Developing Talent among Young Dancers:

Findings from the UK Centres for Advanced Training

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Abstract

The identification and development of talent is a key concern for many dance educators, yet little research has been conducted in the area. In order to understand better how to optimise dance talent development among young people, systematic and rigorous research is needed. This paper will summarise and discuss the key findings of a ground-breaking longitudinal interdisciplinary research project into dance talent development. Over two years, almost 800 young dancers enrolled at one of the eight nationwide Centres for Advanced Training (CATs) participated in the project. Physical factors, psychological characteristics, and injury data were collected quantitatively while the students' thoughts and perspectives on commitment, creativity and cultural variables were captured using qualitative methods. The largest study of its kind, the project yielded a wide range of findings with a number of practical implications. The main focus of this paper is on how the project findings apply to important pedagogic topics such as audition criteria, passion and commitment, and teaching behaviour. The area of talent identification and development is complex, yet this research has begun to shed new light on the notion of talent and has provided novel insights to support its development.

Keywords: talent identification, talent development, dancing

Introduction

Dance talent has typically been perceived as something that can be intuitively recognised but not easily defined. Perhaps for this reason, little prior research has addressed the notion of talent in dance, what it comprises and how it can be developed. However, without systematic investigation into talent in dance, we cannot truly understand how best to develop it in training environments. The concept of talent can be divided into talent identification and talent development. Talent identification refers to the recognition of an individual's abilities – or their potential ability – while talent development refers to the conditions that facilitate the fulfilment of potential (Walker, Nordin-Bates and Redding 2010). Research in related domains including sport and music indicates that talent is comprised of multiple factors, such as physical and technical skills, psychological characteristics, and in certain activities, artistic abilities. Its development can depend upon not only these factors but also upon good quality practice, appropriate teaching and supportive social relationships (e.g. Baker and Horton 2004; Ericsson et al. 1993; Haroutounian 1995; MacNamara, Button and Collins 2010; Martindale, Collins and Daubney 2005; Phillips, Keith, Renshaw and Portus 2010; Vaeyens et al. 2006; Williams and Reilly 2000). Dance talent may be difficult to define but it too can be described as multidisciplinary (Walker et al. 2010). Therefore considerations of dance talent should include physical and technical ability, psychological factors, creativity and expressive ability, as well as the impact of teachers and other social agents (Walker et al. 2010). This paper outlines the key findings of an interdisciplinary longitudinal investigation into dance talent development conducted in the UK between 2008 and 2011 (Redding, Nordin-Bates and Walker 2011). The main aims of the project were to investigate what young talented dancers are like and, in particular, how they develop over time.

Although dance talent research was sparse prior to the conduction of the project reported in this paper, there have been few inter- or multidisciplinary longitudinal studies even in domains such as sport where talent research is more established. For example, the Training of Young Athletes (TOYA) project followed 453 talented young people engaged in swimming, tennis, football and gymnastics across three years, but focused largely on physiological and biomechanical factors

such as growth and flexibility (e.g. Baxter-Jones, Maffulli and Helms 1993; Maffulli and Baxter-Jones 1995; Maffulli, King and Helms 1994); psychological factors were considered to a much smaller extent (Rowley 1987, 1993). Retrospective talent development studies tend to focus solely on psychological and developmental factors (e.g. Côté 1999; MacNamara et al. 2010). We believe that talent development studies should investigate a range of multidisciplinary variables in order to gain a holistic view of the young person as they develop through training (Burwitz et al. 1994). To our knowledge, the project reported here was the first to focus equally on physical and psychological factors, as well as incorporating injury[1] and creativity into the study design.

Notably, our focus was predominantly on talent development rather than identification. The project did not aim to define dance talent, or provide a comprehensive guide for its identification, partly because of the problems associated with talent identification. Specifically, talent identification procedures in dance tend to happen before young people have fully matured, and evidence in sport suggests that talent criteria assessed pre-puberty may not be reliable indicators of future ability (Abbott and Collins 2004; Durand-Bush and Salmela 2001). For example, Abbott and Collins (2002) tested 10 fitness and anthropometric characteristics among 390 young people twice over a one-year period and found low test-retest reliability between measures, demonstrating the extent to which physical characteristics alter during adolescence. Therefore, we focused on talent development, which allowed the emphasis to be on factors that are amenable to change and thus having more relevance to pedagogy. Specifically, literature reviews in both sport and dance indicate that optimal talent development depends upon a range of variables including student commitment, teacher behaviour, structured learning and practice, as well as physical facility, all of which educators can influence in the studio (e.g. Walker et al. 2010; Williams and Reilly 2000).

To conduct this study, we worked with the Centres for Advanced Training (CATs), a nationwide talent development scheme in England which aims to select and train talented dancers in a variety of dance styles through a structured programme. In working with the CATs we were able

[1] Injury findings have not been included within this paper as they do not pertain directly to talent development. For details on the injury findings, please see Redding et al. (2010) and Steinberg, Aujla, Zeev and Redding (2013).

to track young dancers as they progressed through training, enabling us to investigate the talent development process in terms of change over time in the dancers' characteristics, and the relationships between factors such as teacher behaviour and creativity. This paper will report and discuss the findings of the research project in terms of physical factors, psychological findings, creativity, and the role of the teacher. Within these broad subheadings, topics such as commitment and social relationships are discussed in relation to practical recommendations. We hope that this paper will be of interest and value to educators and researchers alike in better understanding how to optimise talent among young dancers.

Methods

Across two years, nearly 800 young people aged 10-18 years enrolled at one of the CATs took part in twice-yearly data collection phases (see Table 1 for participant characteristics). During these phases, a large range of physical tests and psychological questionnaires were administered. The physical tests were as follows: aerobic fitness; upper body (handgrip) strength; vertical jump height; external hip rotation (turn-out); balance; hypermobility and hamstring flexibility. Validated psychological questionnaires addressed the following: self-esteem; trait anxiety; perfectionism; disordered eating; perceptions of the motivational climate; and passion for dance. These measures were taken approximately 6 months apart during the winter and summer periods of 2008 to 2010. The data was analysed statistically using a range of tests on SPSS software.

Table 1. Participant characteristics at each time point.

	Sample size	Mean age	Female (%)	Male (%)
Winter 2008	337	14.43 ± 2.10	75.4	24.6
Summer 2009	332	15.07 ± 1.94	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

As well as the regular quantitative data collection phases, qualitative data was gathered at different times throughout the project in order to address topics including commitment and dropout, creativity and the role of social relationships. Qualitative data collection methods included interviews and observations which were content analysed. To investigate creativity, interviews were conducted with three young dancers, three permanent staff members and three visiting choreographers, alongside a 12-week observation period at a case study CAT. A creativity questionnaire was also developed as part of the project. To investigate commitment and dropout, 19 committed and 10 dropout students were interviewed, and a further seven students from one case study CAT were interviewed about the roles that social relationships, values and cultural factors played in the talent development process. Due to space limitations within this paper, the methods have only been briefly outlined here; the full methodology can be found in the research report (Redding et al. 2011).

Findings and Discussion

Physical factors: components of physical fitness

We investigated a range of physical fitness variables that relate to dance technique, because aerobic fitness, balance, muscular strength, power and flexibility are important in terms of maintaining performance intensity and quality, and the skilful and accurate execution of dance movements (Walker et al. 2010, 2011). For example, flexibility is valued in dance due to aesthetic preferences, while muscular power can enhance elevation for impressive jumps. However, the extent to which many of these elements are trainable as opposed to innate was previously unknown. Therefore, analysing changes over time in physical fitness components enabled us to assess whether effective training can result in significant gains in these areas.

According to our analyses, all of the physical factors measured (aerobic fitness, upper body strength, vertical jump height, turn-out, balance and hamstring flexibility) increased significantly across time. This improvement did not always occur in a linear fashion: in particular, turn-out was

greater in the summer months compared with the winter months; aerobic fitness peaked in summer 2009; and jump height peaked in summer 2010. There are several potential reasons for the increases we observed, the first being maturation. Previous research indicates that many of the physical factors measured are likely to increase as a result of maturation, such as muscular strength and power (Klausen et al. 1989; Mersch and Stoboy 1989). Indeed when statistically controlling for the effects of training – i.e. the number of hours per week the students trained in different dance styles – analyses revealed significant differences in muscular strength and power between older and younger students (Walker, Nordin-Bates and Redding 2011), indicating that maturation had an effect on the study variables.

The changes across time also indicate a training effect. We found that increases in upper body strength and lower body muscular power were associated not only with age but also with hours training in hip hop and contemporary dance (Redding et al. 2011). Therefore, the underlying principles and demands of different dance techniques appear to cause specific adaptations in components of physical fitness. No association between age and flexibility (hamstring flexibility or turn-out) was found indicating that these physical variables are not affected by biological maturation (Walker et al. 2011); instead dance training – in particular ballet– had a greater influence (Redding et al. 2011). As such, dance training can have significant effects on flexibility which are not related to student age or stage of biological development. While hamstring flexibility increased in a linear fashion (see Figure 1), changes in turn-out appeared seasonal as values were greatest during the summer period (see Figure 2). This may be because increased core temperature results in greater laxity of the collagen in the hip joints, allowing greater rotation. Alternatively, or in addition, the musculature around the hip joints may have become stronger at the end of the training year.

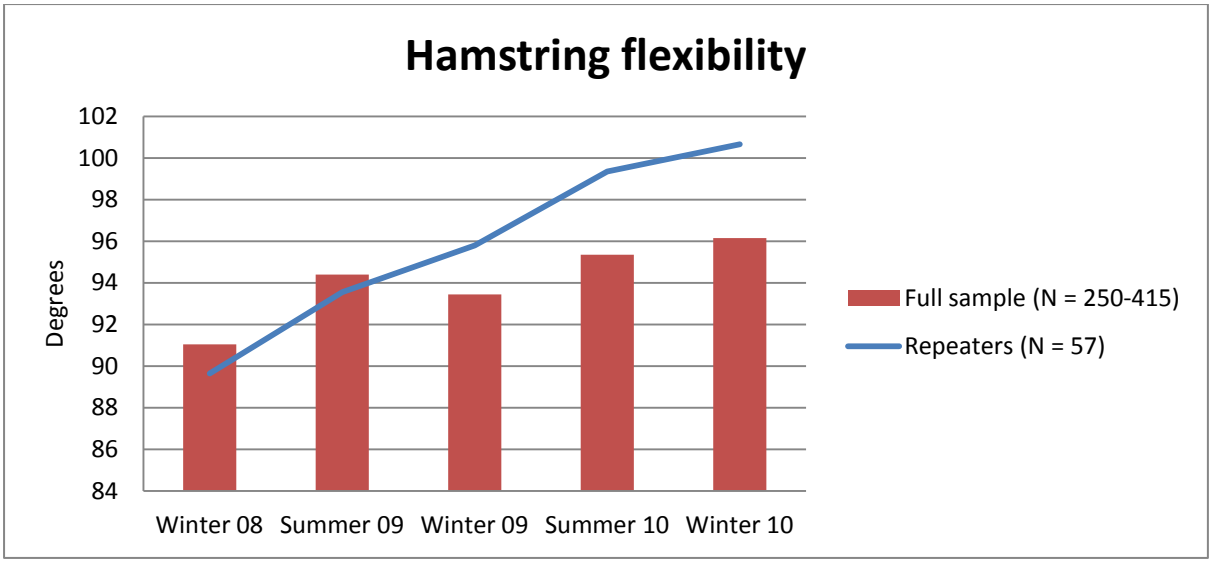

Figure 1. Changes in hamstring flexibility across time, demonstrating a linear increase in hamstring flexibility.[i]

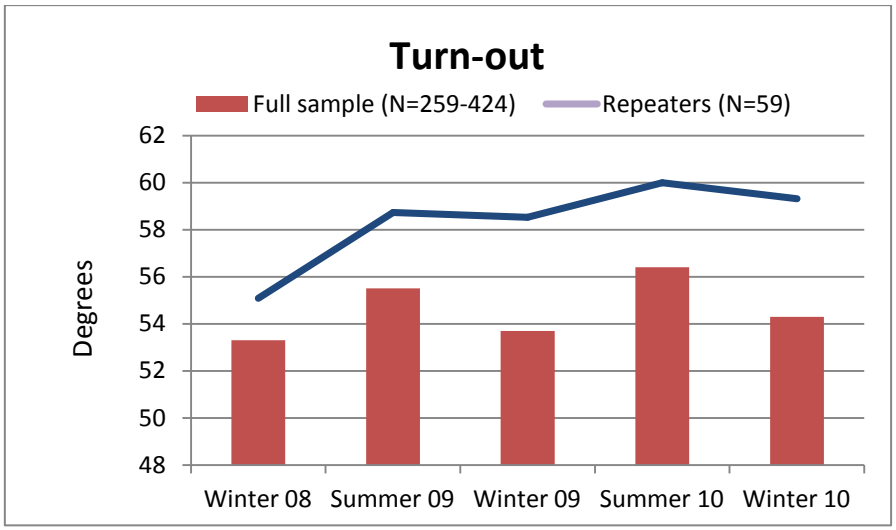

Figure 2. Changes in external hip rotation (turn-out) across time, showing seasonal variation in turn-out values.[i]

Other seasonal changes may be more due to specific performance demands. The fact that vertical jump height peaked in summer 2010 and aerobic fitness in summer 2009 supports a previous study reporting that some physical factors may be honed during the rehearsal and performance period rather than during training. Wyon and Redding (2005) tested the aerobic fitness of 17 professional dancers before and after a performance period, finding that dancers' fitness increased

significantly after the performance period. The authors concluded that dance training does not adequately prepare dancers for the intensity of performance. Similar findings emerged in our project. For example, the fact that vertical jump height peaked in summer 2010 may indicate that specific choreographic work being performed in that period involved explosive movements that required muscular power over and above that developed in training. However, in contrast to Wyon and Redding's (2005) findings, this explanation does not appear to hold true for aerobic fitness. Analysis revealed that dance training and performance had less of an impact on aerobic fitness than other forms of sport and exercise; in line with previous research, this suggests that supplementary fitness training is necessary in order to enhance young dancers' fitness beyond the demands of technique class to help them prepare for performances (Wyon et al. 2003).

Taken together, understanding change across time in the physical variables is complex given that maturation, training, and performance can all have an impact on the development of different components of physical fitness. Our results indicate that dance training can enhance muscular strength, power and flexibility. Certain choreography may result in specific adaptations, but aerobic fitness does not improve significantly as a result of dance training. Therefore, supplementary fitness training may be necessary to enhance aerobic fitness, such as jogging, swimming and cycling. Supplementary training could also ensure consistent improvement across each fitness component, and can also be tailored to specific choreographic demands. It must then be scheduled both early and in an on-going, progressive manner. Specifically, when working to improve in certain areas, the level of challenge should be increased progressively in terms of intensity, frequency or duration. In this way, meaningful improvements may be obtained without the risk of overtraining.

The potential impact of these findings on talent identification is intriguing The CAT audition criteria currently include a category called "Fundamental body skills" which includes flexibility, balance and strength; how much emphasis should be placed on these during one-off selection processes if they can be trained? We recommend that all educators continue to question how they define talent, and examine their own biases in terms of its identification. It is our view that talent identification processes be multidimensional in nature. As many of the physical factors associated

with dance talent are trainable, equal weighting should be given to other important skills and attributes such as students' approach to learning and their enthusiasm for dance. The role of passion is further explored in the next section.

Psychological factors: Well-being and Commitment to training

Well-being

Research in sport indicates that psychological factors such as passion and high self-esteem can help performers to succeed (Walker et al. 2010), yet according to previous research dancers of various ages, levels and styles are anxious, low in self-confidence and high in disordered eating characteristics (e.g. Bakker 1991; Hincapié and Cassidy, 2010; Marchant-Haycox and Wilson 1992). We wanted to investigate this rather worrying picture further in order to ascertain firstly whether it was true of young contemporary dancers, and secondly if these factors remained stable over time. By better understanding the psychological attributes of dancers, educators can strive to facilitate positive change among their students.

In contrast to previous dance research, we found that the young CAT dancers' level of psychological well-being was generally high and stable across time: dancers reported high levels of self-esteem and harmonious passion for dance (a flexible form of engagement that does not cause conflicts between different areas of life; Vallerand et al. 2003); moderate levels of perfectionism and obsessive passion for dance (a rigid persistence whereby dance becomes all-consuming); and low levels of disordered eating. Many of these factors were related to one another. For example, dancers reporting high levels of harmonious passion also tended to report high self-esteem and low levels of anxiety. This supports previous research indicating that harmonious passion is associated with more positive outcomes than obsessive passion (Vallerand et al. 2003). Positively, students typically reported greater harmonious than obsessive passion but we did find that dancers who had sustained an injury in the 12 months prior to the commencement of the research project reported greater levels of obsessive passion than students who did not sustain an injury in that time period. This concurs with a study of 81 student dancers, the more obsessively passionate of whom found it

difficult to stop training even in the face of injury, and were less likely to seek treatment (Rip et al. 2006). Therefore, balancing dance training with other life commitments appears important in order to prevent obsessive feelings for dance from compromising well-being. Findings such as these emphasise the importance of conducting interdisciplinary research, as psychological and physical factors can clearly affect each other.

Although our findings around the young dancers' well-being were mainly positive, 7% of the students scored the eating attitudes questionnaire in a way indicative of disordered eating symptoms. Further investigation revealed that disordered eating was associated with a variety of variables (Nordin-Bates, Walker and Redding 2011). First, it was noted that menstrual dysfunction, poor sleep quality and excessive exercising outside of dance could all be considered symptoms of disordered eating. Other warning signs, and indeed risk factors for disordered eating development, included low self-esteem and perfectionist tendencies according to our findings. This supports previous research with dancers and athletes (e.g. Anshel 2004) and suggests that a combination of unfavourable attitudes towards the self, rigidly high personal standards and a need for approval as well as perceptions of pressure from significant others puts the dancer at risk of developing an eating disorder. Therefore, it seems particularly important that teachers keep a watchful eye on dancers who appear to be sensitive in this way.

Any student who scored above the cut-off point on the eating attitudes questionnaire was referred to their CAT for support. We also developed an eating disorders policy in conjunction with the CAT staff as a result of these[2]. Co-creating a policy enables educators to take ownership of its tenets and feel more confident in applying them. We suggest that schools and companies hold talks on well-being, promote open communication among dancers and staff, create their own policies, and monitor risk factors in order to prevent disordered eating from developing into a clinical eating disorder. For example, teachers may wish to monitor their students' physical activities outside of class where possible, and encourage students to set flexible and achievable, rather than rigid and out-of-reach, goals. Furthermore, dancers should be encouraged to develop realistic goals and learn

[2] www.trinitylaban.ac.uk/dance-science/dance-science-research/the-cat-research-project/cat-project-resources

to trust their own feedback instead of always looking to the teacher. Moreover, previous research suggests that perfectionism and disordered eating emerge especially during times of stress, so placing realistic demands on dancers, especially during busy periods, appears important (Sassaroli and Ruggerio 2005).

Commitment to training

Without commitment to training, a young person cannot develop his or her talents optimally. For example, MacNamara and colleagues (2010) interviewed elite musicians, reporting that they were characterised by high levels of commitment to both music and to excelling in music. As such, commitment forms an important part of talent development; however, to date little dance research had been conducted in this area. We were able to contribute to the literature by investigating the factors that facilitate commitment among dancers.

The key factors associated with commitment to the CATs were enjoyment, positive peer relationships, harmonious passion, certain teacher behaviours (see below section), parental support, and the varied opportunities that the scheme provides (Aujla, Nordin-Bates and Redding 2013). Enjoyment sources in dance included self-expression, task mastery, performing, emotional release and creativity. Furthermore, we found that greater harmonious passion statistically predicted adherence to training. This suggests that young dancers need not sacrifice all other interests for the sake of their dance activity in order to optimise their talents. In fact, encouraging young dancers to seek other interests could have several benefits, not least reducing the potential for a more obsessive, maladaptive passion developing. Sampling a diverse range of activities during early adolescence typically enhances physical and motor skills, intrinsic motivation, peer relationships and enjoyment whilst protecting against exhaustion and dropout (Weiss and Amorose 2008). For dancers this might include participating in sport, drama and music activities which may benefit their physical fitness as well as expression and musicality. Therefore, encouraging such sampling may facilitate the development of well-rounded dance artists.

Social relationships such as family support and friendships with peers also played a key role in commitment (Aujla et al. 2013; Sanchez, Aujla and Nordin-Bates 2012). Parents provided emotional, motivational and logistical support, while peers not only represented a supportive group with similar interests, but also fellow artists with whom to collaborate, create and perform. Thus positive peer relationships play a particularly important part in student motivation and commitment, presumably because peer relationships take on greater importance than relationships with family and other significant adults during adolescence (Youniss and Smollar 1985). On the other hand, some dropout students cited poor peer relationships as a reason for leaving the CAT programme, demonstrating the influence that a lack of close relationships within the talent activity can have (Walker, Nordin-Bates and Redding 2012). While it could be assumed that talented young dancers are single-minded in their pursuit of excellence, these findings alongside previous literature (e.g. Patrick et al. 1999) indicate that peer relationships should be encouraged even – or especially – in selective training programmes.

In order to enhance commitment to dance training, educators should maximise the enjoyable aspects of training wherever possible (Aujla et al. 2013). For example, teachers can encourage self-expression in technique classes and provide formal and informal opportunities for performing; these could also be linked to opportunities for creative exploration outside of specific creative sessions. Because peer relationships emerged as important in terms of both commitment and dropout, schools could help students to bond through social activities and consider setting up a buddy or mentoring scheme. Students should be grouped strategically and these groups changed regularly to encourage dialogue and communication between all young dancers (see Table 2). Finally, parental support can be encouraged through invitations to informal sharings, parents' evenings and meetings so that parents feel part of their child's training.

Another interesting suggestion from these findings is that harmonious passion is an indicator of adherence, and as such could form part of the audition criteria of selective programmes. Detecting whether passion is harmonious or obsessive among young dancers may be challenging, but passion for dance at the very least is a realistic talent criterion that could be observed during

auditions and interviews. This appears important given that many of the physical factors sought during auditions are amenable to change with good quality training, whereas ideally young dancers will be passionate from the outset. Our findings collectively indicate that talent criteria should be evaluated and that psychological characteristics should be given as much attention as physical ones. Although much research remains to be done before arriving at firm guidelines for how this might be achieved, some recommendations can be given. First, including an interview with each prospective student appears paramount. Secondly, speaking with the young dancer both with and without his/her parents is important in attempting to uncover whether the child's passion is truly her or his own. Thirdly, asking them to describe how they fit dance in with other activities may help indicate whether their passion is harmonious or obsessive, as well as whether they are being realistic in their aims. If young dancers do appear to be dedicating themselves solely to dance, teachers could encourage them to seek out other hobbies, perhaps by explaining the benefits of sampling to dance performance (and well-being) as described above.

Creativity

Creativity is generally viewed as a key skill for dancers and has been written about in various ways within dance literature (Redding et al. 2011). However, this was the first time creativity had been investigated from a dance science perspective, enabling us to relate our findings to the other elements of the research project. Our research revealed that creativity was facilitated by certain personal and environmental factors (Watson, Nordin-Bates and Chappell 2012). Rather than support the popular notion of the 'tortured genius', when interviewed students believed that confidence, focus and openness to be important attributes, while staff discussed courage as essential alongside a need to recognise and explore one's vulnerabilities in order to promote greater risk-taking. On the whole these reports were supported by quantitative data indicating that students who had greater self-esteem and lower anxiety also perceived themselves as more creative than students who reported lower self-esteem and greater anxiety (Redding et al. 2011).

Again in contrast with notions of the stereotypical 'tortured genius' who works alone, the process of working in collaboration was perceived by staff and students as preferential. This collaborative approach could facilitate both group and individual creativity by providing reciprocal ideas and feedback (Watson et al. 2012). Staff emphasised that creating a safe environment was essential, as the fear of being wrong could thwart the creative process. Instead, the focus was on creating a "close-knit family" (Watson et al. 2012, p.163) where each dancer had a voice and was challenged according to their own individual starting point. Therefore, staff balanced support with the encouragement of student autonomy in order to nurture individual creativity. Such an emphasis on the role of the environment supports previous research in dance indicating that wider social and cultural factors can influence, and in some cases are part of, creativity (Chappell 2006; Press and Warburton 2007; Sawyer 2007).

Importantly, we did not attempt to objectively assess students' creative ability; rather we used questionnaires to ascertain whether or not students felt creative, interviewed staff and students about facilitating creativity, and observed creative sessions. Therefore, the findings do not represent a 'sure-fire' method for producing outstanding creative work; nevertheless they do suggest several strategies that can nurture creative processes from a variety of starting points. Firstly, teachers should emphasise that there are multiple ways of doing things well; exploration is the key to unlocking creativity, and not every idea can be used. The ability to select from a range of ideas is a crucial element of creativity, and exploration and risk-taking is the best way in which to devise a range of choices. The student voice in terms of contributing thoughts, opinions and ideas can be drawn out with specific opportunities for discussion alongside movement exploration. For example, students can be asked to discuss their aims and ideas with the teacher in the studio, rather than only showing their work in progress. Teachers would do well to facilitate new ideas and alternatives rather than criticise, because anxiety and self-consciousness can undermine creativity; this will be avoided if teachers emphasise that there are no 'rights' or 'wrongs'. The fact that creativity often emerges collaboratively can also be highlighted and cooperation among peers encouraged as this will both enhance creativity and commitment through positive relationships. Finally, the notion that

creativity should be taught only in specific sessions appears outdated; schools could discuss ways in which creativity can be embedded in the entire curriculum. For example, creativity can be incorporated within a technique class by asking students to improvise for a set number of counts within a phrase or creating arm gestures to accompany a footwork exercise. Even a fitness session can include elements of creativity, by asking students to work in small groups to devise sections of the class. Within the case study CAT, creativity was embedded within the curriculum rather than reserved for specific sessions only, though having the latter was valued by the students (Watson et al. 2012). This reflected the general ethos of the CATs which is to provide an education which aids students' development not only as dancers but as well-rounded young people.

The role of the teacher

One of the most crucial relationships within the talent development environment is that between teacher and students. Research in physical activity has indicated that teacher behaviour can influence student well-being and retention (Ntoumanis and Biddle 1999); as such teachers do not only impart knowledge and expertise but also can have a positive or negative impact upon how their students feel. In our project this relationship was investigated primarily with reference to the *motivational climate*. The motivational climate is the teacher-created atmosphere in the studio; two distinct types have been identified in the literature (Ames 1992). The first is a task-involving climate, whereby teachers encourage effort and hard work, collaboration among peers, accept mistakes as part of the learning process and treat students equally. The second is an ego-involving climate, whereby teachers selectively praise or punish students, encourage rivalry and competition, do not accept mistakes and recognise objective success or talent rather than effort (Ames 1992). Perhaps unsurprisingly, perceptions of these types of climate have been associated with positive and negative outcomes respectively, including variations in self-esteem, enjoyment and anxiety (Ntoumanis and Biddle 1999). It is important to note that while the two climates have distinct characteristics, elements of both may be present during any one class; the dominant type of climate is of interest as this will have the greatest impact on well-being and performance.

Positively, the CAT motivational climate was perceived as being overwhelmingly task-involving. Not only were task-involving climate perceptions greater than ego-involving perceptions, but participants also perceived their CAT climate to be more task-involving and less ego-involving than the climates they encountered in other dance classes outside of CAT. In spite of these positive findings, students perceived their climate to become significantly more ego-involving during the summer of 2009 (Nordin-Bates, Quested, Walker and Redding 2012; see Figure 3). During this time each CAT was involved in a large public performance, and the pressure of this may have affected teacher behaviour: perhaps teachers were less accepting of mistakes, and paid more attention to the 'stars' of the show. The increase in ego-involving climate perceptions during this time predicted increased anxiety among the young dancers, highlighting the very real consequences changes in teacher behaviour can have on student well-being (Nordin-Bates et al. 2012). As such, our results indicate that both physical and psychological changes can occur around performance time: physical characteristics may be developed and trained according to the choreography, but young dancers can be negatively affected psychologically as a result of teacher behaviour. Accordingly, teachers should be mindful of their language, behaviour and feedback during stressful times and reassure students that they are performing well.

In further investigating the impact climates can have on well-being, we found that students who reported perceiving their climate to be more task-involving also tended to report greater self-esteem and harmonious passion. In fact, increases in task-involving climate perceptions predicted increases in harmonious passion. Previous research has indicated that autonomy supportive behaviours from parents and teachers can facilitate the development of harmonious passion among children and young people (Mageau et al. 2009); as such, when teachers use behaviours such as giving students choices and explaining the rationales behind exercises they may help their students to engage in dance in an autonomous way. Importantly, task-involving climates often incorporate elements of autonomy through encouraging self-referenced learning and progression based on personal standards and goals. Furthermore, emphasis on autonomy was reported in both the qualitative data around creativity and analysis of the quantitative data which revealed that students

who perceived their climate to be highly task-involving also perceived themselves to be highly creative. Within a task-involving climate, a safe and supportive space is created where mistakes are acceptable and collaboration encouraged; this finding supports the qualitative data reported above (Watson et al. 2012).

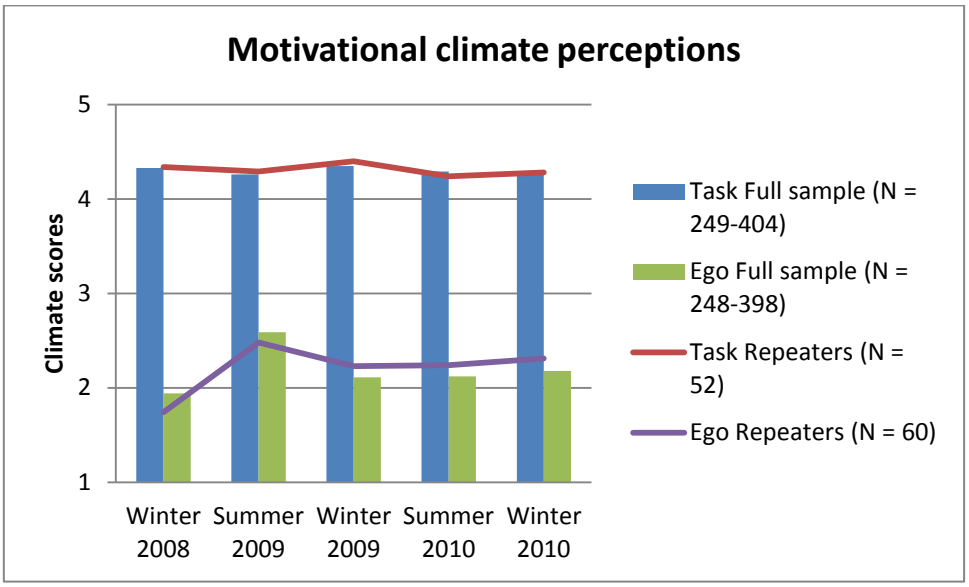

Figure 3. Motivational climate perceptions across the project, showing an increase in ego-involving motivational climate perceptions in summer 2009.[i]

In terms of the more negative aspects of the teacher-created environment, we found that not only were perceptions of ego-involving motivational climates associated with anxiety, but they were also associated with dropout and perfectionism. Specifically, students who perceived their climate to be more ego-involving were less likely to adhere to training. It appears likely that the more a young person's well-being is compromised by the learning environment, the less likely it is that he or she will remain in that environment. Regarding perfectionism, some aspects of perfectionism include concern over mistakes, rumination and need for approval (Hill et al. 2004), which relate conceptually to the punishment of mistakes and selective praise found in ego-involving climates. Further analysis revealed that dancers who reported more perfectionistic concerns also rated their climate as more ego-involving over time. This appears to be a perceptual bias indicative

of the inherent sensitivity and critical attitudes typical of perfectionists. Therefore, while the motivational climate can affect students, the students' own psychological characteristics can influence the ways in which they perceive and interpret teacher behaviour.

Regarding practical application of these findings, the TARGET (Epstein 1989) approach provides a foundation for creating a task-involving motivational climate. Table 2 below is modified for dance from Brady's (2004) sport-specific version of the TARGET approach.

Table 2. Recommendations for creating a task-involving motivational climate.

Factor	**Recommendations**
Task	• Incorporate variety, challenges and maximum involvement • Rotate positions • Avoid excessive waiting for example during sequences performed in small groups • Use fun activities and games
Authority	• Adopt a democratic style • Promote leadership and decision-making roles among students • Encourage self-directed learning and individual goal-setting • Promote peer collaboration
Recognition	• Recognise effort and improvement, process as well as product • Acknowledge individual characteristics • Increase opportunities for recognition by incorporating multiple means of evaluation • Encourage students to acknowledge the efforts of peers • Use recognition equally (i.e. avoid favouritism)
Grouping	• Avoid choosing groups for performing sequences or working together based on ability • Rotate groups regularly
Evaluation	• Encourage self-monitoring • Avoid public comparisons of students • Use instructive, corrective and positive feedback • Use feedback judiciously rather than constantly; do not try to correct too many factors at one time • Focus on strengths rather than shortcomings
Time	• Use progression in tasks, classes and terms • Use developmentally appropriate tasks • Individualise instruction

In addition to these recommendations, it is important within a talent environment in particular that the teacher explains to students that each dancer has their own strengths and weaknesses. Moreover, teachers should emphasise that talent is not fixed or stable, but is something that can change over time with commitment, effort and hard work. By engendering students with a sense that hard work equates to ability, students are more likely to feel in control of their abilities and will thus persist more and exert greater effort to achieve their goals (Dweck 2000). As such, students should be praised for what they *do* (e.g. work hard), not what they *are* (e.g. talented).

Conclusion

Although it was not possible to include all of the findings generated from the research project in this paper, it is hoped that the results discussed here are of interest and value to dance educators and researchers alike. In summary, we found that all of the physical variables measured increased across time, either as a result of training, maturation or performance periods. We also found that in general students reported healthy psychological profiles, and tended to perceive themselves to be highly creative. The role of the teacher-created learning environment, or motivational climate, had an impact upon many of the psychological variables, highlighting the impact teacher behaviour can have. We recommend the creation of a task-involving motivational climate in order to enhance well-being, creativity and adherence to training. Well-being arguably underpins all elements of dance training in terms of not only psychological factors but also physical progress and injury prevention. As such, these findings emphasise the importance of considering talent in a multidisciplinary way so that students are challenged and supported throughout training without feeling pressured to over-train, commit at an early age or develop obsessive or perfectionistic tendencies around their dance involvement.

Talent identification and development is complex, and will continue to change as choreographic and aesthetic demands evolve. For this reason, we advocate regularly surveying emerging literature in the area, questioning what talent is, and maintaining an open dialogue with

colleagues as well as students, as it is the young dancers themselves who will go on to define tomorrow's talent.

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[i] Note that "full sample" denotes the participants present at each data collection (hence the variable N); "repeaters" denotes the students who provided data for every time point.