Correlates of adults' participation in physical activity: Review and update. *Medicine and Science in Sports and Exercise*, *34*(12), 1996-2001.

Twitchett, E., Brodrick, A., Nevill, A. M., Koutedakis, Y., Angioi, M., & Wyon, M. (2010). Does physical fitness affect injury occurrence and time loss due to injury in elite vocational ballet students? *Journal of Dance Medicine and Science*, *14*(1), 26-31.

Ullrich-French, S., & Smith, A. L. (2009). Social and motivational predictors of continued youth sport participation. *Psychology of Sport and Exercise*, *10*(1), 87-95.

Ureña, C. A. (2004). *Skill acquisition in ballet dancers: the relationship between deliberate practice and expertise*. (Unpublished doctoral thesis). Florida State University.

Vaeyens, R., Malina, R. M., Janssens, M., van Renterghem, B., Bourgois, J., Vrijens, J., & Philippaerts, R. M. (2006). A multidisciplinary selection model for youth soccer: The Ghent Youth Soccer Project. *British Journal of Sports Medicine*, *40*, 928-934.

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., Gagné, M., & Marsolais, J. (2003). Les passion de l'ame: On obsessive and harmonious passion. *Journal of Personality and Social Psychology*, *85*(4), 756-767.

Vallerand, R. J., Mageau, G. A., Elliot, A. J., Dumais, A., Demers, M., & Rousseau, F. (2008). Passion and performance attainment in sport. *Psychology of Sport and Exercise*, *9*(3), 373-392.

Vallerand, R. J., & Miquelon, P. (2007). Passion for sport in athletes. In S. Jowett & D. Lavallee (Eds.), *Social Psychology in Sport* (pp.249-263). Champaign IL: Human Kinetics.

Vallerand, R. J., Ntoumanis, N., Philippe, F. L., Lavigne, G. L., Carbonneau, N., Bonneville, A., Lagace-Labonte, C., & Mahila, G. (2008). On passion and

sports fans: A look at football. *Journal of Sport Sciences*, *26*(12), 1279-1293.

Vallerand, R .J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The academic motivation scale: A measure of intrinsic, extrinsic and amotivation in education. *Educational and Psychological Measurement*, *52*, 1003-1017.

Vallerand, R. J., Paquet, Y., Philippe, F. L., & Charest, J. (2010). On the role of passion for work in burnout: A process model. *Journal of Personality*, *78*(1), 289-312.

Vallerand, R. J., Rousseau, F. L., Grouzet, F. M. E., Dumais, A., Grenier, S., & Blanchard, C. M. (2006). Passion in sport: A look at determinants and affective experiences. *Journal of Sport and Exercise Psychology*, 28, 454-478.

Vallerand, R. J., Salvy, S., Mageau, G. A., Elliot, A. J., Denis, P. L., Grouzet, F. M. E., & Blanchard, C. (2007). On the role of passion in performance. *Journal of Personality*, *75*(3), 503-534.

Van Rossum, J. H. A. (2001). Talented in dance: The Bloom Stage Model revisited in the personal histories of dance students. *High Ability Studies*, *12*(2), 181-197.

Van Rossum, J. (2004). The dance teacher: The ideal case and the daily reality. *Journal for the Education of the Gifted*, *28*(1), 36-55.

Van Rossum, J. H. A. (2006). Relative age effect revisited: Findings from the dance domain. *Perceptual and Motor Skills*, *102*, 302-308

Vazou, S., Ntoumanis, N., & Duda, J. L. (2006). Predicting young athletes' motivational indices as a function of their perceptions of the coach- and peer-created climate. *Psychology of Sport and Exercise*, *7*, 215–233.

Vlachopoulus, S. P., Karageorghis, C. I., & Terry, P. C. (2000). Motivation profiles in sport: A self-determination theory perspective. *Research Quarterly for Exercise and Sport*, *71*(4), 387-397.

Wainwright, S. P., Williams, C., & Turner, B. S. (2005). Fractured identities: Injury and the balletic body. *Health*, *9*(1), 49-66.

Walker, I. J., & Nordin-Bates, S. M. (2010). Performance anxiety experiences of professional dancers: the importance of control. *Journal of Dance Medicine and Science*, *14*(4), 133-145.

Walker, I. J., Nordin-Bates, S. M., & Redding, E. (2010). Talent identification and development in dance: A review of the literature. *Research in Dance Education*, *11*(3), 165-189.

Walker, I. J., Nordin-Bates, S. M., & Redding, E. (2011). Characteristics of talented

dancers and age group differences: Findings from the UK Centres for Advanced Training. *High Ability Studies*, *22*(1), 43-60.

Walker, I. J., Nordin-Bates, S. M., & Redding, E. (2012). A mixed methods investigation of dropout among young dancers: Findings from the UK Centres for Advanced Training. *Journal of Dance Medicine and Science, 16*(2), 65-73*.*

Wall, M., & Côté, J. (2007). Developmental activities that lead to dropout and investment in sport. *Physical Education and Sport Pedagogy*, *12*(1), 77–87.

Wankel, L., & Kreisel, P. (1985). Factors underlying enjoyment of youth sports: Sport and age group comparisons. *Journal of Sport Psychology*, *7*, 51-64.

Wankel, L. M., & Sefton, J. M. (1989). A season-long investigation of fun in youth sports. *Journal of Sport and Exercise Psychology*, *11*, 355-366.

Warburton, D. E. R., Nicol, C. W., & Bredin, S. S. D. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal*, *174*(6), 801-809.

Warburton, E. C. (2002). From talent identification to multidimensional assessment: toward new models of evaluation in dance education. *Research in Dance Education*, *3*(2), 103-121.

Watson, D. (2009). *Creativity: An exploration into the views and experiences of young dancers on a pre-vocational training programme*. (Unpublished Master's thesis). Laban.

Watson, D., Nordin-Bates**,** S. M., & Chappell, K. (2012.). Facilitating and nurturing creativity in pre-vocational dancers: Findings from the UK Centres for Advanced Training. *Research in Dance Education, 13*(2), 153-173.

Weiss, D. S., Shah, S., & Burchette, R. J. (2008). A profile of the demographics and training characteristics of professional modern dancers. *Journal of Dance Medicine and Science*, *12*(2), 41-46.

Weiss, M. R., & Amorose, A. J. (2008). Motivational orientations and sport behaviour. In T. Horn (Ed.), *Advances in sport psychology third edition* (pp. 115-156). Champaign, IL: Human Kinetics.

Weiss, M. R., Kimmel, L. A., & Smith, A. L. (2001). Determinants of sport commitment among junior tennis players: Enjoyment as a mediating variable. *Pediatric Exercise Science*, *13*, 131-144.

Weiss, M. R., & Petlichkoff, L. M. (1989). Children's motives for participation in and withdrawal from sport: Identifying the missing links. *Pediatric Exercise Science*, *1*, 195-211.

Weiss, M. R., & Smith, A. L. (2002). Friendship quality in sport: Relationship to age,

gender and motivation variables. *Journal of Sport and Exercise Psychology*, *24*, 420-437.

Weiss, W. M, & Weiss, M. R. (2006). A longitudinal analysis of commitment among competitive female gymnasts. *Psychology of Sport and Exercise*, *7*(3), 309-23.

Weiss, W. M., & Weiss, M. R. (2007). Sport commitment among competitive female gymnasts: A developmental perspective. *Research Quarterly for Exercise and Sport*, *78*(2), 90-102.

Weiss, W. M, Weiss, M. R, & Amorose, A. J. (2010). Sport commitment among competitive female athletes: Test of an expended model. *Journal of Sport Sciences*, *28*(4), 423-34.

Wellard, I., Pickard, A., & Bailey, R. (2007). 'A shock of electricity just sort of goes through my body': Physical activity and embodied reflexive practices in young female ballet dancers. *Gender and Education*, *19*(1), 79-91.

White, S. B., Philpot, A., Green, A., & Bemben, M. G. (2004). Physiological comparison between female university ballet and modern dance students. *Journal of Dance Medicine and Science*, *8*(1), 5- 10.

Wiersma, L. D. (2000). Risks and benefits of youth sport specialisation: perspectives and recommendations. *Pediatric Exercise Science*, *12*, 13-22.

Williams, A. M., & Ford, P. R. (2008). Expertise and expert performance in sport. *International Review of Sport and Exercise Psychology*, *1*(1), 4-18.

Williams, A.M., & Reilly, T. (2000). Talent identification and development in soccer. *Journal of Sport Sciences*, *18*, 657-667.

Wilmerding, M. V., McKinnon, M. M., & Mermier, C. (2005). Body composition in dancers: a review. *Journal of Dance Medicine and Science*, *9*(1), 18-23.

Wilson, M. A. & Stephens, D. E. (2007). Great expectations: An examination of the differences between high and low expectancy athletes' perception of coach treatment. *Journal of Sport Behavior*, *30*, 358-373

Winner, E. (1996). The rage to master: the decisive role of talent in the visual arts. In K. A. Ericsson (Ed.), *The road to excellence: The acquisition of expert performance in the arts and sciences, sports and games* (pp. 271-302). Mahwah, NJ: Lawrence Erlbaum Associates.

Wolfenden, L. E., & Holt, N. L. (2005). Talent development in elite junior tennis: Perceptions of players, parents and coaches. *Journal of Applied Sport Psychology*, *17*(2), 108-126.

Wolstencroft, E. (2002). *Talent identification and development: An academic review*. Edinburgh, Scotland: Sport Scotland.

Woods, E., & McDaniel, P. (1997). *Training a Tiger: A father's guide to raising a winner in both golf and life*. New York: HarperCollins.

Wooten, C. (2009). *Navigating liminal space in the feminist ballet class*. Paper presented at Global Perspectives on Dance Pedagogy Research and Practice: Congress on Research in Dance Special Conference, 26 June, De Montfort University, Leicester.

Wyon, M., Allen, N., Angioi, M., Nevill, A., & Twitchett, E. (2006). Anthropometric factors affecting vertical jump height in ballet dancers. *Journal of Dance Medicine and Science*, *10*(3&4), 106-110.

Wyon, M. A., Deighan, M. A., Nevill, A. M., Doherty, M., Morrison, S. L., Allen, N., Jobson, S. J., & George, S. (2007). The cardiorespiratory, anthropometric and performance characteristics of an international/national touring ballet company. *Journal of Strength and Conditioning Research*, *21*(2), 389-393.

Wyon, M. A., Grant, A., Redding, E., Head, A., & Sharp, N. C. C. (2004). Oxygen uptake during modern dance class, rehearsal and performance. *Journal of Strength and Conditioning Research*, *18*(3), 646-649.

Wyon, M., Head, A., Sharp, C., & Redding, E. (2003). The cardiorespiratory responses to modern dance classes: Differences between university, graduate and professional classes. *Journal of Dance Medicine and Science*, *6*(2), 41-45.

Wyon, M. A., & Redding, E. (2005). Physiological monitoring of cardiorespiratory adaptations during rehearsal and performance of contemporary dance. *Journal of Strength and Conditioning Research*, *19*(3), 611-614.

Wyon, M., Redding, E., Abt, G., Head, A., Sharp, N., & Craig, C. (2003). Development, reliability and validity of a multistage dance specific aerobic fitness test (DAFT). *Journal of Dance Medicine and Science*, *7*(3), 80-84.

Xiang, P., McBride, R., & Guan, J. (2004). Children's motivation in elementary physical education: A longitudinal study. *Research Quarterly for Exercise and Sport*, *75*, 71–80.

Xiang, P., McBride, R., Guan, J., & Solomon, M. A. (2003). Children's motivation in elementary physical education: An expectancy-value model of achievement choice. *Research Quarterly for Sport and Exercise*, *74*, 25–35.

Yang, X. L., Telama, R., & Laakso, L. (1996). Parents' physical activity, socioeconomic status and education as predictors of physical activity and sport among children and youths: A 12-year follow-up study. *International Review for the Sociology of Sport*, *31*(3), 273-291.

Young, B., & Medic, N. (2011). Examining social influences on the sport

commitment of Masters swimmers. *Psychology of Sport and Exercise, 12*(2), 168-175.

Youniss, J., & Smollar, J. (1985). *Adolescents' relations with mothers, fathers, and friends.* Chicago: University of Chicago Press.

Zahariadis, P., Tsorbatzoudis, H., & Alexandris, K. (2006). Self-determination in sport commitment. *Perceptual and Motor Skills*, *102*, 405-420.