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ABSTRACT

Elite performance in dance is the result of many years of training, during which dancers face high physical and emotional demands. There is little empirical evidence addressing dancer training behaviours in the context of overtraining and in response to training demands, however underlying dancer attitudes that effect training behaviours must first be understood to truly determine the drivers of dance training behaviour. This study explored the attitudes held by vocational dance students and their teachers in relation to stress and recovery during vocational dance training. Using Q methodology with a sample of 86 students and teachers, six viewpoints were identified through factor analyses. These six factors are discussed in relation to the overarching themes of sources of stress, attitudes towards stress and recovery, and dance culture.

Keywords: recovery-stress balance, attitudes, training behaviours, dance culture

INTRODUCTION

Elite dance performance is produced through many years of training and dedication. Approaches to dance training are often based on traditional methods handed down across generations (Lakes, 2005, Roche and Huddy, 2015) and can place high physical, mental and emotional demands on students (Grove *et al.*, 2013). Maladaptive behaviours, such as normalising injury, pushing through pain and fatigue, and over-conformity to sociocultural norms are prevalent within dance training and performance environments (Aalten, 2005, McEwen and Young, 2011). These behaviours may lead to overtraining and burnout within the high performance demands of elite dance training (Koutedakis, 2000, Blevins *et al.*, 2019). Understanding dancer attitudes that underlie overtraining risk behaviours would support the development of adaptive behaviours in response to training demands.

Attitudes derive from an individual's general evaluation of 'objects', which can include themselves, other people, physical objects, and social issues (Cross, 2004). These evaluations reflect an individual's learned experiences and can be based on cognitions (thoughts), affect (feelings), behaviours (actions), or a combination of these elements (Ajzen, 2005). Attitudes may explain an individual's predisposition to engage in particular behaviours, whether motivated through their personal beliefs or their perception of significant others' desire for them to engage in the behaviour (Hagger *et al.*, 2001). An individual's attitudes must first be identified in order understand how they influence behaviour and resultant outcomes (Cross, 2004). Dancers' behavioural responses to high pressure training environments that impact health and wellbeing may therefore be better understood through the evaluation of dancer attitudes to training.

Overtraining is an underexplored issue in dance (Koutedakis, 2000) despite dancers perceiving

fatigue and overload as influential injury risk factors (Liederbach *et al.*, 2013, Vassallo *et al.*, 2017). Overtraining is associated with an imbalance between stress experienced and recovery achieved by an individual (Kellmann, 2002a, Richardson *et al.*, 2008). This balance of stress and recovery is unique to the individual and may be explained as a "*psychosocialphysiological balancing act*" (Kenttä and Hassmén, 2002, p.67). The Overtraining Risks and Outcomes Model further acknowledges the importance of the cultural context in which an individual performs for overtraining risk, and the interaction between cultural norms, situational factors, interpersonal, and intrapersonal factors in contributing to stress loads (Richardson *et al.*, 2008). Dance students experience stress from a variety of sources related to their training and working environment (Krasnow *et al.*, 1999, Noh *et al.*, 2009), including relationships with significant others, individual factors, and situational factors such as job security (Blevins *et al.*, 2019). Therefore, attempts to understand overtraining in a vocational dance training context must consider the situational, personal, and interpersonal factors related to stress, alongside the sociocultural context of dance culture.

The ideologies endorsed within the sociocultural context of dance are paramount in understanding student attitudes to dance training. Drawing from definitions in sport[1], it may be argued that dance culture consists of socially constructed thoughts, feelings, and actions

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[1] Coakley and colleagues (2009) define culture as "the ways of life that people create as they participate in a group or society…[encompassing] all the socially invented ways of thinking, feeling, and acting that emerge as people try to survive, meet their needs, and achieve a sense of meaning and significance in the process." (p.4)

emerging from the need to find meaning and significance in dance participation[2]. Adverse ideologies of being able to push through fatigue, pain, and injury have a high prevalence in dance culture (McEwen and Young, 2011, Blevins *et al.*, 2019). Likewise, dancers are susceptible to poor body image and body dissatisfaction if they feel pressure to conform to physical aesthetic ideals portrayed in the media (Swami and Tovée, 2009, Langdon and Petracca, 2010, Abbott and Barber, 2011, Nerini, 2015). Overconformity to adverse dance ideologies may lead student dancers to experience stress and engage in behaviours that increase risk of overtraining and burnout (Blevins *et al.*, 2019). If dance culture endorses overtraining behaviours, for example, celebrating those who push through fatigue or perform when injured or ill, then students are likely to internalise these behaviours. Overconformity to the norms embedded within dance culture may lead to engagement with health compromising behaviours and outcomes (Waldron and Krane, 2005, Blevins *et al.*, 2019). Understanding dancer attitudes to training in response to ideals stemming from dance would be beneficial in identifying dancer engagement in health compromising behaviours.

Teachers play a pivotal role in the development of young dancers[3]. Students' perceptions of teachers' attitudes may differ from the attitudes reported by the teachers themselves. Teacher attitudes toward training may sway young dancers into moving toward or from approaches that encourage overtraining. To gain a more complete picture of the training environment, it is also

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[2] Ideologies are the attitudes, beliefs, and principles that drive these socially constructed thoughts, feelings, and actions (Coakley *et al.*, 2009)

[3] Wang and Russell (2018) highlight how dancers look to their teachers not only for guidance regarding technique and skill acquisition, but also for healthcare advice.

essential to consider the opinions and experiences of vocational dance teachers.

Using Q methodology, this study explored the attitudes of vocational dance students and their teachers to understand experiences of stress and recovery related to the demands of vocational dance training. Q methodology allows for the identification and discussion of a range of attitudes related to specific concepts and theories (Watts & Stenner, 2012). This study aimed to investigate dancers' and teachers' attitudes related to sources of stress and the influence of dance culture, and addressed the question: *What are the attitudes held by students and teachers about sources of, and responses to, stress during vocational dance training?*

METHOD

Q Methodology

Q methodology is a way of investigating the subjective experience of individuals. Invented in 1935 by William Stephenson, Q methodology uses factor analytic techniques to uncover subjective attitudes and experiences from the perspective of the individual under observation (Brown, 1996). Q methodology is recommended for use in studies investigating attitudes particularly in relation to health research (Cross, 2004), and proponents of the methodology argue that it successfully combines qualitative and quantitative research strengths (Dennis and Goldberg, 1996) while allowing for many voices of subjective experience to be heard (Stainton Rogers, 1995). Q methodology has been applied to investigate subjectivity around communication, knowledge acquisition, and coach-athlete relationships in sport (Moen, 2014, Moen and Kvalsund, 2014, Moen *et al.*, 2016). Q methodology represents a novel

methodological approach to dance research (Erskine, 2007).

Two main features characterise Q methodology: 1) using Q sorts for data collection, and analyses and 2) interpretation of the Q sorts through intercorrelation and by-person factor analysis (Watts and Stenner, 2012). Researchers prepare items, usually in the form of statements, for participants to rank, which are designed to represent a range of possible views on the topic under investigation. These items are referred to as the Q set. The Q sort requires a participant to make a forced choice decision about the statements in the Q set. This sorting process results in an inverted pyramid grid where items are sorted on a continuum ranging from, for example, 'agree most' to 'agree least'. Each completed Q sort is interpreted as an individual's point of view on the topic in question. Using the grid allows for a quantitative analysis of qualitative data (Jeffares and Dickinson, 2016).

Q-Set Design and Content

The Q set used in this study was developed from qualitative interviews conducted with professional dancers (Blevins *et al.*, 2019), alongside related sport (Richardson *et al.*, 2008) and dance (Noh *et al.*, 2003, Noh *et al.*, 2009, Grove *et al.*, 2013) research. The statements were developed to reflect myriad different attitudes towards dance training that participants might agree or disagree with. An initial concourse of 68 statements were reviewed by the research team and reduced to the final Q set of 54 statements by refining and eliminating items that were repetitive or confusing. To assist the teachers to rank the statements, two versions of the final Q set were produced, one from a student's point of view (e.g., item 8 'Financial concerns make me feel very stressed') and one from a teacher's point of view (e.g., 'Financial concerns make dance

students feel very stressed').

Participants

Student and teacher participants (n=86) were recruited from two Australian tertiary dance training institutions. Full-time dance students (n=75; 71 females, 4 males) and their teachers (n=11; 7 females, 4 males) completed an online Q sort task at the beginning of the university year. Students had an average age of 18.94 years (SD = 1.74) and had an average of 12.3 years (SD = 3.62) training prior to entering their vocational dance training course. They reported training for an average of 23.09 hours (SD = 12.44) per week on their course, and most students (n = 70) participated in additional physical training outside of their vocational dance training course (M = 4.8 hours, SD = 4.58). Students were in the first (n = 44), second (n = 9), third (n = 19), and fourth (n = 2) year of their course, and identified their primary dance genre as ballet (n = 16), contemporary (n = 26), contemporary/ballet (n = 19), jazz (n = 3), or a mixture of three or more dance genres (n = 11).

Teachers' average age was 50.46 years (SD = 11.01) and had an average of 17.96 years (SD = 9.29) vocational teaching experience. Nine teachers had completed vocational dance training, gaining qualifications at diploma (n = 3), bachelor (n = 4), and masters (n = 2) level. All the teachers had danced professionally, averaging 15 years (SD = 5.79) spent as a professional dancer. Primary dance genres taught were ballet (n = 4), contemporary (including improvisation) (n = 6), and kinesiology (n = 1).

Procedure

Participants were emailed an online link to the Q sort hosted by the iPOETQ software (version 1.1) (Jeffares *et al.*, 2012). After providing demographic information, participants were asked to sort the 54 statements into three categories – agree, disagree, and neutral. In the second step, participants were presented with the items in their agree category and asked to rate which two statements they agreed with the most. This process was repeated for the disagree category which defined the statements in the outer columns of the Q sort grid. This process continued with the remaining statements until the sorting process had finished. The participant was then presented with the final Q sort, providing a ranking of statements from 'agree most' to 'agree least'. The participant was able to view the entire Q sort and could make changes to the order of the statements. The final sorted grid consisted of 9 columns. Two statements could be placed under the -4 (agree with least) to +4 (agree with most) columns, and a pre-determined number of statements could be placed under each subsequent column. Figure 1 shows an example of a completed Q sort (representing the exemplar Q sort for Factor 1 in this study). Once completed, the participant was asked to provide a written explanation for why they agreed the most and least with the statements ranked +4/-4.

Insert Figure 1 here.

Figure 1. Example of a completed Q sort in this study, using a fixed quasi-normal distribution. The statement numbers reflect the factor-defining Q sort for Factor 1. The number of statements allocated to each column are in brackets at the bottom of the column.

Data Analyses

Q sort data were intercorrelated and subjected to a by-person factor analysis using PQ Method

software (Schmolck and Atkinson, 2012). Using varimax rotation[4], six factors emerged from

analyses, explaining 52% of the variance in the study. For this study, a Q sort loading of 0.50

reached significance at $p < 0.01$. This means that participants loading significantly on a factor

have completed their Q sorts in a similar fashion and share similar viewpoints on the subject

being investigated. Factor arrays (see Table 1) were compiled using weighted averages of

exemplar Q sorts to produce a characteristic Q sort for each factor (Watts and Stenner, 2012).

These factor-defining Q sorts were interpreted in conjunction with additional qualitative data

(comments written for the two highest and lowest ranked statements). Factor summaries are

presented in the following section with rankings of items provided in brackets to highlight to

shared viewpoints for participants significantly loading on each factor. For example, (15: +4)

indicates that statement 15 was ranked in the +4 position (i.e., most agree) for the factor-defining

Q sort for factor 1. Comments by participants are presented in italics and are included in the

results to assist with interpretation. Each factor summary has been given a title (e.g., Factor 1:

The High Performance Dancer) to provide an indication of the dominant viewpoint for that

factor.

Insert Table 1 here.

Table 1. Q set statements and factor scores[ab]

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[4] Varimax factor rotation uses statistical criteria to automatically rotate factors, resulting in the

identification of factors that are statistically independent and uncorrelated (Watts & Stenner, 2012).

The Q sorts that approximate the viewpoint of the factor can thus be identified and used to provide a

meaningful interpretation of the factor.

RESULTS

Factor 1: The High Performance Dancer[5]

The dominant theme represented in this factor was one of high performance, competitiveness, and healthy attitudes to recovery and injury management. Participants loading on Factor 1 rated performance highly and put pressure on themselves to do well (33: +3). Poor performance was a source of stress (11: +2) and produced feelings of helplessness (38: +3). Participant 32 noted, 'doing a good job is very important to me. If I don't do well I feel disappointed in myself'.

This factor endorsed the ideology that success in dance takes long hours of training (46: +4) and that repetition is necessary for technical expertise and improvement (2: -4). Participants loading on this factor valued versatility (36: +2) and set standards for physical appearance (37: +3), undertaking additional physical training alongside the dance course (5: +2) to maintain and support their dance technique and to *'fix'* their bodies [Participant 31]. Competition with themselves and their peers, related to their desire to excel and succeed in the industry, could be seen to be sources of stress:

> I am a very competitive person, I'm often finding thought patterns setting up little competitions in my mind against other dancers or even my past self as a way of keeping myself motivated. I feel that I do put a huge amount of pressure on myself to do well, and this pressure increases around the time of assessments or casting for a show.[Participant 23].

Participants loading on this factor felt supported by their families (15: +4) and teachers (14: -4), and highly valued the opinions of dance teachers, choreographers, and directors (18: +3). They

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[5] Factor 1 had an eigenvalue of 13.76 and explained 16% of the study variance. Thirteen participants (12 females) were significantly associated with this factor.

were getting enough sleep (22: -3), managed their time well (45: -2) and did not endorse

unhealthy behaviours such as smoking or drinking to deal with stress (44: -4). Illness (21: -3),

injury (25: -2), or underrecovery (26: -3) were not currently an issue, and the importance of

speaking out when experiencing niggles or pain was recognised (53: -2). However, while

maladaptive responses to pain, fatigue and injury were not endorsed, they were not completely

rejected (30: 0; 39: 0; 51: 0). Therefore, although healthy attitudes to injury and recovery were

reported, the behavioural response exhibited when faced with the reality of dealing with fatigue

or injury may be maladaptive, particularly considering the competitive nature and high

expectations for performance demonstrated in this factor.

Factor 2: The Teacher's Perspective[6]

Participants loading on this factor believed that the opinions of dance leaders are important to

dance students (18: +4) and that dance students compare themselves with others to improve their

skills and increase their motivation (32: +4). Likewise, they believed dancers are competitive and

put pressure on themselves to do well (33: +3). This extends to dance students striving to achieve

aesthetic physical ideals (35: +2) and setting physical standards as to how they should look (37:

+2). These participants also believed that events outside of dance training were a source of stress

that negatively impact performance (19: +3): 'What is happening outside is seen loudly in class'

[Participant 78]. Low confidence (29: -2), performance in assessments (11: +3), and industry

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[6] Factor 2 had an eigenvalue of 7.74 and explained 9% of the study variance. Nine participants were

significantly associated with this factor, comprising two female third year students and seven teachers

(five female). This is the only factor that teachers loaded on.

demands (10: +2) were also cited as sources of stress in this factor.

This factor represented a greater focus on training demands than the other factors, specifically around difficulty in coping with training demands (1: +2) and achieving balance in academic and physical workloads (12: +2). Participants loading on this factor believed that rest and recovery in dance training was inadequate (3: -2) and that vocational dance training does not allow for adaptation to individual needs (4: -3). Success equated with long hours of training (46: +1) was rated more moderately than other factors and was explained by one participant as a distinction between 'recognising time over years of training rather than excessive training in any one week. Overtraining is not helpful either.' [Participant 84]. This factor also differentiated from the other factors by a lesser focus on doing extra physical training on top of a dance course (5: -1) and the need to be versatile as a dancer (36: 0), and rejected the idea that success is achieved by training hard and pushing through pain and discomfort (39: -2).

Adaptive attitudes toward vocational dance training were exhibited in the form of social support from families (15: +3) and dance leaders (47: -4), and positive coping approaches to injury and illness (43: +2). Healthy approaches to dealing with injury and illness were strongly endorsed (30: -3; 20: -2; 53: -3) as was using alternative strategies to deal with poor performance, other than training hard (42: -4). The idea that dance students should be prepared to do anything that is asked of them was rejected (41: -2).

Factor 3: The Low Confidence Dancer[7]

Participants loading on this factor reported performance stagnation (6: +4) and low confidence (29: -4; 31: +3) as major sources of stress. Participant 49 noted 'I can see improvement in everyone else but myself'. Low confidence appeared to be related to a struggle with nutrition (23: +4), weight (50: +3), and physical appearance (24: +1). These concerns may have been taking their toll, evidenced by some degree of sleep disturbance (22: +3) and time management issues (45: +2). While participants in this factor valued the opinions of others towards themselves (18: +2), they were finding it difficult to live up to their expectations (17: +3). Participant 35 noted:

> I have always felt inexperienced compared to my peers and I don't think that I am as good of a dancer as the other people in my course. I also feel like I don't have enough training to become a dance teacher as I started very late.

This factor highlighted a dissociation between the physical concerns of the participants and their preparedness to deal with an incompatibility with the perceived physical ideal of the dancer's body. Participant 35 acknowledged that she has 'a bigger body shape than most dancers'. However this factor also represented a distinct rejection of pursuing an ideal physical appearance or perfection in dance as the solution to all problems (34: -3; 35: -4).

Participants loading on this factor were more likely to engage in unhealthy behaviours when stressed (44: +1) than in the other factors. Relationships with peers were valued (16: +3) but perceived support from family (15: 0) and dance leaders (47: 0) was lower than other factors.

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[7] Factor 3 had an eigenvalue of 4.65 and explained 4% of the study variance. Three participants (all female) were significantly associated with this factor.

Injury and illness were not an issue (21: -3; 25: -3), and neither was inadequate recovery (26: -3). Given the low ranking of statements related to pushing through and working hard in this factor (46: 0, 49: -2; 52: -2) it was not surprising that physical fatigue did not feature as a source of stress. However, the desire for more rest and recovery time (3: -2) may indicate a need for greater psychological recovery. Given the low levels of confidence and perceived performance stagnation for this factor, combined with resistance to pushing through at any cost, it appeared that these participants may have given up on themselves and their ability to progress to an elite performance level in dance.

Factor 4: The Time-Poor Dancer[8]

Participants loading on this factor were struggling to manage their time, seeking balance in their lives and would benefit from better recovery. Managing time effectively and balancing academic and physical workloads were concerns (12: +2; 45: +3). Sleep disturbance was evident (22: +4) and recovery from dance training was seen to be inadequate (3: -3):

> Because the intensity of the program and the amount of time spent training is so much, trying to recover on a daily basis is very hard. When you are constantly working your body to the extreme it never really gets the time to recover because you are always pushing it harder and trying to get better. [Participant 29]

The ideology that success in dance is dependent on long hours of training and repetition was endorsed in this factor (2: -2 and 46: +3). Participants loading on this factor believed that they

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[8] Factor 4 had an eigenvalue of 9.30 and explained 8% of the study variance. Six participants (five females) were significantly associated with this factor.

could tailor their dance training to their personal needs (4: +3) and participated in extra physical training outside of their dance training course (5: +2). They compared themselves with other dancers regardless of age or skill level (32: +3).

Finding a balance between dance training and everyday life was perceived as important and perfection in dancing was not seen to be a solution for all problems (34: -4):

> These days I can acknowledge that I will have good and bad days in the dance studio and I am 100% comfortable with that. I dance for myself now and I'm not striving for perfection. My life does not revolve around dance and I don't put my self-worth in dance alone [Participant 37].

Perhaps due to this, fitting in to the dance world (48: -2) and concerns about industry demands (10: -1) were not sources of stress for this factor.

Participants in this factor perceived a great deal of social support from family (15: +3), teachers (14: -4) and dance leaders (47: -3). This factor rejected using unhealthy behaviours to deal with stress (44: -3) and concealing early warning signs of injury (53: -3). However, the clustering of items in the centre of the Q sort indicated some potentially maladaptive attitudes to injury (20: +1), including fear of falling behind if they take time off (30: 0) and not stopping dancing when injured unless forced to (40: 0).

Factor 5: The Conforming Dancer[9]

Participants loading on this factor conformed to a particular cultural ideology of dance. They were prepared to do anything that was asked of them (41: +4) and set standards for themselves as to how they should look physically (statement 37: +3):

> In order to make it as a dancer you have to take risks, be hard working and determined to improve. I will do whatever my teachers ask of me as they have lived the life of a dancers, they know what its like and I trust them more than anyone to help me get to where I need to be [Participant 46]

Commitment to, and a singular focus on dance feature in this factor (13: -1; 28: +1). Participants loading on this factor valued versatility (36: +2) and compared themselves with other dancers (32: +2). They did not believe that dance training is too repetitive (2: -4) and saw repetition as a source of strength:

> Dance training can be repetitive but it's for a very good reason. Dance and especially ballet is very technique based and in order to be a successful dancer you need to have a strong foundation before you add your originality and performance. [Participant 46].

They did extra physical work on top of their training course (5: +2) but felt they had enough time to rest and recover from training (3: +1) and could see improvements in their dancing (6: -2).

Conflicting ideologies around dealing with fatigue, pain, and injury were demonstrated in this factor. While adaptive behaviours relating to healthy approaches to dealing with stress (44: -4) were reported and beliefs related to pushing through and/or concealing pain and fatigue were not

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[9] Factor 5 had an eigenvalue of 5.16 and explained 6% of the study variance. Three female participants were significantly associated with this factor.

endorsed (39: -3; 51: -3; 53: -3), increasing training was seen to be an appropriate response to setbacks or poor performance (42: +1). Likewise, participants loading on this factor reported that they would stop dancing when sick or injured (40: -2) but they also believed that it was important to get back as quickly as possible from an injury (20: +1).

Sources of stress for this factor derived from situational and interpersonal issues. Financial concerns (8: +4), industry demands and expectations (10: +2) and independent living (7: +2) were identified as stressors, as was tension within the training environment (9: +3), particularly related to relationships with their classmates (16: +3). Family members and dance leaders were sources of support (15: +3; 47: -3).

Factor 6: The Balanced Dancer[10]

Participants loading on this factor perceived a great deal of social support from parents (15: +4), peers (16: +3), and dance leaders (47: -3). Adaptive beliefs and behaviours related to dance training feature, including maintaining hobbies outside of dance (13: +4) and rejecting the ideology that success in dance is achieved by training hard and pushing through pain and discomfort (39: -4):

> Pushing through the pain and discomfort means you're not acknowledging your body and what it is asking you … If you ignore these pains and discomforts they will progressively get worse and be shown in your dance… as well as result in halting dance. [Participant 45]

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[10] Factor 6 had an eigenvalue of 7.74 and explained 9% of the study variance. Seven participants (six females) were significantly associated with this factor.

Participants loading on this factor would reduce their training when injured or ill (43: +3), tell someone when experiencing niggles or pain (53: -3) and would stop dancing when sick or injured (40: -2):

> I've seen so many people, including myself, re-injure themselves because they have come back into dance too quickly or have even been forced to stop dancing entirely as a result of their set back. I feel that with the level of my training at this time, it would be too much of a set back to take risks and not wait enough time. [Participant 45]

Perfection in dance was not equated with everything else being okay (34: -2) and physical appearance was not a concern (24: -3, 35: -2, 37:-2; 50: -4):

> I want to be fit for purpose not because I want to look slim. I do not care how my body looks, only how I feel and if I'm able to have enough stamina, strength and endurance to perform what I need to [Participant 6]

The time and effort that goes in to making an elite dancer was acknowledged (46: +2). Participants loading on this factor believed they were able to train harder than most others they know (52: +2) and would push themselves to make up for their shortcomings as a dancer (49: +1). However, they believed they could tailor their training to their personal needs (4: +3) and were achieving adequate recovery from training (3: +1). Participants loading on this factor reported greater confidence in 'making it' as a dancer than the other factors (29: +2) and could see improvements in their dancing (6: -2):

> I am a strong, hard-working person and dance is something that I've always wanted to do. I am confident I can make it because I feel that I have what it takes to get there. I am willing to work hard to achieve my goals [Participant 56]

Poor performance during assessments (11: +3) and fitting in to the dance world (48: +2) were

stressors in this factor. Participant 6 noted: 'The dance world (especially in Australia) is small and I sometimes find it stress[ful], especially at the moment to think where I will fit into that world/environment'.

DISCUSSION

Using Q methodology, six factors were identified in this investigation which depicted the attitudes of vocational dance students and their teachers toward vocational dance training in the context of stress, recovery, and overtraining. Different viewpoints were identified that related to experiences of stress and recovery, as well as the attitudes towards dance training and the cultural context in which these attitudes developed. As the primary aim of this study was to investigate dancers' and teachers' attitudes related to sources of stress and the influence of dance culture, these viewpoints will be discussed in relation to three key themes: sources of stress, attitudes toward stress and recovery, and dance culture. Focusing on these specific themes, drawn from both the results and from extant literature[11], allows for comparison and contrast of the attitudes and viewpoints held within the six factors in relation to overtraining and recovery in vocational dance training.

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[11] Drawing from the Overtraining Risks and Outcomes Model (Richardson *et al*., 2008), which focuses on sources of stress and the influence of sociocultural context in sport, this research was interested in applying this model to a dance training context. Therefore, dancers' and teachers' attitudes around the concepts of sources of stress and dance culture were of particular interest in this study.

Sources of stress

The six factors in this study revealed a number of different sources of stress for vocational dance students involving personal, interpersonal, situational, and cultural factors (Richardson *et al.*, 2008, Noh *et al.*, 2009, Blevins *et al.*, 2019). Personal stressors included low confidence, poor performance, and the impact of training demands and individual capacity for recovery. Interpersonal stressors included competition and comparisons with other dancers, value being placed on the opinions of others, and perceived difficulty in living up to others expectations of oneself. Situational stressors included concerns outside of dance training, worries around finding and maintaining employment, financial concerns, and time management issues. Cultural stressors included concerns related to physical appearance and conforming to aesthetic ideals of what a dancer's body should look like, and perceived ability to fit in to the dance world. The diversity of potential sources of stress for dancers indicates a need for stress-recovery monitoring to be conducted at an individual level. The use of training logs is commonplace in sport (Kellmann, 2002b) and dancers may benefit from implementing similar monitoring systems in their daily practice.

The factors differentiated between these different sources of stress. For example, when considering personal stressors, Factors 2 and 3 identified low confidence as a source of stress, whereas confidence was not seen to be a stressor in Factor 6. Likewise, for situational stressors, Factors 2 and 5 noted industry demands and expectations were a source of stress, however for Factors 3 and 4 time management was a source of stress. The factor that was most differentiated in this regard was Factor 3. Factor 3 stands alone in it's focus on physicality and low confidence, depicting a viewpoint of a dancer who is struggling to cope with dance training psychologically, rather than physically. The varying sources of stress identified across the factors corroborates

previous research identifying sources of stress from psychological, physical, social, and situational factors (Noh *et al.*, 2009). This finding suggests that interventions designed to assist dancers cope with stress in the training environment (and therefore enhance recovery) must be focused around the specific stressors that the individual experiences.

Commonality was observed across the six factors regarding competition and comparisons with others, with all factors agreeing that dance students compare themselves with other dancers. This was observed to have a positive function in some factors. In Factor 2 it was noted that dance students use comparisons for motivation and skill enhancement. However in Factor 3, taken in consideration with the low levels of confidence and body issues reported, this statement takes on a more negative connotation. This example illustrates how in the same situation, something that is seen as a positive motivator for one student may become a source of stress for another student. Sports research highlights that response to training is highly individualised (Kenttä and Hassmén, 2002). It is important that dance research investigates individual responses to training stress to better understand the needs of the individual dancer.

Attitudes towards stress and recovery

Varied adaptive and maladaptive responses to training stress were observed between the factors. Factor 2 was comprised mainly by the dance teachers and differentiated from other factors by a strong endorsement of healthy approaches to training, injury, and illness. This suggests that teacher attitudes were largely separate from the students in the study. It is encouraging that approaches to training such as refusing to push through pain or discomfort, taking adequate time off when injured, and developing alternative strategies for poor performance other than just

training harder were endorsed. These views are in opposition to research suggesting that some teachers use authoritarian approaches to teaching that are potentially harmful to students (Lakes, 2005). However, the fact that dance students loaded on different factors that did not fully endorse these views means that students and teachers approach vocational dance training from different perspectives. While dance teachers may share safe dance practice knowledge and endorse healthy attitudes toward training, there was an incongruence observed here with the information that is received and processed by dance students. This finding also indicates that dance students gather information on dance culture from sources other than the dance training environment. For example, media can influence body dissatisfaction in young dancers (Swami and Tovée, 2009, Nerini, 2015). More research is needed to understand how social media and internet sources (such as YouTube or Instagram) impact young dancers' perception and endorsement of dance culture.

Across the six factors there were several similarities that emerged in relation to attitudes toward recovery. All factors agreed that it was better to inform someone if experiencing early warning signs of injury. This finding is interesting when considered in light of recent research reporting that only 50% of professional dancers will report an injury to someone in their employment area (Vassallo *et al.*, 2017). It highlights the discrepancy between attitudes and behaviours. While dance students and teachers know that it's important to recognise and report early warning signs of injury, the context and performance setting in which these early warning signs present themselves impacts the action adopted by the individual. It may well be the case that when performance demands are high (e.g., major assessments or performances) dancers will not report 'niggles' or pain even though they know that they should.

Similarities between the factors were observed around attitudes towards the repetitive nature of

dance training and long hours of training necessary for success in dance. Repetition was seen to be necessary for skill development and expertise, assisting with building strength and the ability to execute difficult movements with the perception of ease from an audience perspective. Likewise, the technical proficiency required in elite dance performance was believed to result from long hours of training. Research into training in sport suggests that monotony and high training demands are risk factors for overtraining (Richardson *et al.*, 2008). Therefore, dance students should be encouraged to approach repetitious dance activities (e.g. rehearsing repeated movements within choreography) in ways that support valuable exploration of movement and minimise risk of monotony in dance training.

Versatility was also highly rated among all factors (except for Factor 2). If young dancers are concerned about industry demands and the ability to get jobs, they may see versatility as key to finding and maintaining employment in the industry. Most participants in this study reported taking extra classes or doing extra training in addition to their vocational dance training course. The time required to study multiple dance genres may place dancers at greater risk of overtraining because they do not have adequate time to dedicate to recovery. More research is needed to establish where the balance lies between undertaking the training necessary to develop elite level skill in dance and providing enough recovery to minimise the risk of fatigue, overtraining, and burnout.

Dance Culture

Examining endorsement of dance culture and attitudes towards recovery provides an interesting point of distinction between the factors. Factors 1, 4, and 5 appear to more strongly endorse

ideologies within dance culture linked to attitudes and behaviours related to overtraining (e.g., long hours and additional training loads, not stopping when injured, increasing training as a response to performance decreases or stagnation), whereas Factor 3 appears to reject certain dominant ideologies within dance culture, particularly in relation to physical appearance. Factors 2 and 6 appear to endorse a more independent approach to dance, where dance participation is valued but aspects of dance culture are challenged and rejected. For example, Factor 6 indicated the importance of maintaining hobbies outside of dance, rejected common ideals related to physical appearance, and would decrease or stop dancing when injured or ill to assist recovery.

The conceptual space diagram in Figure 2 provides a physical depiction of the similarities and differences between the six factors and their viewpoints in relation to the themes of dance culture and approaches to training (Watts and Stenner, 2012). The horizontal bifurcation represents approaches to training and the vertical bifurcation represents cultural endorsement. Factors falling toward the central point of the diagram may outwardly, and at times of low stress, report adaptive approaches to recovery from training. However, these viewpoints appear to be held moderately, thus potentially resulting in approaches that are maladaptive for a dancers' health when under pressure to perform or when stress load increases. This introduces a situation of conflict for dancers whereby behaving in a manner that may present a risk to health is in direct opposition with the opportunity to advance their dance career. A dancer may therefore choose to engage in a maladaptive behaviour (e.g., ignoring pain or minor injury) to achieve a short-term goal (e.g., participating in a significant performance) without giving due consideration to the long-term impact this approach may produce. The balance between attitudes, behaviour, and health outcomes is complex and warrants further investigation.

Insert Figure 2 here

Figure 2. Conceptual space diagram of the six factors and their viewpoints in relation to the themes of dance culture and approaches to training, with the horizontal bifurcation representing approaches to training and the vertical bifurcation representing cultural endorsement.

Factor 3 was differentiated from the other factors and represented dancers who were not having a positive experience during dance training. This was primarily due to issues around confidence and physical appearance. What is highlighted by this factor is the continued cultural demand – perceived or otherwise – for physical appearance to match a culturally desired aesthetic. Research has shown that dancers who strongly identify as dancers and perceive media pressure to conform to a physical ideal report greater dissatisfaction with their bodies (Langdon and Petracca, 2010, Nerini, 2015). However, focusing on physical functionality over physical aesthetics, while not replacing aesthetics, allows for an integration of functionality into an individual's body image (Abbott and Barber, 2011). Teachers and educators may find it beneficial to provide greater focus on the functionality of the dancer's body in supporting dance students to develop greater body confidence and satisfaction. While physical aesthetic ideals may always exist within dance culture, the evidence points to functionality over form as a preferred approach to issues around body image.

CONCLUSION

This study has reported the various attitudes that dance students and teachers hold in the context of stress and recovery in vocational dance training, sources of stress, and dance culture. This study revealed a diversity of dance student attitudes toward stress and recovery in dance training, and a consistency among teacher attitudes. By beginning to establish a holistic view of

vocational dance training this study can help educators understand the numerous attitudes held toward dance education and training. However, despite the importance of understanding these attitudes, they will not necessarily reflect the dancers' actual behaviours. Although dancers may report healthy attitudes they may not engage in healthy behaviours when under pressure. Students may need additional support and encouragement to take appropriate action when the early warning signs of recovery-stress imbalance appear. Future research would benefit from 'real time' monitoring to see if dancers are engaging in healthy behaviours and recovery approaches, or if they are struggling on a day-to-day basis.

Previous research has differentiated between positive, negative, and total stress in dance, and identified an association between negative and total stress and injury (Krasnow *et al.*, 1999). Future research would benefit from exploring sources of stress in more detail to differentiate positive and negative interpretations of stressors. For example, competition and comparisons with others were seen by some participants in this study to be a positive aspect of dance training serving to motivate students to improve performance. A better understanding of how dancers understand and use stressors in the dance training environment would be beneficial to understand how students interpret and act upon sources of stress.

It is important to acknowledge that this study has not exhausted all possible attitudes toward vocational dance training. The purpose of this study was to begin to understand the emergent narratives within the population, rather than provide an account of what *all* dance students and teachers think about dance training. While the findings of this study are country and institution specific, it would be of interest to see similar studies conducted across international dance training contexts. Further research is needed to confirm if, for example, different accounts emerge from dancers training in different countries and in different dance genres.

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Table 1. Q set statements and factor scores[ab]

	Statement	Factors					
		F1	F2	F3	F4	F5	F6
1.	It is difficult to cope with the physical demands of dance training	-1	2	0	1	0	0
2.	Dance training is too repetitive	**-4**	-2	-1	-3	**-4**	-1
3.	I get enough time to rest and recover from my dance training	1	-2	**-2**	-3	1	1
4.	I am able to tailor my dance training to my personal needs	0	<u>**-3**</u>	0	3	0	0
5.	I do extra physical work on top of my dance training course (e.g., cross-training, other dance classes, competitions)	2	-1	0	2	2	0
6.	I feel like I'm treading water rather than improving	-2	**0**	<u>**4**</u>	**0**	-2	-2
7.	Independent living (living out of the family home) is very stressful	-1	0	-1	1	2	0
8.	Financial concerns make me feel very stressed	0	1	0	1	<u>**4**</u>	1
9.	Tension within my dance training environment makes me feel stressed	0	1	1	0	3	1
10.	Industry demands and expectations (e.g., job security, auditions, organisational expectations) are a major source of worry for me	2	2	1	<u>**-1**</u>	2	1
11.	If I perform poorly during assessments I get stressed	2	3	-1	0	0	3
12.	It is difficult to balance my academic workload and school obligations with the physical workload required in my dance training course	-1	2	-2	2	0	0
13.	I maintain other hobbies and activities alongside my dance training	1	1	1	2	<u>**-1**</u>	4
14.	I feel unsupported by my dance teachers/staff members	-3	-1	0	-3	0	-1
15.	My parents/family are supportive of my desire to dance	4	3	<u>**0**</u>	4	3	4
16.	It is important for me to get along with my classmates/peers	1	1	3	2	3	3
17.	It is difficult to live up to the expectations that others have of me	0	0	<u>**3**</u>	0	-2	-1
18.	Other people's (teachers, choreographers, directors) opinions of me are important to me	3	4	2	1	2	2
19.	Things I am worried about outside of my dance training affect my dancing/performance	-1	**3**	1	1	-2	0
20.	It's important to get back as quickly as possible from an injury	0	-2	1	0	1	0
21.	I seem to get sick a lot (colds, allergies, infections, etc)	-3	0	-3	-2	0	-1
22.	It is hard to get enough sleep	<u>**-3**</u>	0	<u>**3**</u>	4	-1	<u>**1**</u>
23.	It is hard to maintain proper nutrition/eat well	-1	0	<u>**4**</u>	1	-1	-1
24.	It is stressful dealing with how my body is changing	-1	0	1	-1	-1	**-3**
25.	I have had a lot of injuries related to my dancing that I have to deal with	**-2**	-1	**-3**	-1	-1	-1
26.	I am always exhausted and can't seem to recover from my dance training	-3	0	-3	0	0	-1

27.	It is important to me to enter the professional dance world as soon as possible	1	0	1	-1	1	0
28.	Dance is everything to me – I eat, sleep, and breathe it	1	-1	-1	0	1	0
29.	I am confident that I will "make it" as a dancer	0	-2	**-4**	0	0	**2**
30.	If I stop dancing when I'm sick or injured, I will fall too far behind and won't be able to catch up	0	**-3**	0	-1	0	0
31.	I don't ever really feel good enough	1	1	2	0	-1	-1
32.	I compare myself to other dancers even if they are older and/or at a more advanced skill level that me	2	4	2	3	2	2
33.	I am competitive and put pressure on myself to do well/get roles/etc	3	3	0	2	1	0
34.	If I am perfect in my dancing then everything else will be fine	-2	-3	-3	**-4**	-2	-2
35.	I will push my body to achieve my aesthetic 'ideal' of what a dancer should look like	1	2	-4	-1	0	-2
36.	As a dancer, I have to be versatile and be able to do everything	2	0	2	2	2	1
37.	I set standards for myself as to how I should look physically	3	2	1	1	3	**-2**
38.	I feel helpless if I can't perform to the best of my ability	**3**	1	-1	0	1	1
39.	Success is only achieved through training hard and pushing through pain and discomfort	0	-2	-1	-2	-3	-4
40.	I won't stop dancing when I'm sick or injured, unless I am forced to	-1	-1	-1	-2	-2	-2
41.	I am prepared to do anything that is asked of me	0	-2	-2	0	**4**	1
42.	The only way to deal with setbacks or poor performance is to train harder	1	**-4**	0	-1	1	0
43.	If I am injured or ill, I will reduce the amount of training I do until I feel better	0	2	-1	1	0	3
44.	If I am feeling stressed I do things that aren't very good for me in order to relax (e.g., smoking, drinking, etc)	-4	0	1	**-2**	-4	-3
45.	I have trouble effectively managing my time	**-2**	0	2	3	-1	0
46.	Dancers need to put in long hours of training in order to achieve success	4	1	0	3	1	2
47.	Dance leaders (teachers, choreographers, directors) only care about good performances, not about dancers as individuals	-2	-4	**0**	-4	-3	-3
48.	I find it stressful to think about how I fit within the dance world	2	1	1	**-2**	1	2
49.	I push myself hard in my training in order to compensate for my shortcomings as a dancer	1	-1	-2	-1	-1	-1
50.	I have been encouraged to lose weight	-1	-1	**3**	-1	0	**-4**
51.	Good dancers can push through pain and fatigue	0	-1	0	-2	-3	-1
52.	I am able to train harder and put up with more than most people I know	0	1	-2	1	-1	2

53.	*It is better not to tell anyone if you have a niggle or are in pain, in case you aren't able to perform*	-2	-3	-2	-3	-3	-3
54.	I feel pressured by my dance teacher to have technique that is unrealistic for my body	-1	-1	-1	0	-2	-2

[a]Consensus statement in italics. [b]Distinguishing statements are presented in bold (p<.05) and underlined (p<.01)

Agree least   Agree most

-4	-3	-2	-1	0	+1	+2	+3	+4
44	14	53	12	52	35	32	37	46
2	21	25	7	41	16	11	38	15
[2]	26	47	50	43	28	36	33	[2]
	22	6	23	8	49	48	18	
	[4]	34	54	20	13	5	[4]	
		45	19	4	31	10		
		[6]	40	9	3	[6]		
			24	39	42			
			1	51	27			
			[9]	29	[9]			
				17				
				30				
				[12]				

Figure 1. Example of a completed Q Sort in this study, using a fixed quasi-normal distribution. The statement numbers reflect the factor-defining Q sort for Factor 1. The number of statements allocated to each column are in brackets at the bottom of the column.
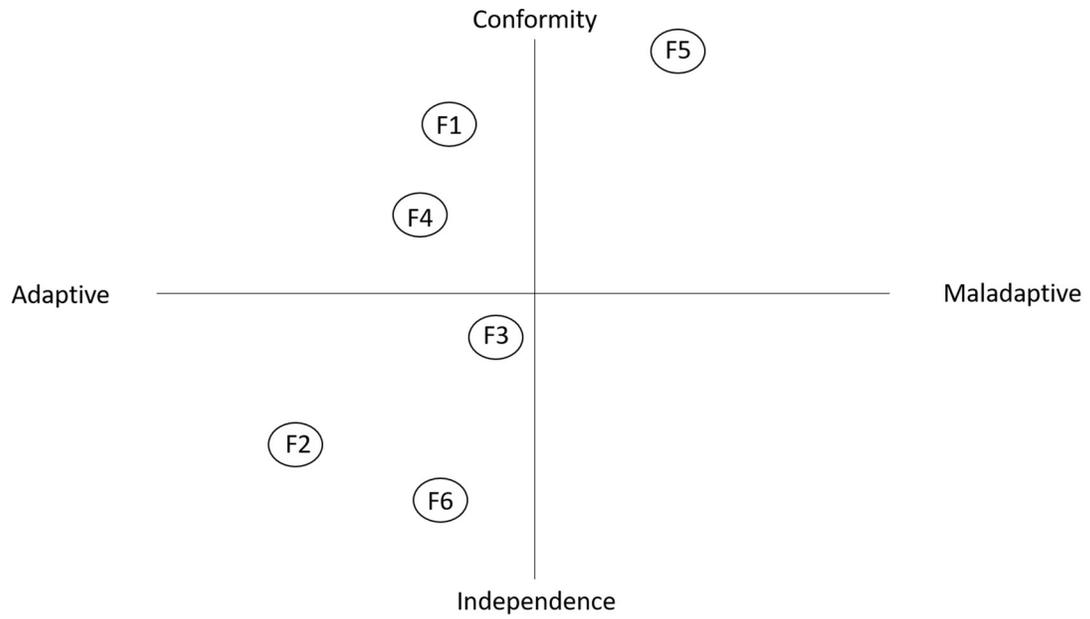
Figure 2. Conceptual space diagram of the six factors and their viewpoints in relation to the themes of dance culture and approaches to training with the horizontal bifurcation representing approaches to training and the vertical bifurcation representing cultural endorsement.