

# COPING AND INJURY IN A PROFESSIONAL BALLET COMPANY: AN INVESTIGATION OF STRESSORS, APPRAISAL, COPING PROCESSES AND INJURY IN PROFESSIONAL BALLET DANCERS

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## Abstract

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The purpose of this study was to longitudinally explore relationships between stressors, appraisals, coping processes and injury among professional ballet dancers, examining differences between rank and performance/rehearsal weeks. Twenty ballet dancers from one professional touring ballet company completed self-report daily diaries consisting of open ended questions and Likert-type scales for 22-days. These were then inductively and deductively content analysed. Findings revealed corps ranks experienced more stressors than soloist ranks, and that the two groups experienced different frequencies of stressor dimensions. Variations in coping strategies used between corps and soloist groups were also revealed. Additionally, different frequencies of stressors were also recorded between performance and rehearsal weeks. Findings supported the transactional coping model, as no consistent relationship was found between stressors and/or appraisals and coping responses. Further, supporting the goodness-of-fit model, problem-focused coping recorded higher appraised levels of control over stressors, than emotion-focused coping. Moreover, days on which new injuries occurred coincided with higher stressor numbers and intensities, suggesting a positive relationship between stress and injury. Based on findings, further research is suggested to better establish causality of these results, by comparing coping processes and injury patterns over longer time periods and differing settings.

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# 1. Introduction

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A professional ballet company is made up of highly skilled, vocationally trained ballet dancers (Schantz and Åstrand, 1984), for whom dancing is their main professional occupation and source of income. Indeed, the literature describes professional ballet dancers as an “athletic” population, executing highly physical activities comparable to sport (Patterson, et al., 1998). Personal experience of nine years dancing with a professional ballet company has exposed the author to the significant physical and psychological demands typical of this profession.

Ballet companies in the UK are hierarchical structures with dancers organised into ranks solely at the discretion of the company’s artistic director, based on judgement of a dancer’s accomplishment and experience; these ranks ascend from artist at the most junior level, in which dancers graduating from school join a professional company, through first artist, soloist, first soloist, to principal at the most senior level (Greskovic, 2005). Workloads and associated pressures vary between ranks; artists and first artists, collectively called the ‘corps de ballet’, or ‘corps’, predominantly perform group dances and must work together, keep in line and often learn parts at short notice; principals at the other end of the spectrum, exclusively perform solo or ‘pas de deux’ work (with a partner) and must deal with the associated pressure of performing lead roles with increased exposure. First artists and soloists dancers may perform both group dances and solo roles as required and at the artistic director’s discretion, but whereas first artists more often perform in group dances, soloists more often perform exposed roles (Ibid.). There can be great deal of crossover between the work of different ranks.

Dancers at all professional levels must combine athleticism with artistic qualities (Bronner and Brownstein, 1997; Nilsson et al., 2001), culminating in considerable psychological and physical pressures and demands (Adam et al., 2004; Tajet-Foxell and Rose, 1995). This is reflected in the

high percentage of reported injuries among professional ballet dancers (Bronner, Ojofeitimi and Spriggs, 2003; Nilsson et al., 2001; Tarr and Thomas, 2009). While physical demands are undoubtedly a contributing factor to injury, psychological factors should also be considered, as studies demonstrate significant correlations between psychological stress and injury in sport (Mainwaring et al., 1993). This has generated a personal interest in how dancers appraise and cope with stress, and the relationship of these psychological processes with injury.

Relationships between psychosocial factors, stress and their impact on injury outcome were proposed in Andersen and Williams' (1988) stress-injury model, in response to high frequencies of injury occurrence in sport. This model hypothesized that an individual's cognitive appraisal of a situation as stressful, could lead to physiological responses such as generalized muscle tension and/or attentional changes, with each potentially having reciprocal effects on the other. Generalized muscle tension may reduce flexibility and disrupt motor coordination, whilst narrowing of the peripheral field may cause players to become 'blind-sided' and distractibility could cause the athlete to miss vital cues (Ibid., p.299), potentially leading to injury.

This model proposed that three major psychological areas, personality factors, history of stressors and coping resources, influence the stress response and affect injury occurrence, either singly or in combination with one another. Whilst, subsequent research has focused on possible effect of all three major areas as predictor and moderator variables on injury vulnerability and resiliency (Williams and Andersen, 1998), of these, coping has the potential to be used as a cognitive-behavioural intervention that may be able to reduce injury frequencies in sport and dance (Krasnow et al., 1999).

With respect to coping resources, this model refers to general coping behaviours or traits (i.e. nutritional habits, medication, social support, stress management and other psychological skills)

which the athlete may draw upon to deal with the stressful situation, buffer the effect of stress and thus reduce the potential of injury (Andersen and Williams, 1988).

However, having examined process-orientated coping theory (see Lazarus and Folkman, 1984) the author elected to use daily diaries to record potential subtleties of stress and coping as a process. Specifically, coping processes are examined so as to reflect their potential to change both over time, and in accordance with situational contexts (Aldwin, 2007; Lazarus and Folkman, 1984). Furthermore, the study aims to establish whether stressors, appraisal and/or coping processes relate to frequency or severity of injuries, considering both skill level and activity. Thus, stress and coping processes are studied alongside injury, and integrated into the stress-injury model, to potentially allow for deeper understanding of the relationship between, stress and coping processes, and injury, within a dance-specific setting.

The following chapter firstly defines key terms and further discusses theory underpinning the study; sport-specific stress theory, coping and appraisal theory originating from general psychology (Lazarus and Folkman, 1984; Folkman, 1992) and dance-specific coping literature are summarised. The theoretical underpinnings of transactional and personality based models of coping literature are then discussed as these are important in driving research questions and designs. Transactional sport-specific stress and coping studies are then examined. Injury research is then reviewed, as advancements in injury reporting in sport research can be incorporated within psychology-based transactional studies. Conclusions propose that theory relating to the distinct areas under study can be integrated, shaping research questions. In chapter 3, the methodology then outlines underlying philosophical assumptions of the researcher, before discussing the appropriateness of the research instrument and design, and analytical procedures. The development of research questions is then set out, before the discussion of appropriate methods of analysis, and their application according to the current study. Chapter 4 then presents results, firstly establishing emerging categories according to stressor and coping dimensions, and then

undertaking further frequency analysis using excel. Finally, chapter 5 discusses outcomes in relation to the literature, before setting out limitations of the study and drawing final conclusions. Appendices display research tools, the qualitative categorisation of data on which frequency analysis was based, and excel charts from which results are drawn, in order that the research process remains as transparent as possible.

## 2. Literature Review

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### 2.1 Theory

#### 2.1.1 *Stress*

Psychological stress, defined as the subjective cognitive appraisal of the situation, ‘as taxing or exceeding his or her resources and endangering his or her well-being’, focuses on the importance of the specific relationship between the person and the environment (Lazarus and Folkman, 1984, p.19). The term ‘stressor’, refers to the situational demand encountered by the person, which results in psychological stress (Mellalieu et al., 2009).

Considering different origins of stressors and their associated cognitive processes and responses may help establish the appropriateness of intervention methods (Hanton et al., 2005) and provide a framework in which stressors can be organized (McKay et al., 2008). Suggested categorizations in sport include competitive and organizational stress (Fletcher et al., 2006). Organizational stress is defined as being, ‘associated primarily and directly with an individual’s appraisal of the structure and the functioning of the organization within which he/she is operating’ (Woodman and Hardy, 2001, p.208), while competitive stress is, ‘...associated primarily with competitive performance’ (Hanton et al., 2005, p.1130).

Organizational stressors in dance and sport are less often considered, despite their clear importance in professional settings (Woodman and Hardy, 2001). This category enables the inclusion of wide varieties of stressors directly relating to the organization, such as selection criteria and coaches (Ibid.), which lay outside the parameters of competitive performance stress, but which from personal experience are just as likely to be relevant. Moreover, while studying personal stress falls outside the parameters of this study, considering stressors originating from

both performance (as opposed to competition for this population) and the organization may help uncover broader spectra of work-related stressors and their associated cognitive processes, potentially requiring contrasting interventions (Mellalieu et al., 2009).

### *2.1.2 Coping*

Stressful situations trigger a complex and dynamic stress process in which coping is embedded (Folkman and Moskowitz, 2004). Most coping research stems from Lazarus's (1966) cognitively orientated model of stress and coping, with definitions from later works still predominantly used (Folkman and Moskowitz, 2004). Coping is described as the on-going process to manage demands appraised as being stressful and includes all conscious and deliberately executed attempts (Lazarus, 1999).

Lazarus and Folkman (1984) identify two main phases in the stress appraisal and coping relationship. Firstly, primary appraisal relates to whether the event is perceived to be relevant to goal commitments, values, and beliefs about self and situational intentions and whether what is happening is beyond the resources or endangering the well-being of the person (Lazarus and Folkman, 1984). If so, then the event may be categorised into three types of appraisal; harm/loss, where damage has already occurred; threat, consisting of potential for future damage; and challenge, implying the anticipation of mastery (Ibid.). A more recent addition is benefit, described as the individual gaining or benefiting from the situation (Lazarus, 1999). Following this, secondary appraisals refer to the cognitive evaluation of coping options available (Lazarus, 1999), especially if the primary appraisal is of the harm/loss or threat category (Nicholls and Polman, 2007).

Most coping models feature two broad coping categories based on intention and function of coping efforts (Crocker et al., 1998). The most widely used categories are problem-focused, where strategies aim to solve the problem causing distress (e.g. goal setting, planning and time

management), and emotion-focused, aimed at regulating emotional distress (e.g. deep breathing and visualisation) or its relational meaning to the individual (i.e. reappraising the situation) (Lazarus, 1993; Park and Folkman, 1997; Nicholls and Polman, 2007). Billings and Moos (1981) made the further distinction of avoidance coping (e.g. avoiding thinking about the problem by doing something else), as opposed to engaging with the situation, which might otherwise be masked by other emotion-focused strategies (Folkman and Moskowitz, 2004). Additionally, communal coping refers to responses influenced by and in reaction to social contexts, where strategies are implemented because they may be beneficial to others, even if they are not to the individual (Ibid.). This involves thinking and acting as if stressors are shared, regardless of whether motives are individualistic or collectivist (Lyons et al., 1998). These varying coping functions often interact, impeding or facilitating each other (Lazarus and Folkman, 1984). Further, dimensions encompass diverse specific coping strategies at the micro-level, with different sub-scales varying between target populations (Crocker et al., 1998).

Evaluation of coping is commonly determined by desired outcomes or else, by considering the goodness-of-fit between coping options and selected coping strategies (Folkman, 2009). Firstly in the goodness-of-fit model, the subjective appraisal of the situation should reflect what is actually going on in the person-environment transaction, so the person's appraisal neither underestimates, nor exaggerates the situation (Kim and Duda, 2003). Following this at the secondary appraisal level, correspondence between appraisals of controllability and reported coping strategies are expected; commonly, problem-focused coping is held to be more appropriate in situations with potential for personal control, while emotion-focused coping is considered suitable for circumstances where the individual has little control over the outcome. Although coping often includes both types, the relative importance of each should differ depending on secondary appraisals of control (Folkman, 1992).

## 2.2 Stress, Coping and Injury Research in Dance

Dance-specific stress-injury and coping literature has followed the lead of sport psychology (Mainwaring et al., 2001), where correlations between history of stressors (i.e. daily hassles, life events, working conditions); coping resources (i.e. coping behaviours, social support; sleep quality); personality (i.e. perfectionism, self-esteem, competitive trait anxiety) and/or injury, displayed in Andersen and Williams' (1988;1998) model, are measured. Particular reference is made here to stress and coping variables, as they are relevant to the proposed study.

Stressful experiences are categorized within this literature into; positive and negative perceptions (Mainwaring, 1993; Patterson et al., 1998; Krasnow et al., 1999; Noh and Morris, 2004); dance (Krasnow et al., 1999) and general life stress (Mainwaring et al., 1993; Ramel and Moritz, 1998; Noh and Morris, 2004); and daily hassles (Adam et al., 2004) and major life events (Patterson et al., 1998; Noh and Morris, 2004). Significant positive correlations were demonstrated between negative stress and injury (Mainwaring, 1993; Patterson et al., 1998; Noh and Morris, 2004); daily hassles and injury (Patterson et al., 1998; Adam et al., 2004); and negative work stress and duration of injury (Mainwaring et al., 1993; Noh and Morris, 2004), with low positive correlations between life stress and work incapacitation (Ramel and Moritz, 1998). However, no relationship was found between major life/positive events and injury (Patterson et al., 1998), and in the case of Krasnow et al. (1999), either positive or negative dance stress.

Additionally, Adam et al. (2004) found significant correlation between negative mood states commonly used to measure distress (Ibid.), and sleep disturbances, daytime sleepiness, and injury in their retrospective study of a sixty member professional ballet company. Further, Liederbach and Compagno (2001) retrospectively measured mood states alongside prospectively and clinically documenting injury over two years. They found that while fatigue was indicated as the main contributor to injury, injured dancers scored significantly higher on the recorded fatigue item used within the Profile of Mood States (POMS) inventory (McNair et al., 1981).

Noh and Morris (2004) meanwhile, found significant positive correlations between dancers reporting low levels of particular coping styles (specifically, freedom from worry, confidence and achievement motivation, peaking under pressure and goal setting/ mental preparation) and frequency and/or duration of injury, in a group of Korean ballet dancers ( $n=105$ ). Furthermore, though injury was not measured, Barrell and Terry (2003) confirmed a positive correlation in a group of Australian classical ballet dancers ( $n=104$ ) between competitive trait anxiety and coping strategies; trait-anxious dancers tended to use more emotion-focused coping strategies than low trait-anxious dancers, showing that competitive trait anxiety significantly predicts coping style. No significant effects of gender or status (in students as opposed to professionals) were found in this group.

Liederbach et al. (1994) meanwhile studied both physiological and psychological measurements of stress by measuring urinary catecholamines and mood states of twelve American professional dancers in a prospective five week study. Injury onset appeared related to time-specific onset of performance-related physiological and psychological stress markers, with increased ratings of fatigue/inertia and decreasing vigour/activity coinciding with significant increases in urinary catecholamines over the five weeks.

Overall, statistical analysis has demonstrated significant positive correlations in the emerging dance psychology literature between stress and injury (Mainwaring, 1993; Liederbach et al., 1994; Patterson et al., 1998; Ramel and Moritz, 1998; Adam et al., 2004; Noh and Morris, 2004), and various coping resources and stress and/or injury (Patterson et al., 1998; Liederbach and Compagno, 2001; Barrell and Terry, 2003; Adam et al., 2004; Noh and Morris, 2004), although comparisons between studies are made difficult because of differences in definitions, inventories and variables measured.

## 2.3 Theoretical Implications

The aforementioned dance-specific studies are embedded in a reductionist, quantitative approach, appropriate for uncovering relationships between variables in order to find generalizations relevant to the population. Coping is conceptualized as a personality disposition or trait, which assumes consistency within individuals across stressors, which may transcend ‘the influence of situational context and time on the choice of coping strategy’ (Lazarus, 1993, p. 241; Aldwin, 2007), and suggest tendencies to habitually use certain coping strategies across a variety of stressful situations (Thoits, 1995; Aldwin, 2007). However, alternative models of coping advocate that coping can change both over time, and in accordance with situational contexts (Lazarus, 1993). This contextual approach, anchored in the early work of Lazarus, centres around the appraisal process of an individual within a given context (Folkman and Moskowitz, 2004; Folkman, 2009) and assumes that coping depends on the cognitive evaluation of the situation (Aldwin, 2007). Factors are not seen as being independent, but as being mutually affected by the transaction (Aldwin, 2007). This interplay between variables therefore implies process, since the environment and person are constantly changing (Lazarus and Folkman, 1984).

According to Aldwin (2007), this conceptualization has shifted general coping literature away from causal reductionism, where occurrence of events are reduced to their underlying causes, towards a transactional model where the person, situation and coping efforts are said to mutually influence each other (Lazarus and Folkman, 1984; Folkman, 2009). While trait/style approaches are not dismissed by Lazarus and Folkman (1984), inventory based research is described as inadequate to have explanatory or predictive value (Ibid; Crocker et al., 1998). This is because inductively inferring general coping style is only considered possible from longitudinal studies assessing coping strategies of individuals over time and across stressful situations, within the same person as well as with sufficient numbers of people (Lazarus, 1993). Further, Folkman

(2009) emphasises that as coping and appraisal of specific stressful situations are affected by situational factors, they need to be measured situationally to be theoretically coherent.

Still, these two opposing theoretical approaches of measuring coping style (trait) or coping process (state), provide different answers to research questions (Lazarus, 1993). Measuring style gives an indication of how the participant usually copes, which may be better for predicting long term outcomes, such as somatic health, social functioning and morale, while process approaches are suited to measuring more immediate consequences of stressful encounters (Lazarus and Folkman, 1984; Aldwin 2007). Whichever approach is utilised, these conceptual assumptions cannot be underestimated, as they affect basic research designs such as wording of coping items and instructions, variables under measurement and analysis (Crocker et al., 1998).

The influence of the transactional approach can be seen in stress-injury literature; Andersen and Williams' (1988) original stress-injury causal model was updated with bi-directional arrows in 1998. However, transactional coping processes in dance-specific literature have not really been addressed; if dance-specific coping research is to advance, it is essential to take account of process-orientated theoretical models, as they serve to focus research questions and provide a framework in which they can be understood (Folkman, 2009). Moreover, since coping is such a complicated phenomenon (Aldwin, 2007), using solely reductionist models to understand its implications for injury outcome may limit understanding. A 'transactionist' approach may provide greater insight into how factors mutually affect the coping transaction and which coping strategies are adaptive or maladaptive in relation to specific stressors and outcomes in dance. Furthermore, mechanisms such as distractedness and generalised muscle tension proposed to link injury to stress (Williams and Andersen, 1998) may also result from short term, state based anxiety as well as from trait anxiety and coping.

## 2.4 Coping Research in Sport

### 2.4.1 *Research based on Transactional Models*

Due to the emerging nature of dance-specific research (Mainwaring et al., 2001), sport-specific coping research encompassing process-orientated theoretical models, has been reviewed. Nicholls et al.'s (2007) documented differences in coping relating to skill level, using open ended questions. International athletes reported coping strategies based on planning, blocking and visualisation more than lower skilled athletes (Ibid.). Further, team sports utilised communication more than individual sport athletes who used more emotion-focused coping techniques (e.g. relaxation, self-blame and visualization).

Other studies (see Anshel and Wells, 2000; Anshel et al. 2001; Puente-Díaz and Anshel, 2005; Anshel and Si, 2008), measured recently experienced coping processes by presenting participants with a list of preselected high intensity stressors from previous literature and statistically analysing reported appraisal and coping strategies. Approach/avoidance coping was shown to reflect types of competitive stressor experienced (Anshel and Wells, 2000; Anshel and Si, 2008). Meanwhile, appraisal (harm/loss, threat or challenge) was found to be a function of competitive stress (Anshel and Wells, 2000; Anshel et al., 2001), with chosen coping strategies dependent on appraisal (Anshel and Wells, 2000; Anshel et al., 2001).

The literature also provides evidence to support Folkman's (1991; 1992) goodness-of-fit model (Nicholls and Polman, 2007). Puente-Díaz and Anshel (2005) found that perceived controllability influenced the choice of coping strategy, where heightened perceived controllability resulted in active (or problem-focused) planning in elite tennis players. Further, Kim and Duda (2003) measured controllability, frequencies of coping strategies, and long term effectiveness via general sport engagement in U.S. and Korean athletes; they found both problem and emotion focused coping to be perceived as effective in the short term, but long term use of withdrawal/avoidance

coping to have the ‘potential for a suppression of the athletes’ positive feelings about their sport engagement’ (p.422).

#### *2.4.2 Longitudinal Designs*

Despite the development of better validated and reliable questionnaires in sport, measurement issues persist (Folkman and Moskowitz, 2004; Nicholls and Polman, 2007). Retrospective designs are associated with, ‘recall bias’ due to inaccuracy of reporting and participant bias, whilst the meaning of coping strategies may vary depending on when they occurred (see Crocker et al., 1998; Nicholls and Polman, 2007; Nicholls et al., 2007; Nicholls and Ntoumanis, 2010 for comprehensive reviews of coping inventories).

In response, longitudinal, prospective studies have begun to emerge in the literature; these are able to focus on day-to-day observations, are micro-analytical and in-depth and are compatible with a holistic outlook (Lazarus, 2000). In sport, Nicholls and colleagues have developed and modified various paper diaries to assess coping on a daily basis and across different time periods usually lasting twenty-eight days; some used open-ended questions (Nicholls, 2007) while others use mixtures of open-ended questions, checklists (Nicholls et al., 2005; Levy et al., 2009) and Likert-type scales (Nicholls et al., 2006; 2009). In Nicholls et al.’s (2005) study, international golfers reported a wide range of competitive coping strategies ( $n=460$ , in response to 369 stressors) with blocking reported as the most frequently used coping response. Meanwhile overall, problem-focused coping strategies were cited more frequently than emotion-focused or avoidance coping functions. Further, similar to Levy et al. (2009), the highest frequency of coping strategies coincided with the period when most stressors were reported (during important competition periods). Nicholls et al. (2009) found that specific competitive coping strategies (increased concentration, focusing on own role) had higher mean frequencies for match days, whilst blocking and increased effort had higher mean frequencies for training sessions. Levy et al. (2009) meanwhile, when examining organizational stressors, found that problem-focused

coping was predominantly used, compared to emotion-focused, and avoidance coping which was utilized only in the final two time periods (days 15-28). The most commonly cited coping strategies were communication, preparation, planning, social support and self-talk.

### *2.4.3 Stress Research in Sport*

As coping processes are, 'embedded in a complex, dynamic stress process that involves the person, the environment, and the relationship between them' (Folkman and Moskowitz, 2004), it is also necessary to study stress from a transactional perspective (Hanton et al., 2005; Mellalieu et al., 2009). However, similarly to coping literature, research has been hampered by the ambiguity of key terms (Hardy et al., 1996); distinction between state and trait anxiety is essential, since state anxiety is the response to a specific threatening situation and trait anxiety is the response to a variety of stressful situations with high levels of state anxiety (Ibid.).

Diary research allows not only coping, but state anxiety to be studied over time. Nicholls et al. (2007) found higher skilled athletes recorded more training and coach stressors than lower-level athletes, who were more worried about letting down team-mates. Meanwhile, Nicholls et al. (2009) found stressors frequencies varied between training sessions and matches, with only match-specific stressors more frequent on match days, whilst overall more stressors were experienced during training. Nicholls et al. (2005) and Levy et al. (2009) also found greater stressor frequencies coincided with the relative importance of competitions at that time. Pensgaard and Ursin (1998), utilising open ended questions to document stressful competitive experiences, found that stress was experienced most in the period prior to competition, while external distraction and expectations were the stressors most frequently cited, followed by the coach. However, Nicholls et al. (2005) found that making a physical/mental error, observing opponents playing well and difficult weather conditions accounted for over 75% of stressors reported by 11 international golfers over 31 days, suggesting that these particularly salient stressors endured over time.

Overall, findings suggest that different situations elicit specific stressors and responding coping behaviours, which change over time. However, the aforementioned diary research mainly focuses on competitive stressors often recorded using checklists, with inadequate sampling inherent (Crocker et al., 1998). Broader work-related stressors were first addressed in sport by Woodman and Hardy (2001) who examined organizational stress by interviewing athletes; they uncovered stress dimensions relating to the environment (selection, training environment, and finances), personal issues (nutrition, injury, goals and expectations), leadership (coaches and coaching style) and team issues (team atmosphere, support network, roles and communication). Fletcher and Hanton's (2003) study, following a similar structure but across varying sports, was consistent with these findings but also found competition, accommodation and competition environment to be other environmental issues experienced. Meanwhile, Hanton et al. (2005) found elite athletes recalled more organizational than competitive performance demands. Further, while competitive stressors were similar across sport types, organizational stressors varied, suggesting their reflection of socio-cultural, political, occupational and economic factors (Ibid.).

McKay et al. (2008) identified eleven dimensions of strain by interviewing ten U.K. track athletes, relating to competition (pressure to perform, underperforming, lack of social support, social evaluation and self-presentational concerns), the organization (governing body factors, environmental conditions in competition, personal issues relating to the organization) and personal issues (life events). Similar to Hanton et al. (2005), McKay et al. (2008) found a core group of stressors mostly relating to performance evident in other sport studies, although others (social evaluation and self-presentation) appeared particularly pertinent to this group. Neil et al. (2009) call for future research to consider a broader range of sports to increase the efficacy of identified stressors.

Limitations of the previous studies are that recalled experiences spanned the athlete's entire career and were not contextualized within a specific time period within interview-based studies

(Mellalieu et al., 2009), while only competitive stressors were considered in diary-based studies. Levy et al. (2009) examined organizational stressors longitudinally, using daily diaries along the aforementioned general dimensions used by Woodman and Hardy (2001); they found administration, overload, competition environment, the athletes and team atmosphere stressors reoccurred over time and accounted for over half of the overall stressors reported. Mellalieu et al.'s (2009) study also took place during a competitive season, although athletes were interviewed about performance and organizational-related demands and thus variations in data collection periods may have affected quantities of stressor types (Ibid.). Even so, resulting performance related dimensions were preparation, injury, expectations, self-presentation, and rivalry, while organizational stressors were factors intrinsic to the sport, roles in the sport organization, sport relationships and interpersonal demands, athletic career and performance development issues, and organizational structure and climate of the sport. It would be useful in further research to collect data from both training and competition periods, or in the case of dancers, rehearsal and performance periods to capture experiences emanating from different aspects of the participants' working lives.

## **2.5 Injury Research**

### *2.5.1 Methodological considerations relating to dance-specific research*

Within dance-specific literature, challenges relating to the recording of injury data follow methodological issues identified in sport. Firstly, while the majority of dance-specific studies use self-reporting systems to record injuries (notable exceptions are Patterson et al., 1998; Liederbach et al., 1994; Liederbach and Compagno, 2001; Noh and Morris, 2004), self-reporting as opposed to clinical reporting affects the calculation of injury incidence (Bronner et al., 2003). Self-reporting resulted in significantly higher injury rates than those medically recorded in one dance study (Luke et al., 2002). However, self-reports are often the most appropriate method available, since many dancers have access to at best, limited medical facilities and studies may not have the

resources to collect medically recorded injury data unless research is undertaken by medical practitioners themselves. Further, while medical professionals are able to clinically classify injuries, under-reporting to clinicians may result in only the most severe injuries being accounted for.

Secondly, retrospectively recording injury data is common in dance-specific literature (see Mainwaring et al., 1993; Ramel and Moritz, 1998; Krasnow et al., 1999; Barrell and Terry, 2003; Adam et al., 2004; Rip et al., 2006; Thomas and Tarr, 2009). This method has been associated with inaccuracy of memory recall and recall bias (Evans et al., 1998; Bronner et al., 2003; Gabbe et al., 2003; Bronner et al., 2006). One study showed that retrospective accounts acted to deflate accounts of injury, with even severe injuries remaining unreported (Junge and Dvorak et al., 2000). From personal experience, it is difficult to accurately remember injuries, especially over long recall periods of up to twelve months (see Ramel and Moritz, 1998; Rip et al., 2006). While such recall periods may be able to differentiate memorable persistent pain from trivial daily muscle soreness (Ramel and Moritz, 1998), more subtle recording of injury may be important within the context of psycho-physiological studies.

Thirdly, conflicting definitions in dance-specific injury reporting make comparisons across the literature difficult and reduce the feasibility of replicating injury research (Mayers et al., 2003; Bronner et al., 2006). Measurements of injury vary, with some distinguishing between acute and chronic injuries and resulting partial- and full-time loss from activities (Rip et al., 2006), while others report frequency and duration of injuries (Noh and Morris, 2004). Severity is also used as an injury indicator by measuring time loss from activity (Liederbach et al., 1994; Rip et al., 2006), although inclusion factors vary with some studies including rehearsal and performance (Patterson et al., 1998) whereas others also include class (Liederbach and Compagno, 2001). Time loss definitions may not account for overuse injuries which do not necessarily result in time

off from activity; these make up a large proportions of overall injuries in technical sports where movement is repetitive (Bahr, 2009), similar to ballet.

Consensus statements on injury definition and standardized reporting guidelines within dance-specific research have been proposed (Liederbach and Richardson, 2007), incorporating recommendations made in sport research (see Fuller et al., 2006). These may better assess which factors are most closely associated with injury risk, enabling focusing of prevention methods. Prospective, continuous monitoring of injuries are recommended (Liederbach and Richardson, 2007) to determine which factors influence fluctuations in injury rates (Meeuwisse, 1994). Further, suggested injury definitions are, ‘any physical complaint sustained by a dancer resulting from company performance, rehearsal, or technique class, irrespective of the need for medical attention or time loss from dance activity’ (Bronner et al., 2006). This serves to broaden injuries recorded, allowing injuries not resulting in time loss from activity to be acknowledged alongside recording full and partial time loss from activity in order to measure severity (Krasnow et al., 1999). Although potentially resulting in higher overall injury rates for this study, this definition may be appropriate for a profession which traditionally encourages a culture of working through pain.

### *2.5.2 Sport-specific injury and coping research*

Consensus statements by key researchers in sport epidemiology have established standardized injury reporting systems relating to data collection and injury definitions, enabling comparisons of injury rates across studies (see Fuller et al., 2006; Hägglund et al., 2005). These reporting systems have begun to be used in sport alongside stress and coping measures, presenting prospective, longitudinal, clinically recorded, injury reporting measures using clear definitions and delineation of injury. They provide directions for injury prevention and permit monitoring of long-term changes in injury frequency and circumstance (Junge et al., 2008). One such study reported that general life stress was found to positively correlate with injuries in female football

players, while players who rated low in coping strategies suffered significantly more stressful life events, although coping was not found to relate to injury occurrence in this case (Steffen et al., 2008).

However, research addressing psychological factors relating to injury risk is still limited (Ibid.); studies addressing injury occurrence consider psychological factors as personality characteristics which can be measured retrospectively, rather than dynamic, transactional processes which may change over time (see Galambos et al., 2005; Meyers et al., 2008; Steffen et al., 2008; Shrier and Halle, 2010). Similar to dance-specific research, while this approach is compatible with the role of psychological factors as predictor or moderator variables, it would also be valuable to consider the relationship of injury alongside state based measures of stress and coping, if only because prospectively measuring stress and coping is likely to yield more accurate reporting of experiences.

## 2.6 Conclusions

Within dance-specific research, statistical analysis has demonstrated positive correlations between stress, maladaptive coping behaviours and injury (Ramel and Moritz, 1998; Patterson et al., 1998; Liederbach and Compagno, 2001; Adam et al., 2004; Noh and Morris, 2004; Rip et al., 2006). However, personality based coping models underpinning this literature do not consider that coping may change over time and in accordance with situational context. Additionally, there are concerns over the inaccuracy of data resulting from retrospective, cross-sectional recording of stressful experiences and coping responses. The emergence of diary based studies with prospective documentation of stress and coping in sport (Nicholls and Ntoumanis, 2010) has the potential to assess coping both over time and within context, as well as allowing both inter- and intra-individual analysis of stressors and coping experiences (Lazarus, 1999). Indeed, according to Nicholls and Polman's (2007), the majority of recent research supports the transactional

perspective, suggesting that coping is recursive and dynamic. In sports settings at least, coping seems to change over time and is influenced by the appraisal of situational demands (Nicholls et al., 2010).

In contrast to sport, little data exists on how professional ballet dancers cope with stressors over time in dance-specific contexts, with no prospective recording of stressors, coping and appraisal according to the transactional coping model; Folkman and Moskowitz (2004) maintain that coping should be assessed within their specific stressful instances, as strategies may be effective in one situation but not another. A prospective, transactional based study, integrating transactional stress theory following recent models (see Mellalieu et al., 2009), would be of value to accurately capture a broader array of work-related stressors. Potential differences in cognitive processes underpinning responses may require contrasting interventions to attempt to alleviate stressors (Ibid.). In addition, prospective measurement of injury alongside coping and stress may give valuable insights, if only tentatively, into how state-based stress and coping relate to injury occurrence, attempting to address current gaps within both dance-specific and injury research.

Thus, this study advances the following research questions, using conceptual models of coping and appraisal from the general psychology literature (Lazarus and Folkman, 1984; Folkman, 1992), stress research in sport (Woodman and Hardy, 2001; Mellalieu et al., 2009) and injury reporting systems developed in sport (Bronner et al., 2006; Fuller et al., 2006, Junge et al., 2008), to create a theoretical framework from which the following questions are derived;

1. What organizational stressors do dancers experience at work?
2. How do dancers appraise specific types of stressors?
3. What particular coping strategies do these dancers use to attempt to cope with specific stressors?
4. How does the cognitive appraisal of each stressor influence the coping response?

5. Are there consistent coping behaviours between and/or among persons or in response to types of stressors/appraisals?
6. Are there differences in stressors/coping combinations reported between ranks or performance/rehearsal weeks?
7. Is there any evidence for any relationship between stressor/coping combinations and injury frequency/severity?

The following propositions are anticipated; coping will vary in response to different stressors, activity and rank; perceptions of control will affect which particular coping strategies are employed; and increased reporting of stressors/certain coping techniques may coincide with reporting of injuries. This study hopes to give additional insight into the use of coping employed to deal with stress within a dance-specific setting, and further to aid understanding of relationships between stress, coping and injury within a population which appears to suffer from particularly high injury rates (Bronner et al., 2003).

## 3. Methodology

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### 3.1 Philosophical approach

According to Tashakkori and Teddlie (2003), the ‘paradigm wars’ (Robson, 2002, p.43) have become increasingly unproductive, with epistemological and ontological extremes characterized by positivists and interpretivists bringing about litigious debates within the social and behavioral sciences (Lincoln and Guba, 2000). An alternative to traditional paradigmatic controversies is the pragmatic viewpoint (Giacobbi et al., 2005), which by holding a midway position between positivism and interpretivism, bridges the gap between these two opposing paradigms (Johnson and Onwuegbuzie, 2004). Fundamental values of the two opposing epistemological positions are viewed as compatible (Ibid.); both methodologies use empirical observations to address research questions, incorporating safeguards into research to minimize invalidity (Ibid.), ‘describe their data, construct explanatory arguments from their data, and speculate about why the outcomes they observe happened as they did’ (Sechrest and Sidani, 1995, p. 78).

The interests of the founders of classical pragmatism, Peirce, James and Dewey, lay in examining practical consequences and empirical findings to better understand the significance of philosophical standpoints and direct attempts to comprehend social phenomena (Johnson and Onwuegbuzie, 2004). Rather than committing to particular philosophical viewpoints or realities (Creswell, 2009), emphasis rests on guiding actions to cope with the world (Bem and Looren de Jong, 1997), with the research design based on questions being asked (Johnson and Onwuegbuzie, 2004). Further, pragmatists consider the methods and theories useful within particular contexts more important than attempting to reveal underlying truths about the nature of reality (Giacobbi et al., 2005).

Knowledge is assumed to be an interaction between subject and object (Bem and Looren de Jong, 1997), appropriate to the subject content of this study, as it deals with subjective appraisals of contextualized accounts of coping. Further, this epistemological position suits the approach used in ballet, where analogies of knowledge and truth reflect learning and performing; while notation is the subjective appraisal of truth written down by the notator, dancers' own subjective interpretation of the steps will inevitably follow, providing a worthwhile rendition of each role which suits their bodies. This approach mirrors the pragmatic researcher, who is free to use those tools and methods which best suit their needs and purposes (Creswell, 2009).

### **3.2 Research Design**

As an established professional dancer, a unique opportunity has arisen to examine dancers' perceptions of stress, appraisal, coping and injury within a ballet organization, using a longitudinal case study design. It is hoped that the author has earned the trust of participants, encouraging them to answer honestly, in what can be a culturally closed world. For ethical reasons, the company under examination will remain nameless, as experiences within qualitative research are easy to identify, especially within the relatively small community of ballet.

Case studies may use quantitative and/or qualitative methods, with designs arising from the desire to understand complex social phenomena (Yin, 1981; 1994), and examine phenomena within their contexts, rather than independently (Gibbert et al. 2008). Distinguishing features are; attempting to study, 'contemporary phenomenon in... real life setting(s), especially when... boundaries between phenomenon and context are not clearly evident' (Yin, 1981, p. 59); uncovering 'how' and 'why' questions about the use of contemporary events, especially when no control over variables exists (Yin, 1994); and enabling the study of 'operational links needing to be traced over time, rather than mere frequencies or incidences' (Ibid., p.6). While examining frequencies will be an important phase of analysis, emphasis is put on the recording of specific

state-based coping and stress dimensions within their context and in sequence. Thus the case study design is considered appropriate for transactional, contextual accounts of coping.

An embedded, single-case design (Yin, 1994) is proposed through the collection of information about multiple individuals or 'cases' as the primary units of analysis within one organization. The organization, in this case a professional touring ballet company is also regarded as a broader unit of analysis, from which stressors stem, and considered an exemplifying case representing other worldwide companies (following Bryman, 2008). However, this group could also be considered fairly unique, as relatively few ballet organisations exist; cases of transactional accounts of coping within ballet dancers are rarer still, as they have not yet been addressed in the literature.

The same criteria utilized within the positivist tradition can be drawn upon to judge methodological rigor of case studies, namely internal-, construct-, and external-validity, and reliability (Yin, 1994; Gibbert et al., 2008). However, case study inquiry has been criticised, due to the lack of rigor employed, with vague evidence or biased views influencing results and analysis (Yin,1994); further, small samples cannot be generalised to the wider population, making external validity questionable (Yin, 1994; Bryman, 2008). Though undertaking multiple-case studies might enable wider generalisations to be drawn, this is not realistic for a single student research project; concentrating finite resources to one ballet company is more feasible within a short time scale, serving to enhance the quality of the research. Furthermore, Gibbert et al. (2008) conclude that, 'a logical prerequisite for external validity is a case study's internal and construct validity' (p.1472), thus this can be emphasized at the expense of external validity. Additionally, analytic generalizations will strive to generalize results to relevant broader theories, with transparent documentation of research enabling reliability of the case study to be achieved through future replication of procedures (following Yin, 1994).

### 3.3 Instrument

In accordance with a pragmatic approach, Crocker et al. (1998) state that research designs should be determined by their research questions. Thus, as qualitative designs may be more appropriate for examining personal and situational variables embedded within larger contexts (Locke, 1989), they seem a pragmatic choice for measuring potential interactions between contextual and personal variables proposed by process-orientated theories of coping (Crocker et al., 1998). Additionally, longitudinal designs are capable of measuring fluctuations in dynamic coping processes within, and across participants, as well as more accurately documenting stress, coping and injury, without the problems of memory recall associated with cross-sectional research (Thoits, 1995; Gould, 1996; Lazarus, 2000). Thus a diary method utilizing open-ended questions is proposed to record coping sequences and the contextual situations which might cause participants to utilize the same, or shift to other coping strategies (Thoits, 1995).

The diary model utilised within this study is based on research by Nicholls and his colleagues who developed daily paper diaries lasting a month, to study perceived stressors and coping within varying sporting populations (see Nicholls 2007; Nicholls et al., 2005; 2009; Levy et al., 2009). Their designs used a mixture of open-ended questions to record stressors and coping responses, and Likert-type scales to record perceptions of stress intensity and effectiveness. This could be seen as a mixed-model approach (following Johnson and Onwuegbuzie, 2004), based on a pragmatic philosophical orientation, as it mixes elements of the constructivist and positivist methods. Open ended questions are utilised to offer more detailed insight into the demands of dancers' lives (Neil et al., 2009) but limit answers to a single sentence, while qualitative content analytic procedures can be argued to orientate around positivist values (Lincoln and Guba, 2000).

The choice of research tool was guided by comparing interview and diary data from the research's pilot study; friends acting as convenient, accessible and geographically proximate pilot

cases (following Yin, 1994), enabled comparison of data from both collection methods with everyday events experienced and observed by the author. As suggested by Bryman (2008) and Bolger et al. (2003), the diary method more accurately documented specific behaviours, time sequencing of events and on-going experiences. Issues of memory recall associated with retrospective designs (Coxen, 1999; Alaszewski, 2006) and present in pilot interview findings were also avoided by minimizing time between experiences and recall (Bolger et al., 2003), yielding more accurate data (Tennen et al., 2000).

Similar to structured observation, self-report data requires participants to observe their own behaviours (Bryman, 2008), capturing aspects of internal thought which elude observation. Diaries also allow greater insight than surveys, into, 'how individuals interpret situations and ascribe meaning to actions and events and therefore how actions that may appear irrational to outsiders are rational to the diarist' (Alaszewski, 2006, p.37), thus recognizing the importance of context (Bolger et al., 2003). Further, diaries may be useful for collecting sensitive data which participants may not wish to disclose when face to face during interviews (Corti, 1993), relevant to recalling potentially intimate work stresses.

However, compliance rates have been criticised; while a distinct advantage of diaries is that prompt completion minimises memory recall bias thus promoting accurate data recording (Stone et al., 2002), Hyland et al. (1993) reported that paper diaries yielded a 20% compliance rate compared to 94% for electronic palm held diaries. This study did however assess momentary perceptions through thrice daily data collections; 'broader conceptualisations of coping that are better perceived with the benefit of some retrospection', or on-going problems, may be missed by such assessment (Folkman and Moskowitz, 2004, p.749). Additionally, electronic data collection is impossible for the purposes of a low budget research project, thus daily paper diaries provide adequate suitability for recording perceptions longitudinally.

Although a recognised form of social activity that will be familiar to the sample group (Alaszewski, 2006), diary keeping relies on a written vernacular, requiring respondents of a certain educational level to understand instructions and complete questions (Alaszewski, 2006; Briggs and Coleman, 2007). However, in a multinational company, variation in linguistic ability might hinder willingness to participate. Added to this, diminishing motivation may cause participants to become less diligent over time (Bryman, 2008). Nevertheless, Lazarus and Folkman (1984) state that for, ‘the study of transaction and process, and how adaptational outcomes evolve in the short and long term, ipsative-normative research is essential’ (p. 301).

Following methodological recommendations made in sport, injury data should ideally be clinically and prospectively collated for over a year (Fuller et al., 2006). However, this is beyond the resources of this study. Access to injury records collated by the company’s injury prevention centre was denied, besides which, limited time was available to gain ethical consent to access injury records. Meanwhile, validity of self-reported retrospective injury data of 12 months or more is questionable, relying on accurate memory recall (Gabbe et al., 2003), and from personal experiences, is difficult to accurately complete. Thus, prospective, self-report data for the duration of the study becomes the only viable option, allowing a limited picture of injury prevalence over the study period.

### **3.4 Development of Method**

Daily diary questions were developed from sport specific diary literature addressing stressors and coping (see Nicholls, 2007; Nicholls et al., 2005; 2009; Levy et al., 2009). Questions were adapted, with perceived effectiveness omitted in preference for perceived control over the stressor, based on theoretical propositions concerning the goodness-of-fit model (Folkman, 1992) and questions added addressing injury frequency.

In accordance with Nicholls et al. (2005;2009), data collection spanned four weeks, as this length of time balanced problems of attrition with the need to collate data over varying situations (Ibid.). A period consisting of two weeks of rehearsals and touring performances was chosen, to allow for comprehensive data collection of both rehearsal- and performance-specific stressors, as well as potential touring stressors.

Firstly, to record stressors, participants were asked to list any work related concerns they had experienced that day, using an open format, and then rate how stressful they found each situation using a five point Likert-type scale (see Nichols et al, 2007; 2009, Levy et al., 2009). Secondly, to determine appraisal relating to perceptions of harm/loss, threat and challenge, participants were asked to describe why they found the situation stressful, following which, a five point, Likert-type scale was used to rate perceptions of control. Thirdly, coping responses were documented by asking participants how they dealt with each concern (Ibid.). Questions on injury then followed, developed from sporting injury literature (Bronner et al., 2006) with open questions on classification and perceived cause of injury, and one closed question determining whether injuries resulted in full, partial or no time-loss from activities (Appendix 1, p.92-93).

Attention was given to the aesthetic design, in accordance with Corti (1993), with a designated time frame of one day for every two pages. This balanced the need to give participants enough room to write about multiple experiences, whilst keeping perceived diary length relatively short to encourage completion. Placing scales alongside interrelating questions in revised diary sheets reduced space between questions, thus helping to minimize the overall length of daily diary sheets, potentially preventing gaps left in data (Appendix 1, p.92). The need to fill out diary sheets nightly, so participants could accurately remember and report actual experiences rather than usual stressors/coping responses, was emphasized (in accordance with Nicholls et al., 2005; Levy et al., 2009). Participants were also asked to reference back to reoccurring events to avoid confounding data.

Although stressor checklists and tick boxes have been developed for competitive athletes by previous studies (Ibid.), items did not reflect stressors personally experienced. Lack of dance-specific, process-orientated research means checklists suitable for dancers have not yet been developed. Thus, lists of potential stressors and coping strategies were adapted from Noh and Morris (2004), who used interviews to record sources of stress and coping strategies from a Korean ballet company, albeit from a trait-orientated perspective (Appendix 1, p.94-95:Q.1, p.96-97:Q.3). Inappropriate items were excluded (i.e. stressor- performance audition for promotion). These lists were given as examples of other dancers' experiences in the diary instruction sheet, to stimulate participants' memories.

The researcher's presence during pilot diary dissemination allowed participants' opinions on question clarity and understanding of discussion areas to be gathered (Holt and Dunn, 2004), guiding revisions to diary instruction sheets. Wording of questions used familiar language to make terms relevant to dancers, i.e. 'work-related concerns', rather than 'stressors', removing the need to provide participants with definitions (following Nicholls, 2007) and encouraging inclusion of minor stressors (Appendix 1, p.86). However, phrasing was queried and required initial explanation within the pilot study, thus 'sources of stress', (following Noh and Morris, 2004) which seemed to give a clearer idea of the question's meaning was utilised in revised diary sheets. Emphasis was made that all stressful incidences should be recorded with revised phrasing (Appendix 1, p.92:Q.1). Pilot participants also needed reminding that each stressor/appraisal be marked on Likert-type scales, suggesting the need for modification of the diary layout (Appendix 1, p.86:Q.2); writing that each concern be marked, using bold print, also avoided further missed responses (Appendix 1, p.92:Q.1). Although every effort was made to supply each participant with clear instructions addressing and providing completed examples of each question (following Corti, 1993), one participant still found question three relating to appraisal confusing (Appendix 1, p.86:Q.3) and required further explanation, possibly due to the use of 'neutral' language, which did not give enough direction. The instruction example given to the participant (Appendix 1,

p.90:Q.3) once read, did appear to adequately illustrate the question, nevertheless wording was adapted to avoid potential confusion (Appendix 1, p.92:Q.2).

In accordance with Yin (1994), the pilot study also helped provide conceptual clarification, specifically developing relevant lines of questioning for injury documentation appropriate to research questions (following Hägglund et al, 2005; Fuller et al, 2006). Instead of assessing injury pain intensity which was not relevant to research enquiries (Appendix 1, p.87:Q.6), questions on frequency, site, perceived cause and intensity of injuries measured by time-loss from activity were developed (Appendix 1, p.93:Q.4).

However, producing valid prevalence and incidence estimates in order to calculate injury rates requires accurate and complete analysis of the whole population, including information about inclusion criteria (Bronner et al., 2003; Hincapié et al., 2008). For example, incidence rates, providing a rate of injury per 1000 hours of dance activity (see Nilsson et al., 2001), give a unit for comparison of different participants or studies. Providing an accurate estimate of exposure would be extremely time consuming, as each dancer's workload varies depending on what they are cast to dance. Considering time constraints, and the additional efforts participants would have to go to in order to recall the specifics of their schedule, this is deemed beyond the capabilities of this study. Therefore, 'prevalence' is the chosen method for calculating injury occurrence, even though this provides only a 'snapshot' calculation of 'the number of existing cases divided by the total population', rather than more accurate recordings based on exposure (Bronner et al., 2006, p. 73).

### **3.5 Sampling, Field and Ethical Procedures**

Before data collection was due to start, each dancer was asked whether they would be interested in taking part in the author's student research project. They were told that this would involve filling out four questions each working day for a month and were given a brief summary of what

the research was about. A copy of the diary sheet was presented to dancers as an example of what the study entailed so that potential participants could decide if they wanted to commit to the study. The author was careful to avoid distracting members during rehearsals and only asked dancers not involved in rehearsals at that moment. Dancers were also assured that they should only take part if they wished to and not feel under any obligation, lest they felt pressurised. Participants were also informed that they could withdraw at any point.

Longitudinal designs require increased time and effort from participants, making representative sampling, permitting secure generalisations difficult (Lazarus, 2000). Thus, the researcher approached all company dancers in order to obtain as varied a sample as possible, in the expectation that relatively few members would agree to participate. This may consequently result in data being skewed by personality factors, with only certain personalities agreeing to partake. However, this is considered an unavoidable aspect of longitudinal research.

Data collection commenced one week after the mid-season break and lasted for the next four working weeks. From a total of fifty seven dancers, twenty three initially agreed to take part in the study, whilst fourteen declined. Only those dancers who were currently fully participating in rehearsals and performances were asked; six dancers were excluded due to injury. Four dancers were excluded because they were busy studying, and a further ten were absent; this unusually high figure was due to illness and dancers taking extra leave of absence after the mid-season break. Though resulting in lower participant numbers, this was the only period providing a good cross-section of activities, comprising two rehearsal and touring performance weeks.

**Table 1- Dancers' Profiles**

<b>Participant</b>	<b>Gender</b>	<b>Rank at time of study</b>	<b>Estimated age at time of study</b>	<b>Years in company at time of study</b>
A	Male	Artist	18	1
B	Male	Artist	22	3.5
C	Male	Artist	23	3.5
D	Male	Artist	24	5.5
E	Male	Artist	22	4.5
F	Female	Artist	23	5.5
G	Female	Artist	22	4.5
H	Female	Artist	22	3.5
I	Female	Artist	22	2.5
J	Female	Artist	26	8.5
K	Male	First Artist	28	10.5
L	Male	First Artist	32	12.5
M	Male	Soloist	32	12.5
N	Female	Soloist	33	13.5
O	Female	Soloist	31	13.5
P	Female	Senior Soloist	41	23.5
Q	Female	Senior Soloist	26	10.5
R	Female	Senior Soloist	32	14.5
S	Male	Senior Soloist	34	17.5
U	Female	Principal	33	13.5

When research commenced, each participant was given two participant information and consent forms (one for the researcher and one for the participant to keep), and one diary instruction sheet (following Corti, 1993; Nicholls et al., 2009). The researcher spoke with each participant prior to data collection taking place, to make sure that he/she had received the relevant paper work, understood what was required, asked if there was any questions, signed a participant information and consent form and to reiterate that they could call the author with any questions. Further, the author was present across the data collection period to answer any procedural questions and ensure adherence (following Nicholls et al., 2005).

Diary sheets were administered as weekly booklets each Monday morning (following Nicholls et al., 2009) because previous research emphasised high non-completion rates resulting from adopting a single 28-day booklet (see Nicholls et al., 2005; 2006). However, as contractual issues meant many dancers were not required to work on Mondays during performance weeks, weekly booklets were handed out on the last working day of the previous week. Participants were asked to return their sheets when the subsequent week's sheets were handed out, to enhance adherence.

Since many dancers asked if they could be reminded to complete their dairy sheets, participants were asked if they would like to opt in to a reminder text service each night. This involved setting up a group on the researcher's phone containing those participants who wished to be reminded. Each evening this group was sent one reminder text to complete their dairy sheets. Participants were told that they could 'unsubscribe' to these reminders at any time via text or any other means. Further, if dancers pulled out of the research, their name would be automatically removed from this text group.

## **3.6 Analysis**

### *3.6.1 Choice of analysis*

Alaszewski (2006) states that qualitative open structures providing written text, are more akin to content analytic and grounded theory procedures (Ibid.). For this study, content analysis is more suitable for analysing open-ended questions set within a clearly structured data collection method with preconceived study propositions. It also reflects the conception of the diary method as recording information about a social reality existing externally to the text; the text can describe and build up a picture of this external reality, and thus can be broken down into its constituent parts and reassembled into a new scientific text (Ibid.).

Content analysis can also be systematically applied across the study to extract uniform and standardized information (Aleszewski, 2006). Data can be summarized numerically, so that hypotheses can be tested by analysis indicating general trends, which can be viewed across diaries, identifying proportional outcomes, whilst aiming to minimize distortions created within naturalistic settings (Ibid.). Advantages also lay in the transparency of coding schemes and sampling procedures, enabling replication of follow-up studies, and the ability to track frequencies over time, making it appropriate for analysis of longitudinal research (Bryman, 2008).

However, Crocker et al. (1998) state that it is important for researchers to classify coping according to purpose, rather than forcing data into pre-existing categories. Thus, aspects of more qualitative types of analysis will also be drawn upon, as the investigator wishes to interpret and shape emerging themes, rather than fitting data into preconceived standardized codes, as with quantitative research (Charmaz, 2000). As Bryman (2008) states, thematic content analysis aims to categorize the phenomenon under observation, which can involve an interpretative approach (Bryman, 2008). This can follow aspects of the grounded theory method where coding categories are developed through a process of constant comparison and data is coded as it emerges (Aleszewski, 2006).

Thus, a combination of thematic content analytic and inductive and deductive procedures will be utilised to analyse the data (following Levy et al., 2009; Nicholls et al., 2005). In accordance with a pragmatic approach, this type of analysis appears most appropriate for classifying and reducing the copious amounts of data generated by the data collection method, whilst attempting to respect its qualitative nature (Cohen et al., 2007), by allowing themes to emerge and capture the specific contexts from which these texts are derived (Ibid.).

### *3.6.2 Analytic procedures*

Analysis began by repeatedly reading through the diary sheets to become familiar with the data and to make note of any ambiguities. The author then respondent validated appraisal answers, as responses did not always address why the respondent appraised the event as being stressful, but rather, explained further the stressful situation; this potentially resulted from difficulties inherent in participants having to self-determine what their psychological stress related to, or else, from the question failing to direct participants to give the level of detail required in order to analyse responses in relation to pre-existing theory. Respondent validation helped clarify the meaning of ambiguous and inconsistent phrasing, gaining greater insight into the perceptions of the participant, to more accurately guide later classification. Notes were made on the diary sheets during interviews, each of which lasted around an hour.

Data were initially examined and coded in relation to the broad themes under analysis, beginning with stressors and intensity of stressors, appraisals and perceived control, and finally, coping strategies. For each construct, results from previously reviewed studies were examined as a base for modelling classifications for the present study wherever possible. However, the author found that, in the case of both stressor and coping strategy results in sport, it was not appropriate to try to fit data in similar categories, as they were not appropriate for emergent themes. Thus where necessary, categories were adapted.

The units of meaning were determined by participants' responses, usually consisting of a word or short phrases representing a meaningful point (i.e. 'my back felt stiff and sore' or, 'tired'). These raw data themes (Patton, 1990 in Fletcher and Hanton, 2003) were firstly coded by participant (A-U) and day (1-22) and then by construct number (i.e. S1, for stressor 1 on a particular day) and then located into common underlying threads which formed emergent first order themes; this resulted in a hierarchical process continuing to higher-order themes (following Fletcher and Hanton, 2003). The constant comparison method was utilised (Glazer and Strauss, 1967 in

Reeves et al., 2009), where, as each new meaning unit was selected for analysis, it was compared to all other units of meaning, and subsequently grouped with similar units; if no similar units existed, then a new category was formed. This process was initially piloted by hand, before being undertaken in separate word documents for each general dimensions.

These emergent themes were then categorised deductively under existing general dimensions derived from the literature where possible (i.e., injury and interpersonal relationships for stressors), while other categories were adapted (i.e. management issues/ standards, goals and expectations, rather than coaches and coaching styles/ goals and expectations) and others were added (i.e. touring stressors) to suit the dance-specific environment. All categories were then reviewed for overlap and ambiguity and subjected to deductive analysis to affirm the appropriateness of categories (following Reeves et al., 2009). The whole process was repeated for coping strategies.

Appraisal responses meanwhile were categorised deductively into the harm/loss, threat, challenge and benefit categories according to the literature (Lazarus, 1999) as categories reflected emerging data. During respondent validation the appraisal theory according to Lazarus and Folkman (1984) was explained so participants were put in the position of the 'expert', deciding how each stressor was appraised according to the literature. This was then recorded in pencil on diary sheets.

Once all units of meaning were categorized, they were entered into an excel spread sheet, along with injury data so that frequencies could be examined between variables. Injury data on the perceived cause of injury was omitted as responses were intermittent, presumably because dancers felt unsure about the cause. Meanwhile, stress intensities by participant or day, were calculated using each participant's maximum level of stress recorded on each day. From personal experience, this was felt to better reflect stress intensity, than daily averages; multiple low intensity stressors recorded on the same day as single high intensity stressors may act to falsely

reduce daily intensity averages. Further, grouping of ranks was necessary to enable meaningful analysis, because of the small number of participants in individual ranks, thus artists and first artists were grouped under 'corps' and soloists, senior soloists and principals were grouped under the term 'soloists' (following Schantz and Åstrand, 1984). These groupings were felt to reflect the major types of work undertaken by dancers within each grouping.

As participants often responded to multiple stressors with one coping response, a coding system was developed to identify when this was the case; corresponding numbers were placed in front of the coping code, alongside strategies used for multiple stressors. Therefore, the relationship between particular stressors and coping responses was maintained, while duplicates could be filtered out when counting actual occurrences of coping strategies. However, while participants commonly entered multiple appraisals and coping responses for any single stressor, there was no way of relating appraisals and coping responses to one another, beyond their co-occurrence in response to the same stressor. Therefore analysis of appraisals and coping combinations was undertaken by examining the frequencies of co-occurrence of different general dimensions using data sorted using horizontal lookup charts in excel. This was necessary to avoid insupportable impressions of causality caused by the artificial creations of pairs of appraisals and coping responses, created in the process of using the pivot tables tools by which most other analysis was performed.

Since consensus validation techniques were not possible for this single student research study (according to Lincoln and Guba, 2000), respondent validation was utilised in order to record most accurately the perceptions of participants. Additionally, each unit of meaning for emergent stressors and coping categories are indexed; under each first-, higher-order theme and general dimension within appendix 2 (see p.101-105 for stressor excerpts and p.106-111 for coping excerpts; full document included on CD); and by participant, within appendix 3 (see p.112-118 for Participant A excerpt; full document included on CD).

## 4. Presentation and Analysis of Results

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Results derived from data analysis procedures (440 daily diaries in total) represent the collated diary responses from  $n=20$  participants over four weeks ( $n=22$  working days), consisting of two, five day rehearsal weeks ( $n=10$  rehearsal days), and two, six day performance weeks ( $n=12$  rehearsal days). Participants consisted of;  $n=10$  artists,  $n=2$  first artists (totalled as  $n=12$  corps de ballet participants); and  $n=3$  soloists,  $n=4$  first soloists and  $n=1$  principal (totalled as  $n=8$  soloist participants).  $n=9$  participants were males and  $n=11$ , females.

### 4.1 Stressors

Diaries identified  $n=741$  stressors, which were abstracted into  $n=141$  raw data themes,  $n=34$  higher order themes and categorized under one of the following general dimensions: **touring**; **interpersonal**; **personal wellbeing**; **injury**; **rehearsal/training**; **performance**; **management**; **psychological states of mind (PSM)**, and **standards, expectations, goals and career (SEGC)**. Stressors pertaining to injury ( $n=128$ ), performance ( $n=106$ ) and SEGC ( $n=135$ ) were experienced most, whilst interpersonal ( $n=51$ ), PSM ( $n=36$ ) and touring ( $n=54$ ) were recorded the least (Appendix 4, p.119, Figure 1). Each dimension is displayed below alongside frequency analyses illustrating the number of times each raw data theme, higher-order theme and general dimension was mentioned. Further descriptions and analysis is limited to the most frequent higher-order themes, because of word restrictions.

A full range of stressors within the **touring** dimension are displayed in Figure 2. These stressors occurred only from day seven to seventeen, when the company toured. They involved difficulties adjusting to unfamiliar surroundings at work, and to temporary accommodation, besides the stress associated with travelling and working away from home.

*Travelling issues* were the most dominant higher-order theme within **touring**; participants frequently commented on *tiredness when travelling* (n=6), and its *effects on personal wellbeing* (n=5) and/or *standard of performance* (n=3). Company protocol designated that dancers were responsible for their own travel arrangements on tour. Consequently, many dancers chose to share car lifts to reduce costs and increase time at home by travelling on performance days, thus faced a trade-off between spending longer at home and the potential detrimental effects of travelling on performance and personal wellbeing, with a daunting, ‘long drive late at night’ after performing a double show day (K17-S1).

A full range of **interpersonal** stressors is displayed in Figure 3. *Tensions with colleagues* (n=25) is the most significant higher-order theme; several participants commented that feeling uncomfortable around colleagues creates ‘unnecessary tension in the rehearsal studio’ (E6-S1), and that frictions in the changing room, if left to develop, ‘can lead to real fallings out’ (D10-S1). Dancers spend most of their time together in dressing rooms when performing, thus it can be difficult to deal with colleagues who are upset and ‘bringing others down’ (R14-S1) through their own efforts to cope, an example of the social effect of personal coping.

Figure 2: Touring stressors

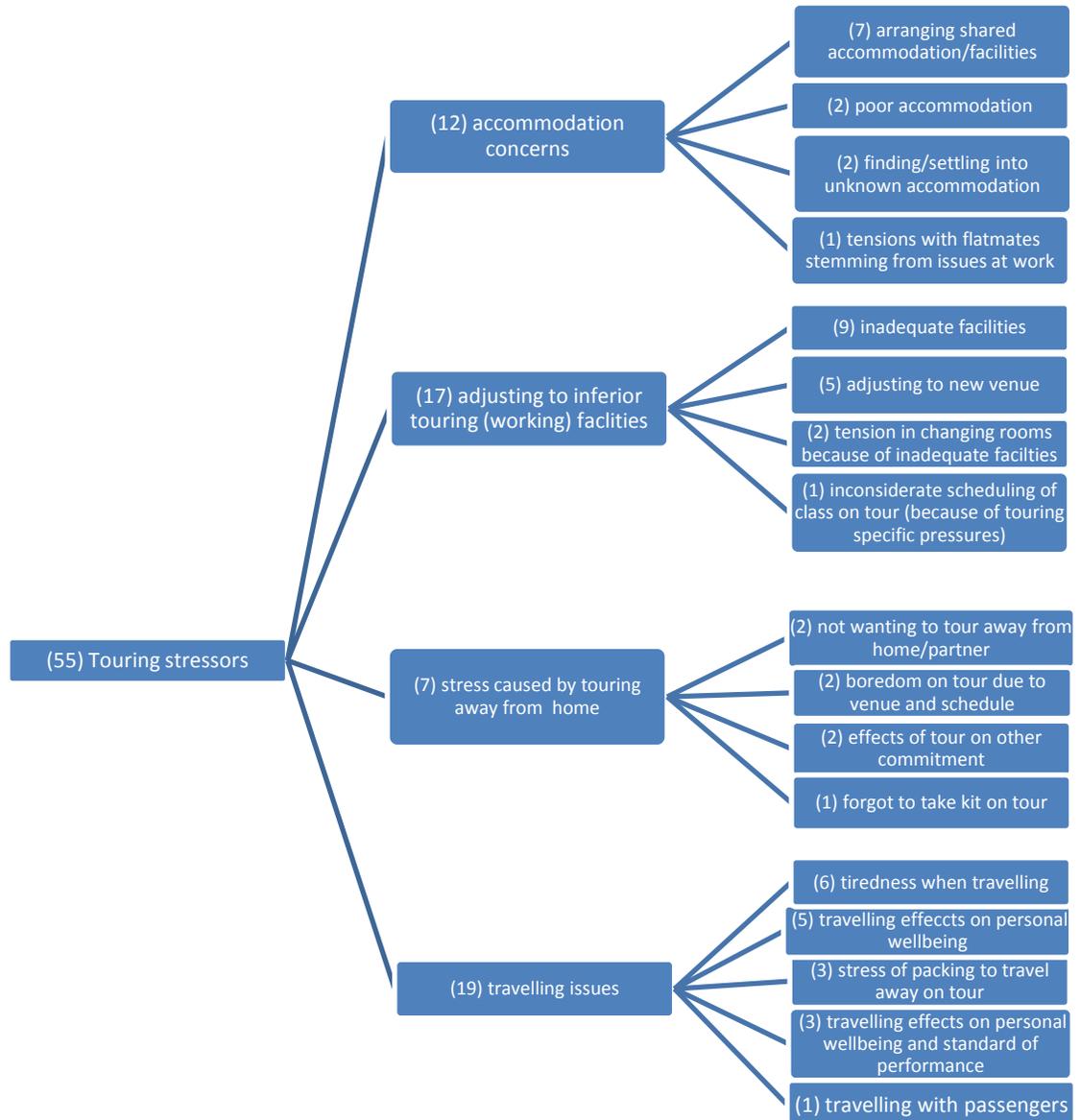
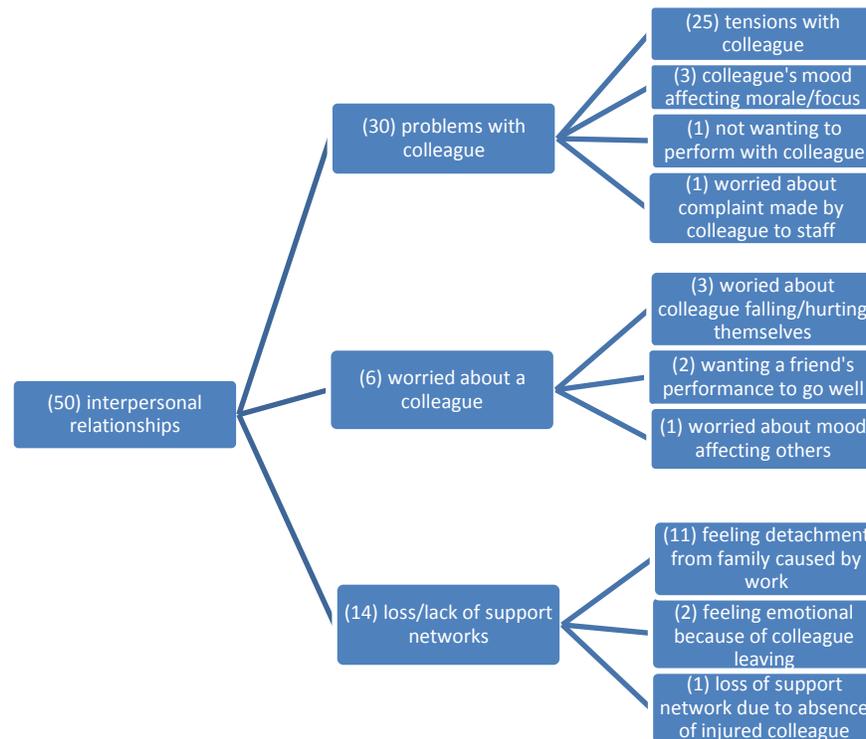


Figure 3: Interpersonal Stressors



A full range of **management** stressors is displayed in Figure 4. The hierarchical nature of ballet causes staff to dictate how rehearsals are taken. Thus dancers' concerns about organization of rehearsals are not easily addressed, as they are afraid to discuss matters with staff who ultimately influence their careers; these unresolved issues can then become more stressful. *Staff not fulfilling roles* is the most significant category in this dimension. First-order themes such as *staff not correcting rehearsals effectively/caring* ( $n=12$ ), reflect dancers' concerns about 'the lack of basic instruction (that) would avoid confusion and improve the quality of... performances with very little extra time or effort' (D2-S1). Lack of feedback was also seen as giving no indicator of how to improve performance (P13-S1).

Figure 4: Management Stressors

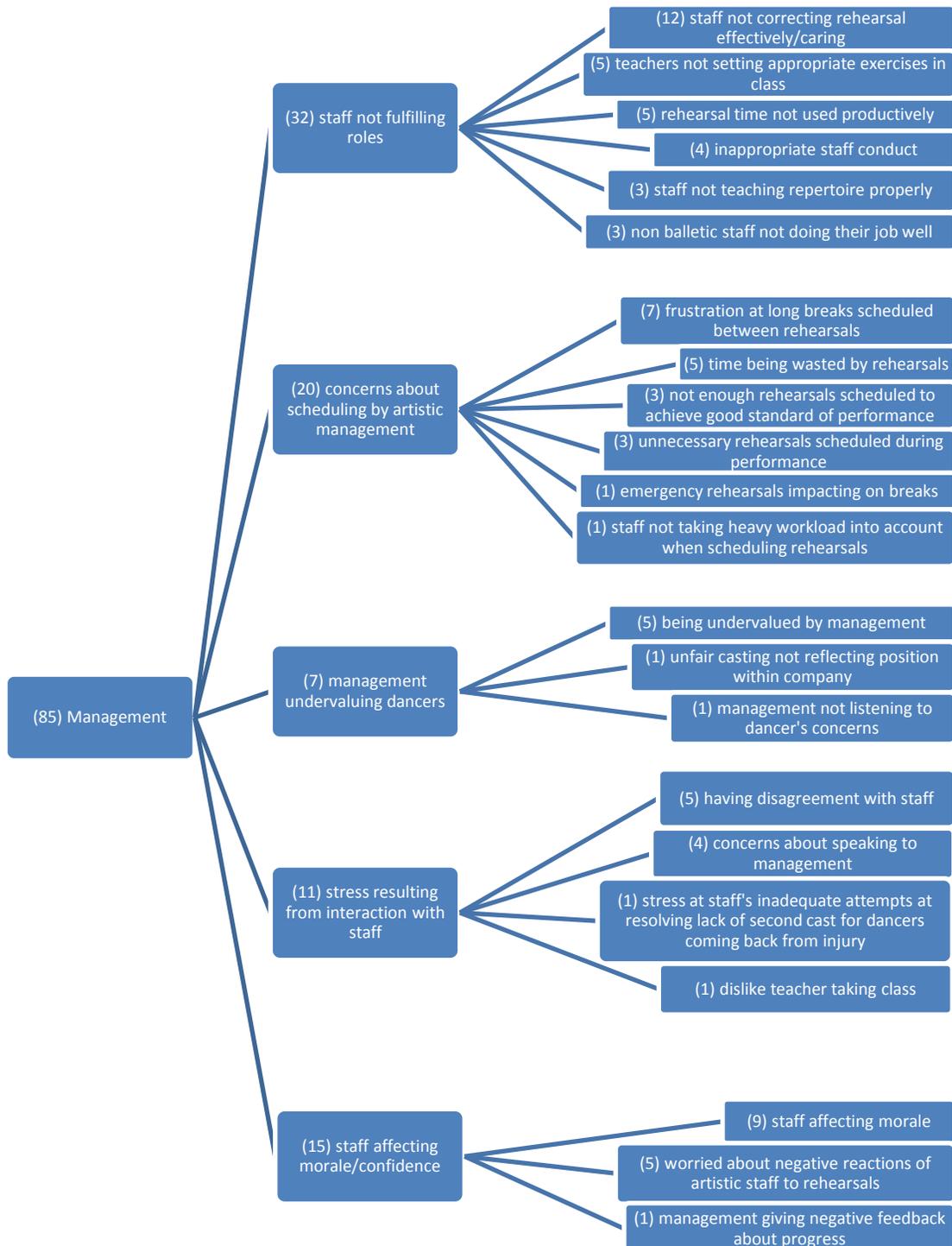


Figure 5: Rehearsal/training Stressors

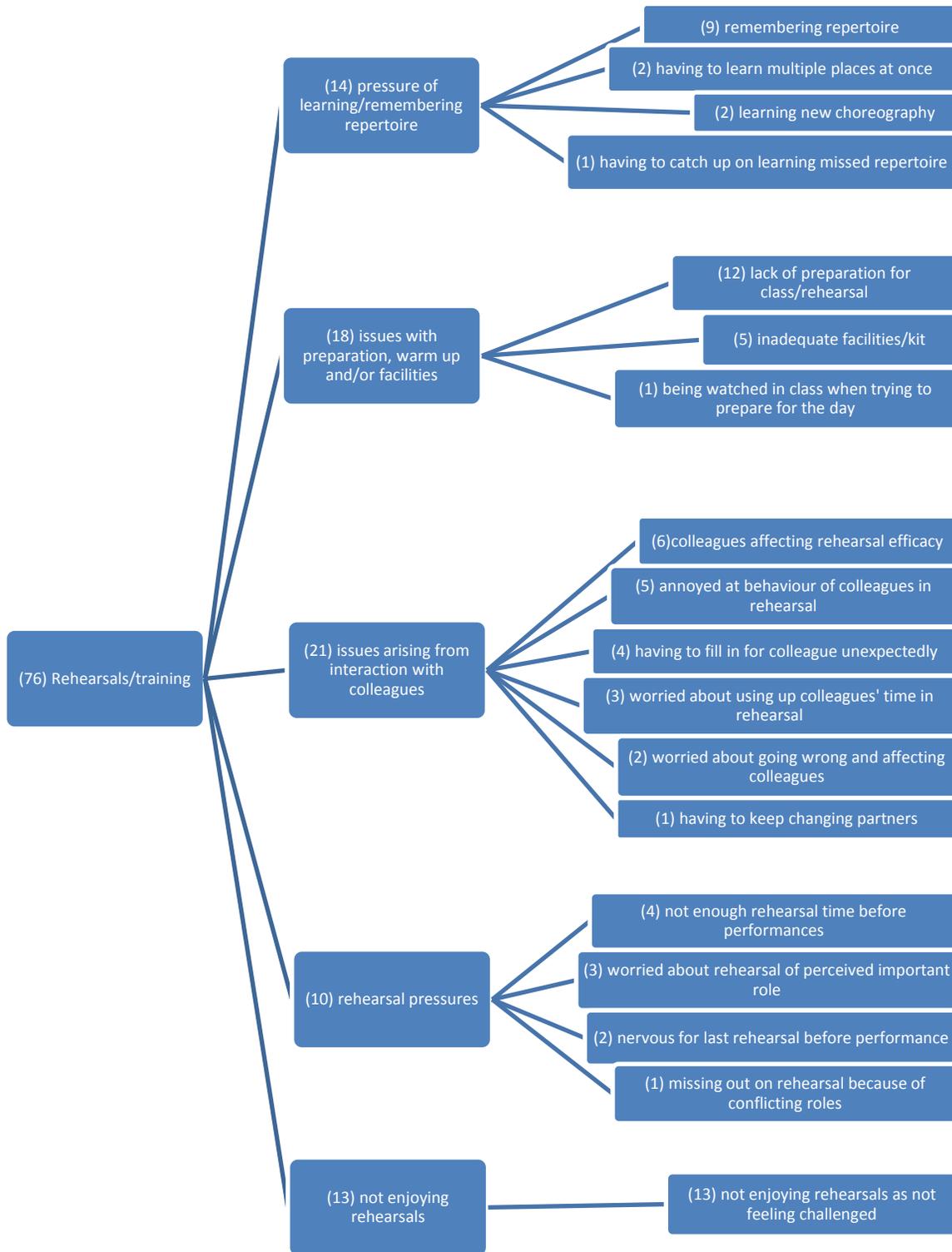
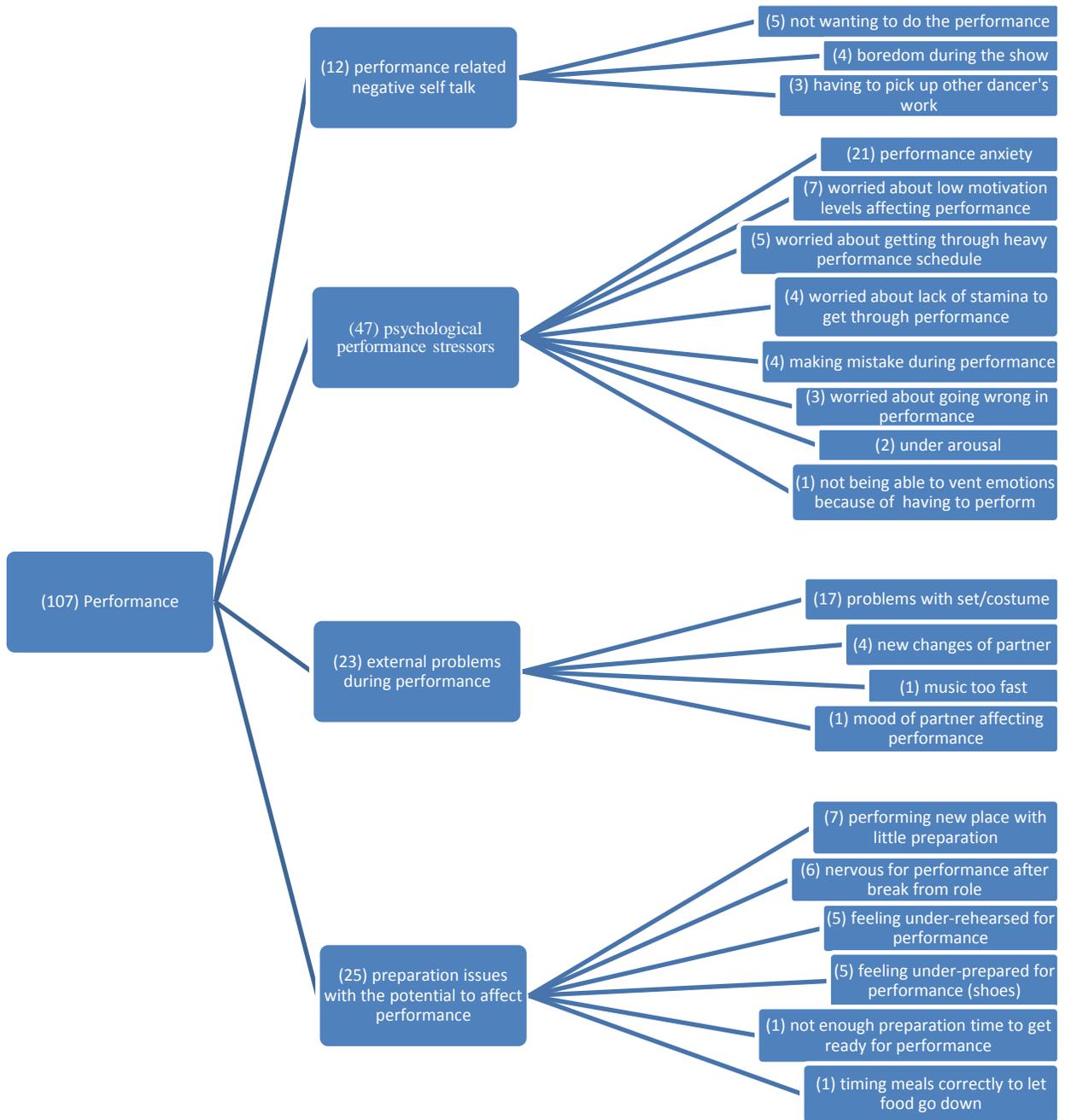


Figure 6: Performance Stressors



A full range of **rehearsal/training** stressors is presented in Figure 5. This dimension comprises issues in rehearsals or class deemed to have potential effects on dancers' personal standards/wellbeing or general company performance. Perhaps surprisingly, *issues arising from interaction with colleagues* ( $n=21$ ), was the most dominant higher-order theme, often stemming from 'colleagues not being helpful or productive with time management' (E2-S1) when trying to learn new repertoire, thus 'wasting everyone's time' and achieving nothing (M1-S1), or having to do 'other people's work in rehearsal' (N5-S2.1).

A full range of **performance** stressors is displayed in Figure 6. *Psychological performance stressors* ( $n=47$ ) were a significant higher-order theme, usually because of the potential effects on optimal performance. *Performance anxiety* ( $n=21$ ) was widely felt, especially when dancing new roles which were perceived to be important and an opportunity to demonstrate ability to staff. *External problems during performance* ( $n=23$ ) consisted mostly of *problems with set/costume* ( $n=17$ ); dealing with skin conditions brought about by gluing on wigs, not being able to breathe and over-heating in costumes were common because materials are chosen for their aesthetic qualities over suitability for dancing;

'the thought of doing (ballet) in full costume really scared me- it's so heavy and hard work (just not being fit enough and being able to get through it properly)' (D8-S1).

*Preparation issues with the potential to affect performance* ( $n=25$ ) encompassed dancers feeling under-rehearsed for performances, usually because of lack of rehearsal or having to fill in for other dancers at very short notice. It can be frustrating when lack of rehearsal impacts on standard and enjoyment of performance; as one participant commented,

'I still feel uncomfortable with the solo and I should be able to do it in my sleep' (N8-S2).

A full range of **SEGC** stressors are displayed in Figure 7. *Short term concerns about standard of work* ( $n=42$ ) were frequently cited, involving concerns about *technical standard of dancing* ( $n=30$ ) and the ‘self-dissatisfaction’ (C16-S1) felt when ‘unable to execute certain steps as well as usual’ (C8-S1). Stress was often shown to result from the high standards dancers placed on themselves.

Common anxieties relating to *short term concerns about fitness and body* ( $n=27$ ), demonstrate the importance of aesthetics in dance; body image becomes ‘part of (an) overall concern about (your) look as a performer’, with, ‘pressure to be in shape from yourself and everyone externally’, with potential effects on future opportunities as a result (O1-S2). Similarly *concerns about evaluations and expectations of colleagues/staff* ( $n=40$ ) were numerous; staffs’ evaluations are especially worrying, because if expectations are not met, then fewer opportunities may be given in the future (H3-S1).

A full diagram of **PSM** stressors is displayed in Figure 8. Frequent themes relate to *concerns about negative moods/emotions caused by work* ( $n=28$ ) and centre on *distress at not enjoying work* ( $n=12$ ) and *amotivation* ( $n=9$ ). Again, not wanting to dance can be, ‘really upsetting (when you) don’t feel like doing something that (you) love and... don’t want to be at work’ (C15-S2).

Figure 7: Standards, Expectations, Goals and Career Stressors

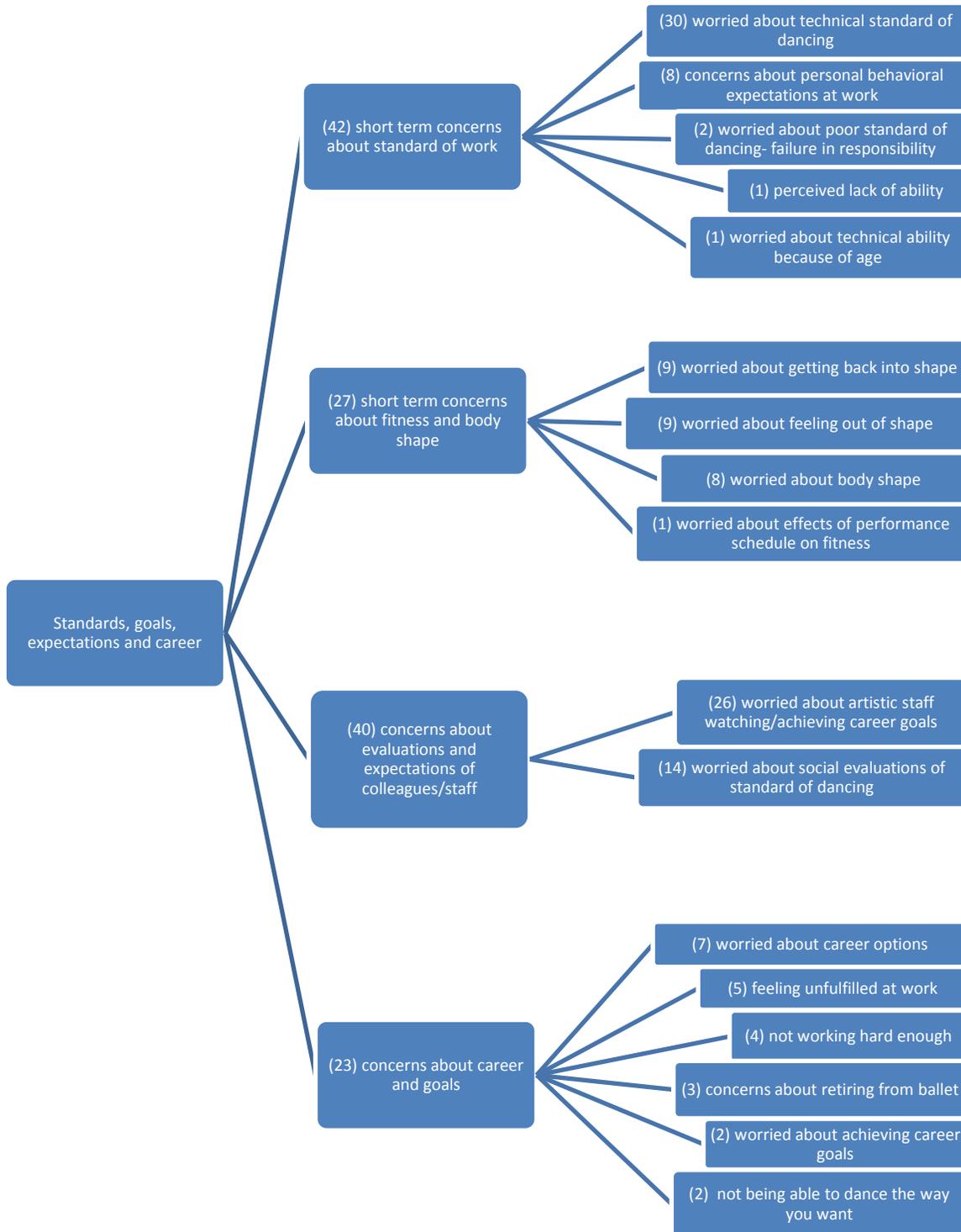


Figure 8: Psychological States of Mind Stressors

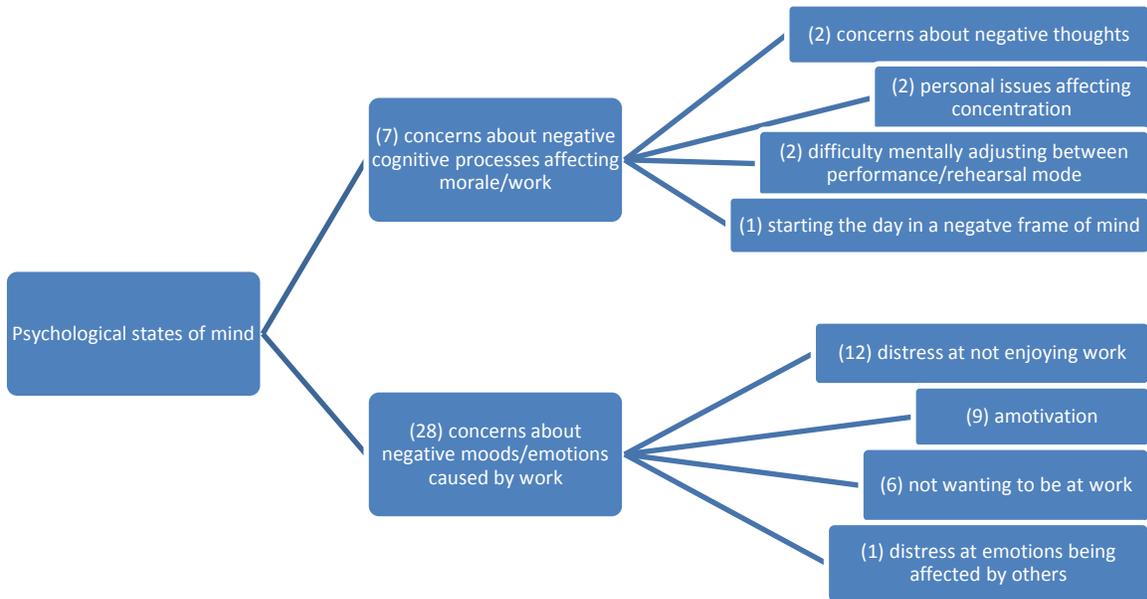


Figure 9: Personal Wellbeing Stressors

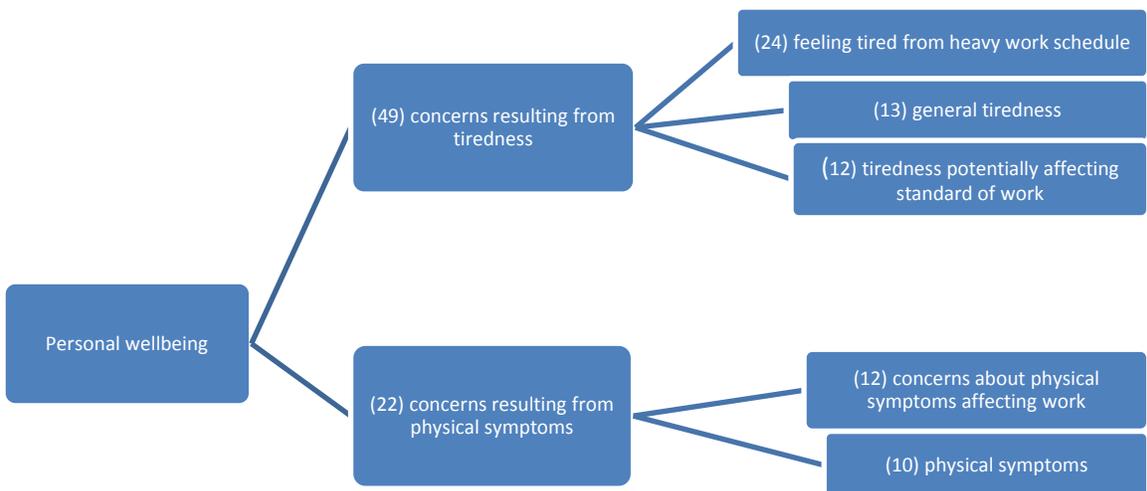
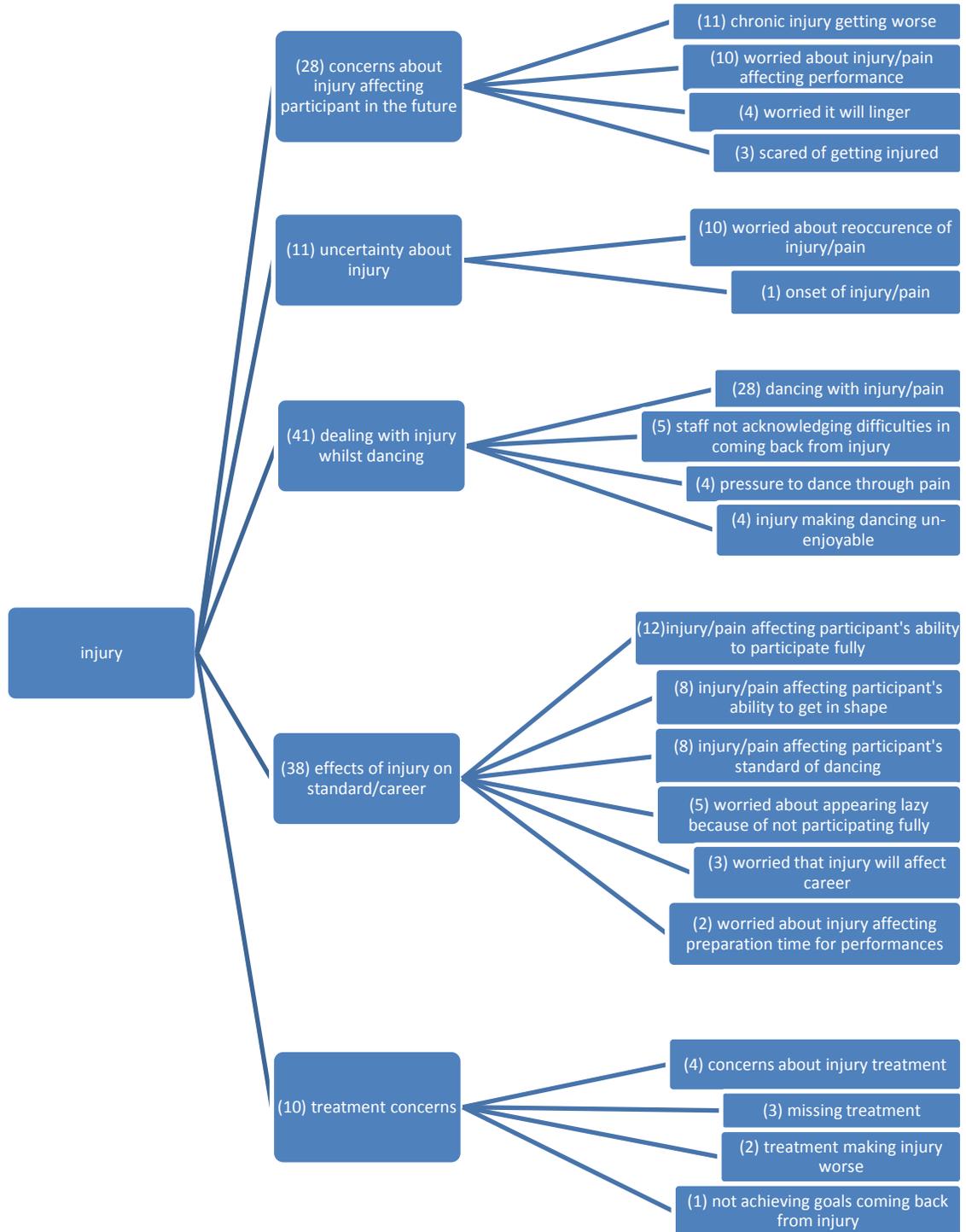


Figure 10: Injury Stressors



Stressors pertaining to **personal wellbeing** are displayed in Figure 9. Higher-order themes were *concerns resulting from tiredness* ( $n=49$ ) and *physical symptoms* ( $n=22$ ), distressing because of potential impact on standard of work; it can be particularly stressful when having to perform a challenging role while not feeling at your best (G16-S1). Tiredness and illness can also make performing an average of seven shows each week particularly daunting;

*'the tiredness is catching me- not used to it again performing every fucking day- my body is fucked' (J17-S1)*

Stressors pertaining to **injury** are displayed in Figure 10. *Dealing with injury whilst dancing* ( $n=41$ ), was most often cited, including pressures to continue dancing whilst in pain, besides being worried for one's personal wellbeing. Dancers do not wish to be considered unreliable by staff, thus feeling pressured to do more than is appropriate (S8-S1), especially when there are no other dancers available to stand-in. Further considerations include, 'having to be aware/careful of how much you push- how long will it last?- am I going to be dealing with this forever?' (O11-S1); such distractions change one's focus when dancing (I4-S1) and hinder enjoyment.

*Effects of injury on standard/career* ( $n=38$ ) related to 'frustration at (the) inability to dance fully' (C2-S3), and not being 'able to get in adequate shape for forthcoming demands', or, 'increase/maintain skill level' (S9-S1). Injuries causing problems later on in one's career (I19-S2) or 'being perceived as lazy because of not participating fully (F2-S2.2) were also concerning.

## 4.2 Appraisals

All primary appraisal responses were categorised deductively into harm/loss, threat, challenge and benefit categories established in the literature (Lazarus and Folkman, 1984; Folkman and Moskowitz, 2004). Frequencies of recorded primary appraisals were; threat ( $n=965$  or 54%), harm/loss ( $n=768$  or 43%), challenge ( $n=45$  or 2.5 %) and benefit ( $n=4$  or 0.2%). Average

control ratings varied by appraisal with threat having a higher average control (2.7) than harm/loss (2.3). Challenge appraisals had the highest average control of 3.2, while benefit had too few responses to create meaningful averages (Appendix 4, p.149, Table 2).

### 4.3 Coping

Coping strategies have been classified deductively from the data, based on coping models from the literature (Billings and Moos, 1981; Lazarus and Folkman, 1984; Lyons et al., 1998), under **problem-focused, emotion-focused, avoidance, communal** and **no coping** general dimensions. A total of  $n=1102$  coping responses arose from diaries, which were abstracted into 61 raw data themes, 19 higher order themes and categorized under the aforementioned general dimensions.

A full display of higher- and first-order themes within **problem-focused** coping, ( $n=569$  or 52% of responses), can be found in Figure 11. **Physical preparation/recovery** ( $n=302$ ) was a significant higher-order theme consisting of coping strategies aimed at alleviating pain and preparing the body for activity. As physiotherapy is freely available and ‘good practice’ recovery techniques such as icing or wearing recovery garments are encouraged, it is unsurprising that *physical recovery strategies* and *seeking physical treatment* were common first-order themes.

**Planning** ( $n=84$ ) was also common, consisting mainly of *planning physical preparation/recovery*, where strategies such as ‘booking physio’ (F1-S2.1) and getting an early night (G8-S2), aimed to plan ahead to alleviate pain/tiredness.

**Emotion-focused** coping strategies ( $n=343$  or 31%) are displayed in Figure 12. The most recurrent higher-order theme is **acceptance**, which includes strategies aimed at emotionally accepting the situation; these include *physically carrying on* and not trying to change the origin of the problem, *positive re-appraisal*, and *rationalizing*, (or putting the stressor into perspective); as

one participant writes ‘(the) thought of doing it (was) worse than doing it... (I) put it into perspective and thought, ‘fuck it, never mind’ (M9-S2).

Emotionally driven **social support** was another common higher-order theme, especially *speaking to friends/family*. **Relaxation** also frequently cited, centred on activities specifically undertaken ‘to relax and chill out’ (H19-S1); *behavioural relaxation* included watching films, listening to music and ‘retail therapy’.

**Avoidance** coping, (n=113 or 10%), consisted of behavioural and cognitive strategies which avoided dealing with the stressor (Figure 13). **Behavioural avoidance** largely involved *leaving the work environment* by removing oneself ‘physically from the situation’ (A2-S5), and *behavioural distraction* where participants engaged in activities for ‘distraction and entertainment’ (B15-S1), such as watching films/television, reading or going out for dinner.

The majority of **cognitive avoidance** strategies were made up of *thought stopping*; participants, ‘tried not dwell on/think about’ (Q13-S1) the stressor and tried to ‘stop thinking negative thoughts and move on’ (U3-S1). Participants also thought ahead to the near future by telling themselves ‘it was...almost home time...’ (D11-S1) or that ‘it would be the weekend soon’ (F5-S1) or looked to the distant future;

‘I just try to think about the future...that makes me happy...’ (J17-S3.1)

Figure 11: Problem-focused Coping Strategies

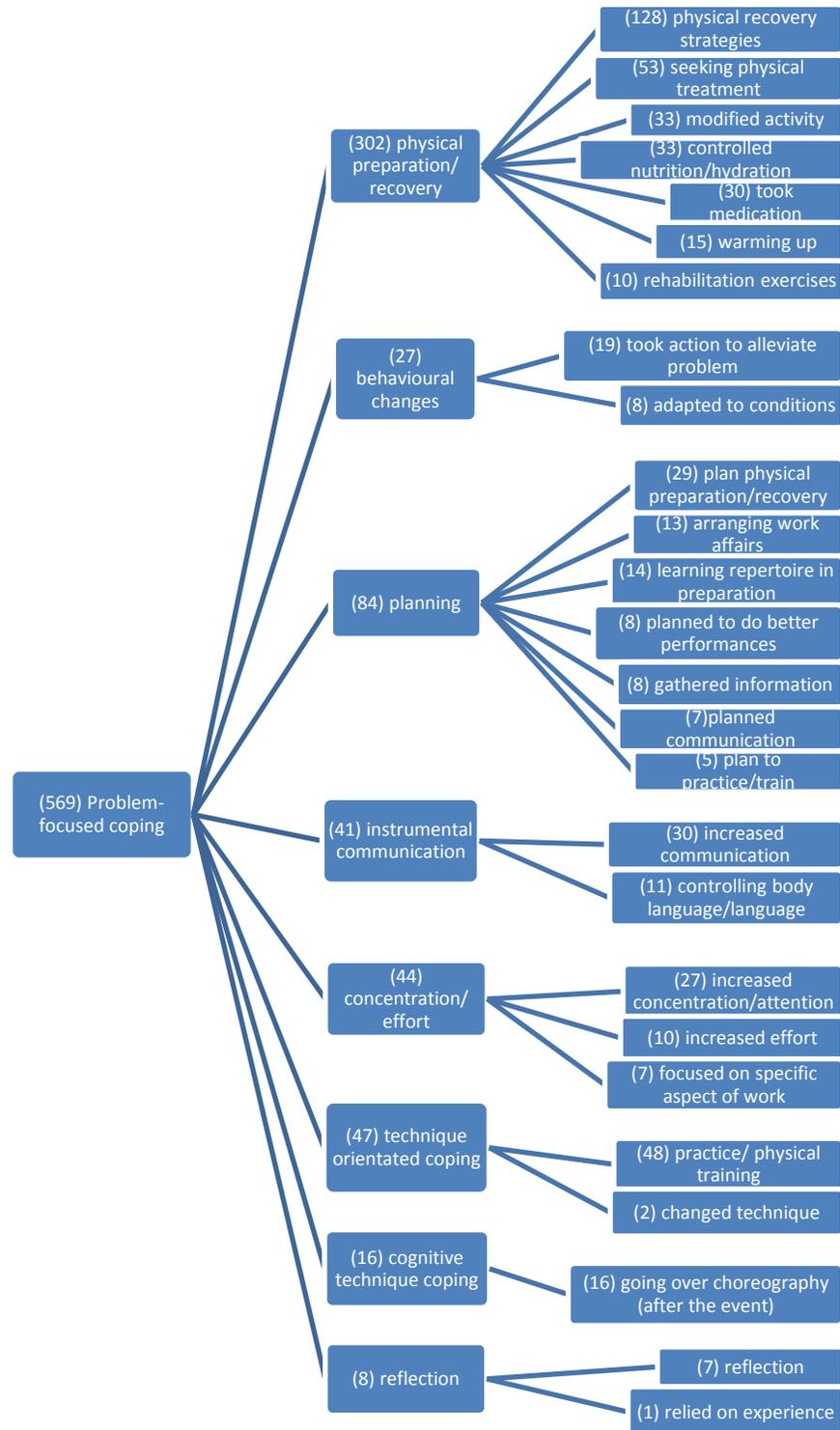
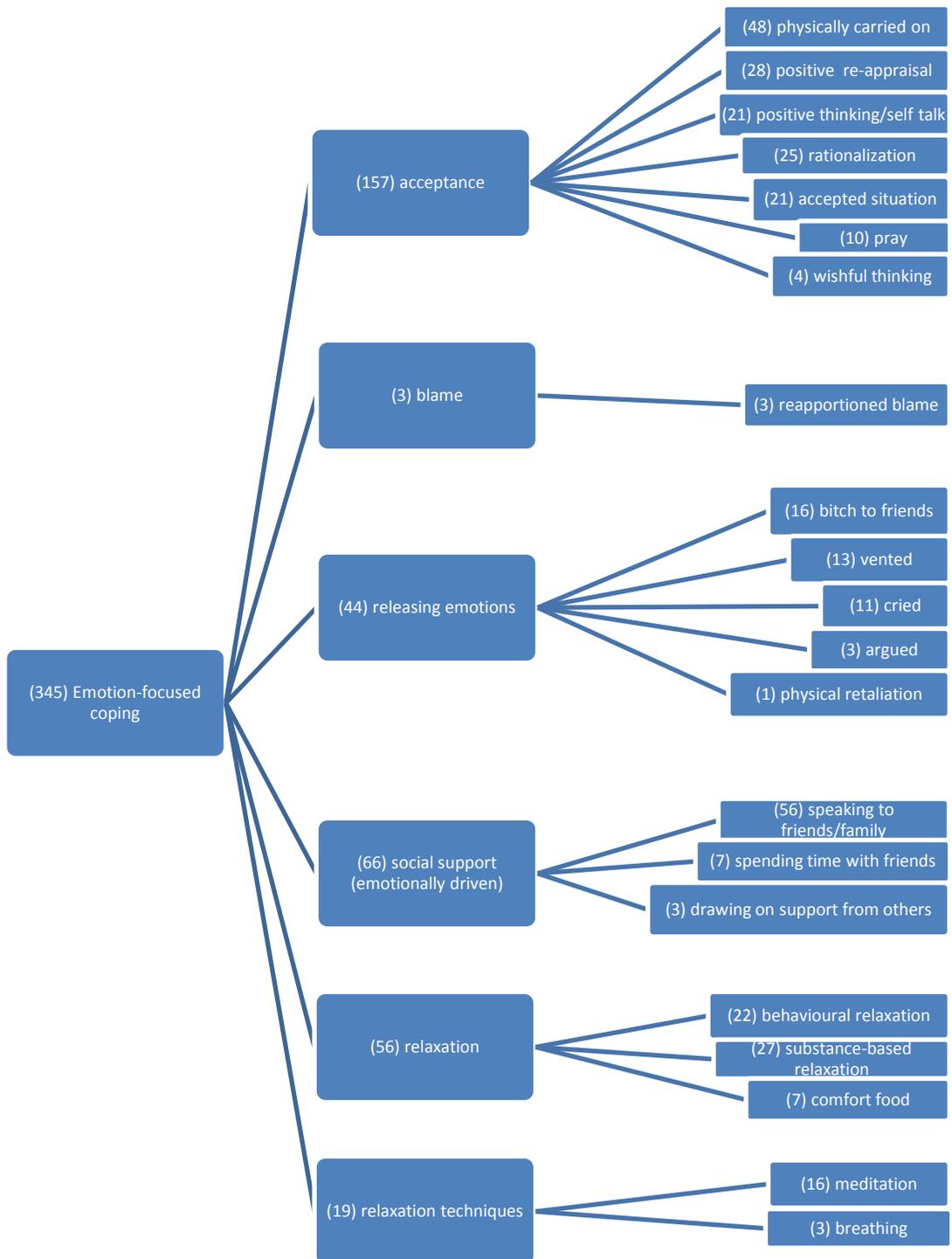
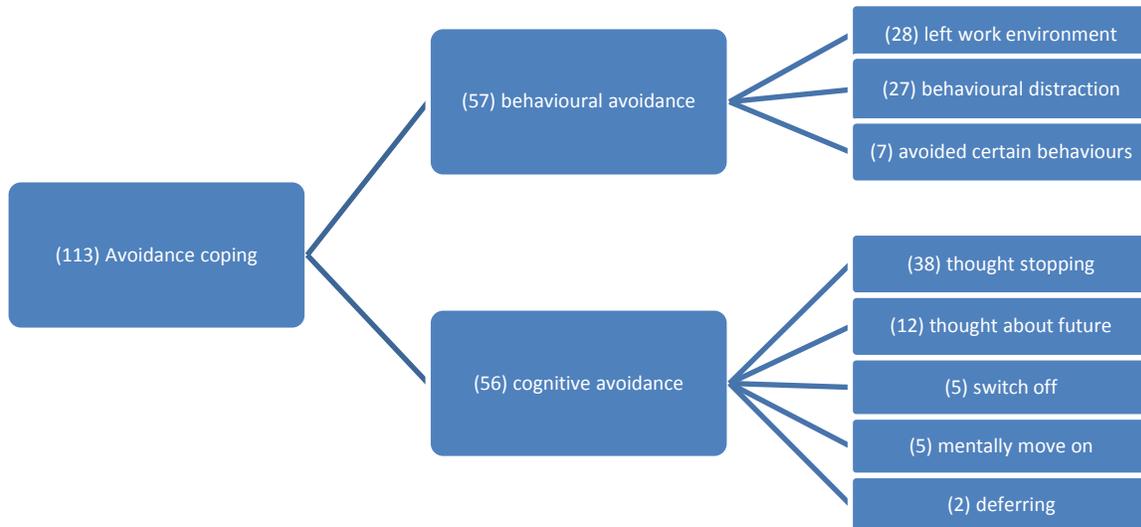


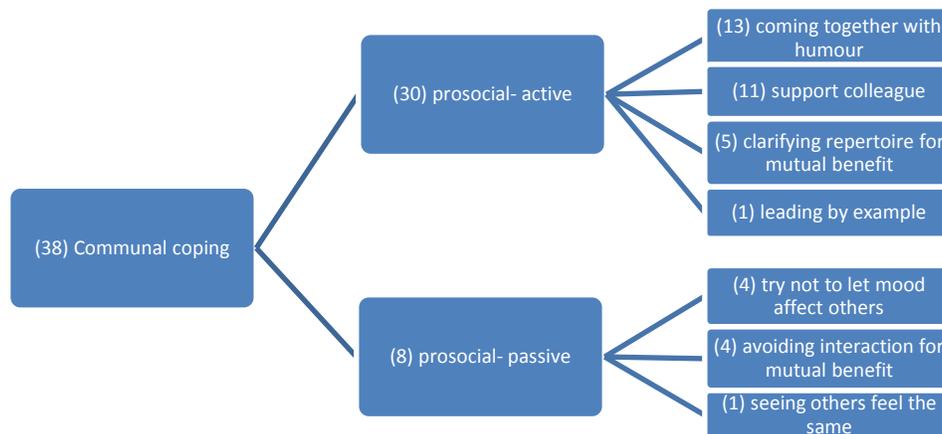
Figure 12: Emotion-focused Coping Strategies



**Figure 13: Avoidance Coping Strategies**



**Figure 14: Communal coping strategies**



The most frequent higher-order theme within **communal** coping (3% of responses), is *prosocial-active*, where strategies are utilised for the benefit of others, rather than oneself, such as *coming together with humour*, occurring in response to shared stressors when participants feel they ‘are all in the same boat’ (N18-S1); ‘hav(ing) a laugh and joke with colleagues without being too annoying relieves the boredom and tension’ (N2-S1). *Supporting colleagues* was also common, where participants spent time reassuring/calming others who were upset (Figure 14).

**No coping**, where participants reported that they did nothing to deal with the stressor, makes up 3%, or  $n=37$  coping responses.

#### 4.4 Further Frequency Analysis

Frequency analysis is mostly restricted to the general dimension level, apart from when comparisons can be made to the literature, as response numbers reduce the value of frequency analysis of lower orders and word restrictions do not permit inclusion of lower-order frequency analysis.

##### 4.4.1 Appraisal and coping frequencies for general dimensions of stressors

Stressor dimensions with the highest overall frequencies were not necessarily those with the highest average intensity score; PSM (3.5) and interpersonal (3.4) have among the lowest frequency counts but the highest intensity scores (Appendix 4, p.119, Figure 15). Meanwhile, SEGC (3.3) and injury (3.2) issues were both high in frequency and intensity.

Stressor dimensions generally corresponded to more threat than harm/loss appraisals, with disproportionately large frequencies of threat appraisals for injury, performance and SEGC dimensions. Conversely, interpersonal, management and PSM were the only dimensions to show more recorded harm/loss appraisals than threat (Appendix 4, p.120, Figure 16). Whilst most dimensions of stress had above average ( $>2.6$ ) appraisals of control, touring (3.0), PSM (2.9) and

performance (2.9) had the highest averages, and management (2.1), interpersonal (2.4) and injury (2.4) had the lowest (Appendix 4, p.147, Table 2).

Meanwhile, average stress intensities were relatively even across appraisals, with harm/loss appraisals rating slightly higher (3.3) than threat (3.1), while challenge recorded an average of 2.9 (Appendix 4, p.149, Table 4).

Problem-focused coping was the predominant response for most general stressor dimensions, especially injury (73%), personal wellbeing (74%) and touring (61%). However, emotion-focused coping was predominantly recorded for interpersonal, management and PSM issues, making up 49%; 53%; and 51% respectively of all coping responses for those stressors. Communal coping was only notably recorded for interpersonal ( $n=11$ ), management ( $n=11$ ) and rehearsal/training ( $n=13$ ) dimensions. Avoidance responses were most common for performance ( $n=21$ ) and SEGC ( $n=34$ ) dimensions, although proportionally, they made up more of PSM (27%) and of SEGC responses (17%) (Appendix 4, p.120, Figure 16).

#### *4.4.2 Coping frequencies in relation to cognitive appraisals*

Average control ratings for each coping general dimension varied, with problem-focused (2.7) and avoidance (2.6), having the highest average control ratings. Communal and lack of coping rated lower at 2.3 whilst average control for emotion-focused coping was 2.4 (Appendix 4, p.150, Table 5). Conversely, for stress intensity, problem-focused and lack of coping had lower average intensities (2.9), than communal (3.1) and avoidance (3.3) while emotion-focused responses had the highest average intensity (3.5) (Appendix 4, p.150, Table 6).

Further, as intensity increased, the proportion of responses which were problem-focused decreased, accounting for 58% of stressors rated 2 intensity, compared to 20% for those rated 5. Conversely, the proportion which were emotion-focused, increased with intensity ratings, from

24% to 59%. Similarly, avoidance coping responses increased slightly as a proportion of all responses with intensity rating 5 compared with other intensity ratings. Communal and lack of coping responses remained relatively even proportionately to varying intensity ratings (Appendix 4, p.120, Figure 17).

Threat ( $n=344$ ) and challenge ( $n=18$ ) appraisals were associated most commonly with problem-focused coping responses, although evidence for threat and emotion-focused coping combinations ( $n=191$ ), and challenge and emotion-focused coping combinations ( $n=13$ ) was also seen. Harm/loss appraisals were much more evenly associated with emotion- and problem-focused coping responses ( $n=198$  and  $n=203$ , respectively), with avoidance, communal and lack of coping responses, 2-3% more likely to be associated with harm/loss appraisals than threat (Appendix 4, p.121). It was not meaningful to analyse the relationship of benefit appraisals to other constructs as numbers were not large enough.

#### *4.4.3 Coping responses in relation to cognitive appraisals of each stressor general dimension*

Threat and harm/loss were the most common appraisals for all stressor dimensions; following overall coping/appraisal patterns, threat appraisals relating to injury, performance, SEGC, rehearsal/training, personal wellbeing and touring were most commonly coped with using problem-focused coping ( $n=90$ ;  $n=47$ ;  $n=57$ ;  $n=43$ ;  $n=42$ ;  $n=29$ ), whilst problem- and emotion-focused coping were used relatively evenly for harm/loss appraisals relating to rehearsal/training stressors.

However, harm/loss appraisals for performance, management, interpersonal and PSM stressors were most often coped with using emotion-focused strategies ( $n=24$ ;  $n=43$ ;  $n=27$ ;  $n=17$  respectively), whilst problem-focused coping for harm/loss appraisals were more numerous for injury, SEGC, personal wellbeing and touring stressors ( $n=51$ ;  $n=31$ ;  $n=30$ ;  $n=17$ ). Finally, for

harm/loss appraisals combined with PSM stressors, avoidance coping was slightly more common than problem-focused coping ( $n=11$  compared to  $n=8$ ).

In response to threat appraisals of management stressors, emotion-focused coping was recorded relatively evenly with problem-focused ( $n=25$  and  $n=22$  respectively), whilst threat appraisals relating to interpersonal and PSM stressors were coped with relatively evenly between problem-, emotion-focused, and avoidance strategies, although numbers of responses were very low.

(Appendix 4, p.122-124)

#### *4.4.4 Frequencies of stressors, appraisals and coping between performance/rehearsal weeks*

Stressor numbers varied between weeks with the most stressors being recorded in week 2 (PERF) ( $n=252$ ) and the least recorded in week 4 (REH) ( $n=132$ ). However weekly frequencies of stressor general dimensions differed; performance, touring, interpersonal, and PSM dimensions peaked in week 2 (PERF) ( $n=252$ ), management and rehearsal/training dimensions peaked in week 1 and 4 (REH), whilst SEGC, personal wellbeing and injury stressor frequencies generally reduced over each weekly period (Appendix 4, p.126, Figure 30).

Overall, stressors were proportionately distributed between rehearsal (10 days 45%) and performance (12 days 55%) weeks. This was reflected in SEGC, personal wellbeing, injury and PSM general dimensions. However, management and rehearsal/training issues were recorded mainly in rehearsal weeks (69% and 76% respectively), whilst interpersonal, performance, and touring issues mainly fell during performance weeks (80%, 90% and 98%, respectively) (Appendix 4, p.127, Figure 31).

Intensity averages were slightly higher overall (by 0.2) for performance compared to rehearsal weeks. Excluding performance and touring general dimensions which mainly fell during performance weeks giving poor comparative averages, intensities were very even between the

two periods, with only PSM and rehearsal/training dimensions showing higher intensity scores for performance weeks by 0.6 and 0.3 respectively (Appendix 4, p.150, Table 7).

The overall distribution of appraisals and that of threat and harm/loss appraisals appears unaffected by performance/rehearsal weeks. Challenge appraisals however, fell mainly during performance weeks ( $n=30$  compared to  $n=15$ ) (Appendix 4, p.127, Figure 32).

In line with stressor frequencies, coping frequencies peaked for week 2 (PERF) ( $n=382$ ), and recorded the least for week 4 (REH) ( $n=204$ ) (Appendix 4, p.128, Figure 33). Further, the distribution of coping responses broadly reflects the % split of performance/rehearsal days, with 57% falling within performance weeks. This split is also reflected when analysing coping dimension frequencies between performance/rehearsal weeks, with only emotion-focused coping varying more than 5% from the proportional split (63% recorded during performance weeks) (Appendix 4, p.128, Figure 34).

Omitting higher-order coping strategies with less than 30 occurrences, acceptance, behavioural avoidance, concentration/effort, relaxation and social support (emotionally driven) were recorded between 6% and 12% more during performance weeks. Meanwhile, prosocial-active, planning, and releasing emotions were recorded between 5% and 12% more during rehearsal weeks, whilst technique-orientated coping was recorded 29% more during rehearsal weeks (Appendix 4, p.129).

#### *4.4.5 Frequencies of stressors, appraisals and coping between ranks*

Overall, corps dancers ( $n=12$ , 60% of population) recorded proportionately more stressors ( $n=567$ , 77%), than soloists ( $n=174$ , 23%); this was reflected in frequencies for all stressor dimensions. The three most frequently reported stressor categories for corps de ballet were SEGC

( $n=109$ ), injury ( $n=92$ ) and performance ( $n=74$ ), while soloists most frequently reported injury ( $n=36$ ), performance ( $n=32$ ) and management issues ( $n=31$ ).

However, when compared with the 77/23% split in overall stressor numbers, management rehearsal/training and performance stressors were reported proportionately more by soloists (36%, 32% and 30% respectively), whilst corps de ballet participants recorded proportionally more interpersonal relationships (92%), PSM (86%), personal wellbeing (87%) and touring (87%) stressors.

(Appendix 4, p.130, Figure 36)

Only marginal differences were noted between average stress intensities between corps and soloists (3.1; 2.9 respectively); however greater differences between ranks were recorded for particular stressor dimensions, with personal wellbeing and interpersonal stressors, 0.49 and 0.45 more stressful for corps respectively, while only PSM (0.3) and rehearsal/training (0.2) dimensions had slightly higher average intensities for soloists (Appendix 4, p.151, Table 8).

Reflecting stressor data, corps de ballet recorded proportionately more appraisals than soloists, ( $n=1336$ , 75% to  $n=446$ , 25%). This percentage split was reflected in all dimensions except challenge which was disproportionately recorded by corps ( $n=38$  of  $n=45$ , 84%) (Appendix 4, p.130, Figure 37).

In line with stressors and appraisals, corps de ballet participants recorded disproportionately more coping responses ( $n= 845$ , 77% compared to a 60/40% corps de ballet/soloist split), reflected across all dimensions. However, while both ranks most often recorded problem- and emotion-focused responses and these coping responses were recorded relatively proportionately by both ranks (81/19% and 74/26% respectively), avoidance, communal and lack of coping dimensions

were recorded disproportionately by soloists (32%, 37% and 30% respectively) compared with the overall 77/23% split in stressor/coping response numbers (Appendix 4, p.131, Figure 38).

Coping responses in relation to low perceived control were relatively even between ranks, with more emotion-focused than any other dimension of coping (42-44%); however, for high perceived control, 60% of coping was problem-focused for corps, compared to soloists, of which 60% was emotion-focused, and proportionally more avoidance coping was used (28% compared to 11% for corps) (Appendix 4, p.131, Figure 39).

#### *4.4.6 Stressors, appraisals and coping experienced by each participant*

Participants' stressor frequencies varied from  $n=76$  (J) to  $n=8$  (L) with an average frequency count of  $n=37$ . Participants who experienced the least stressors were B ( $n=17$ ), L ( $n=8$ ), Q ( $n=13$ ) and U ( $n=17$ ), whilst A ( $n=63$ ), C ( $n=70$ ), H ( $n=68$ ) and J ( $n=76$ ) experienced the most.

In terms of stressor general dimensions, 88% of participants recorded fewer than 10 responses per dimension. However, participant H had unusually high frequencies of SEGC issues ( $n=27$ ); F, I and J experienced unusually high frequencies of injury stressors ( $n=24$ ,  $n=18$ ,  $n=18$  respectively); and J experienced unusually high management issues ( $n=16$ ). L and P experienced stressors from the fewest general dimensions, whilst F, J and R experienced every general dimension. None of the stressor dimensions were experienced by every participant (Appendix 4, p.132).

Average intensities across participants fell between 2.5-3.5, with only K (2.2), falling below, and J (4.3) exceeding this range. However, while participant J recorded both the highest average intensity and stressor count, this relationship cannot be generalised across other participants (Appendix 4, p.133, Figure 41).

Most participants' appraisals followed overall trends, favouring threat over harm/loss, with participants F, G and H showing unusually high proportions of threat appraisal. However, participants C, E, J, M, N and R recorded more harm/loss, with J having exceptionally high frequencies. Meanwhile, only participant G had more challenge than harm/loss appraisals (Appendix 4, p.133, Figure 42).

Participants who experienced higher frequencies of stressors, also recorded higher coping frequencies (Appendix 4, p.134, Figure 43). Problem-focused was the only coping dimension to be used by every participant, and accounted for the majority of coping responses for 14 out of 20 participants, especially B for whom 90% of responses were problem-focused; however, participants J, L, M, N, Q and U, predominantly used emotion-focused coping. M was the only participant for whom communal coping accounted for over 10% of their responses (22%). Similarly, P was the only participant for whom lack of coping accounted for more than 10% of their recorded responses (39%), indeed, Participant P accounted for 19% of all lack of coping responses (Appendix 4, p.135, Figure 44)

In order to determine whether participants coped consistently over time with similar stressors/appraisals, the coping responses of three participants with the highest frequency of the most frequently recorded stressors (injury, SEGC and performance), primary appraisals (threat and harm/loss) were analysed over time (by weeks). Results demonstrate no discernable patterns for different types of coping dimensions used for the same general dimension stressor (Appendix 4, p.136-138), and primary appraisals (Appendix 4, p.139-140) by each participant, over each week.

#### *4.4.7 Injury frequencies*

Although data was collected on site, type and cause of injury, delineation of injuries according to consensus guidelines (Fuller et al., 2006; Hägglund et al., 2005), was not possible as not enough

information was provided by participants; however frequency and severity (measured by recording of pain, acute injury onset and time-loss from dancing) give some indication of injury patterns.

92 acute injury onsets (AIO) and 327 accounts of pain (pain/days) were recorded over the 440 participant days, of which 2 resulted in full, and 58 in partial withdrawal from activity, while 267 did not affect the participant's ability to work. Backs ( $n=17$ ), feet/toes ( $n=17$ ), general muscle soreness ( $n=13$ ) and ankles ( $n=8$ ) accounted for the most common sites of acute injury onset.

While overall average AIO was 4.6 and average number of recorded pain/days was 16.3, average AIO frequencies for corps de ballet participants were 5.3 (total  $n=64$ ) and 3.5 for soloists ( $n=28$ ), while average pain/days were 19.5 ( $n=234$ ) and 11.5 ( $n=92$ ) respectively. While pain/days between performance/rehearsal weeks were proportionately even, more AIO were recorded during rehearsal ( $n=56$ ) than performance weeks ( $n=36$ ). However this can be misleading as the first day under study, on which all injuries ( $n=19$ ) were recorded for the first time, fell on a rehearsal day.

Participants with the greatest number of AIO were D ( $n=13$ ) and R ( $n=9$ ), while participants recording the least were Q ( $n=0$ ), L and S ( $n=1$ ). F was the only participant to fully withdraw from work; however, partial withdrawal was recorded by J ( $n=18$ ), P ( $n=11$ ), R ( $n=8$ ) and F ( $n=9$ ). The most frequent recordings of pain/days which did not affect work were recorded by D ( $n=30$ ), C ( $n=28$ ), F and I (both  $n=20$ ). Participants entering the least accounts of pain/days were L ( $n=3$ ), G and M (both  $n=7$ ) and U ( $n=11$ ), all of whom recorded no full withdrawal from work, although G recorded 2 events of partial withdrawal.

#### *4.4.8 Relationships between injury frequency/severity and stressors, appraisals and coping among participants*

No relationship was found between AIO frequencies and stressor frequencies among participants (Appendix 4, p.141, Figure 50), or between average daily maximum stress intensity and pain/day frequencies, or injury severity and stressor frequency (Appendix 4, p.141, Figure 51). However, a weak positive relationship between low stressor and pain/day frequencies, and high stressor and pain/day frequencies appeared among participants (Appendix 4, p.134, Figure 43).

There was no relationship between the proportional use of particular general dimensions of stressors, primary appraisals, or coping in relation to varying frequencies of pain/days, injury severity or AIO frequencies among participants. (Appendix 4, p.142-146)

Stressor frequencies were also examined on the day of AIO relative to the three preceding days; stressor frequencies were recorded relatively evenly on each of the three days leading up to the day on which acute injuries were recorded ( $n=91-99$ ). However, the number of stressors doubled ( $n=185$ ) on the day of recorded AIO (Appendix 4, p.147, Figure 61); all general dimensions of stressors, except performance issues were recorded more on AIO days than on preceding days . While injury stressors were particularly well recorded on the day of AIO, accounting for 52% of all injury stressors over the four days, rehearsal/training (52%), touring (49%), personal wellbeing (42%) and management (40%) were also recorded more on the day of AIO (Appendix 4, p. 147, Figure 62). Higher stress intensity levels were also more frequently recorded on AIO days, than on preceding days (Appendix 4, p.148).

## 5. Discussion

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This purpose of this study was to explore relationships between stressors, appraisal, coping strategies and injury among ballet dancers, to provide a greater understanding of the demands and responses of professional ballet dancers and how experiences of, and reactions to stress relate to injury. It is the first study, to the author's knowledge, to longitudinally record transactional stress and coping models within a professional ballet setting, and in relation to injury/pain. Results reveal similarities between sport-specific stressors and use of coping strategies, but also uncover dance-specific stressors, providing stressor and coping frameworks which reflect the settings of this particular case study.

### 5.1 Stressors

Comparisons of results with previous studies are difficult, as emergent themes were not compatible with categories developed within sport-specific literature. Overarching dimensions from stress literature such as organizational stress (Woodman and Hardy, 2001) and competitive stress (Fletcher and Hanton, 2003) were not comparable, as emerging data too often lay across dimensions. For example, touring stressors could be classified as performance stress when adjusting to unfamiliar performance conditions, or organizational stress when dealing with scheduling issues resulting from touring. Potential differences in funding sources and processes, the nature and goals of performance, and performance schedules between ballet companies and sports organization, may have caused differing emerging stressor categories (Hanton et al., 2005).

However, some comparisons can be made to higher order-themes; pressure to perform, underperforming, lack of social support, and social evaluation, relating to competition (McKay et al., 2008) are comparable to psychological performance stressors, short term concerns about

standard of work, loss/lack of support networks and social evaluation established in this study. Organizational higher-order themes, governing body factors, environmental conditions in competition and personal issues relating to the organization (Ibid.) are also broadly reflected in management issues and external problems during performance, even though groupings within general dimensions differ. Other comparable categories included training environment, injury, goals and expectations, coaches and coaching style, and support networks (Woodman and Hardy, 2001; Fletcher and Hanton, 2003). Additionally, competition stressors, making errors, team and individual performance, coaches, selection, playing at higher level, social evaluation, mental stress and family/friendship stressors (Reeves et al., 2009) are comparable to performance, management, SEGC, PMS and interpersonal dance-specific general dimensions. However, others such as match officials, weather/pitch and opposition (Ibid.), were not applicable to dance-specific settings.

Meanwhile, few higher-order themes recorded in the current study were dance-specific (i.e. remembering repertoire, although even here, comparisons could be made with routine based sports such as gymnastics/synchronized swimming), with many others (i.e. scheduling concerns, travelling issues, preparation issues) potentially pertinent to sport. The fact studies measuring organizational stressors (Woodman and Hardy, 2001; Fletcher and Hanton, 2003) did not record these particular categories, may have been due to the retrospective nature in which interviews were conducted. Additionally, the most frequent and intense stressors dimensions were SEGC and injury, not performance. These findings emphasize the importance of recording broader work-related concerns, rather than just limiting studies to competition stressors (see Anshel and Wells 2000, Anshel and Delany, 2001). Further, unlike Nicholls et al.'s study (2005) where four particular stressors recurred over time, dancers experienced broad ranges of stressors from the nine dimensions during both rehearsal and performance weeks, similar to Gould, Finch, and Jackson (1993). These differences may also have resulted from the current study recording open-

ended responses, rather than using a stressor checklist (see Nicholls et al., 2005), emphasizing the effect of differing methodological approaches on outcome of results.

Although unlike Nicholls et al. (2005), no difference in stressor frequencies were found between performance/rehearsal weeks, slightly higher intensity averages were recorded during performance weeks, similar to Nicholls et al. (2009), suggesting stressors may have been felt slightly more keenly with the added pressure of performance. Stress relating to performance resulting from PSM issues such as not enjoying performing or amotivation can, from personal experience, generate great emotional turmoil because of the amount of time invested to achieve a performing career.

Variations in types of stressor dimensions between weeks were in line with dancers' activities, similar to Pensgaard and Ursin, (1998). However, stressor dimensions reflected the nature of the dance environment, rather than sport; increased management and rehearsal/training issues during rehearsal weeks reflected when dancers were rehearsing and interacting with staff. Further, increased performance and touring issues during performance weeks, as well as interpersonal issues, may have resulted from the impact of touring schedules on relationships both within and externally to the company. These outcomes support the premise that different situations elicit specific stressors (Nicholls et al., 2009).

It is also interesting to note the considerable drop in stressor frequencies during the second performance week (week 3) after peaking in the first performance week (week 2). This may be due to repetition of routines over the two performing weeks improving self-efficacy, which in turn, acts to reduce levels of stress (Bandura, 2009). Further, general reductions of SEGC, personal wellbeing, PSM and injury stressors may imply that dancers generally felt they got back to fitness over the four weeks and that these dimensions are not affected by rehearsing/performing activities; additionally, in week 4, most participants were not called for

many rehearsals, so will not have been at work, potentially acting to lower stressor frequencies for this week.

Results also found that while stress intensity was only marginally higher for corps dancers, stressor frequencies were significantly higher than for soloists. While the literature supports findings that non-elite athletes did not generally report higher stress intensities than elite athletes (Neil et al., 2006), it does not discuss differences in reported stressor frequencies. However, findings do report significantly more facilitative interpretations of stress by elite athletes (Ibid.). It is theorised that performers who feel more in control, and able to cope with anxiety and achieve their goals, are more likely to interpret anxiety as facilitative (Jones, 1995). Self-confidence was also found to influence direction of anxiety and was reported more by elite athletes (Neil et al., 2006). Facilitative anxiety in this study may have been masked by negatively framed stressor questions, as it is perceived as more positive and so was not reported by soloists, acting to lower stressor frequencies for this rank. Thus, self-confidence and self-efficacy may be important to consider in future stress-based research considering rank.

Results also partly reflect Nicholls et al.'s (2007) study, where interpersonal issues (letting teammates down) were almost uniquely corps based concerns. Corps dancers have to work in larger groups and share large communal dressing rooms (see J9-S3) thus interpersonal stressors are more salient. Meanwhile, rehearsal/training and management issues were disproportionately soloist concerns also mirroring the aforementioned study. Soloists more often work alone or with partners, share smaller dressing rooms and have more one-to-one rehearsals with staff. Further, hierarchical structures may result in soloists not feeling as concerned about letting less senior corps dancers down. Surprisingly, performance was also disproportionately soloist based, even given the greater experience of these participants. This possibly relates to the extra pressure felt by soloists ranks to perform to a high standard equal to their status (see U19-S2), and is reflected

by sport-specific research indicating the importance of stress in competition for top-level athletes (Jones and Hardy, 1990).

## 5.2 Appraisals

Dancers' appraisals mostly fit into Lazarus and Folkman's (1984) harm/loss and threat categories (97.25% of 1782 appraisals). Relatively few stressors were framed as challenge or benefit appraisals (2.75%). This was apparent even for potentially facilitative stressors, such as getting to perform new roles which could be viewed as career opportunities; emphasis was placed more on failing to do the steps well thus risking harm to one's reputation, than being challenged or potentially benefiting from the situation in terms of career advancement. This may suggest that participants were lacking in psychological skills to deal with the pressures of performance, reflecting findings by Hanrahan (1996) who found professional dancers had low levels of positive self-talk and self-confidence.

On the other hand, challenge/benefit appraisals may have been noted less frequently by participants because questions on perceived stress acted to frame participants' responses negatively, so masking potential concurrent challenge/benefit appraisals. Evidence demonstrates that affective cues have remarkably consistent effects on whether participants appraise situations as threat or challenge, especially in relation to situational uncertainty, relevant to performance related concerns (Blascovich and Mendes, 2000). Even so, this limitation is difficult to avoid when framing questions documenting appraisals of stressful events.

Similarly to Anshel and Wells, (2000) and Anshel et al. (2001), primary appraisal type appears to be a function of the stressors, with some dimensions representing disproportionately more threat than harm/loss appraisals (injury, performance and SEGC stressors). Although not supported in the literature, this may be as a result of these stressors being predominately future-based, an idea reinforced by higher average control ratings for threat, as there is the potential for more control

over situations which have not yet happened. Meanwhile, interpersonal, management and psychological states of mind stressors were associated with disproportionate numbers of harm/loss appraisals, with lower associated average control ratings. Slightly higher stress intensity averages of harm/loss compared to threat appraisals further concur with the idea of harm/loss events having already happened, and thus being less controllable.

Corps dancers recorded more challenge appraisals than soloists, mostly during performance weeks. Further, while soloists recorded disproportionately more performance stressors, less were associated with challenge appraisals. This is rather unexpected, as it might be anticipated that more senior participants would be better at appraising standard/career and performance concerns as challenges and rising to these, compared to their less experienced counterparts. This would assume as Hardy et al. (1996) suggest, that high levels of intrinsic motivation would be expected from elite level athletes in order to sustain motivation through times of setbacks during their career. From personal experience, these outcomes may be related to low levels of feedback from staff discouraging some dancers from finding new challenges within existing work. Indeed, the implications of cognitive evaluation theory (Deci and Ryan, 1985, cited in Hardy et al., 1996, p.74) suggests that disruptions to achievement of performers' goals (in this case, lack of feedback), may lead to reductions of perceived competence, and thus intrinsic motivation (Hardy et al., 1996). Research on the relationship between process-orientated models of appraisal and motivational theory considering differences in skill level may be interesting for further study.

### **5.3 Coping**

Drawing comparisons between studies of both particular coping strategies and general types of coping is problematic, as classifications of coping strategies fluctuate between studies; intentions of strategies vary within different contexts and thus have the potential for varying interpretation (Crocker et al., 1998). Further, use of differing types of coping dimensions driven by literature

underpinning the research (i.e. approach/avoidance or problem-focused/emotion-focused), make broader comparisons difficult (Ibid.)

Still, some limited comparison with past research is possible. Similar to Nicholls et al. (2005) dancers reported more coping responses ( $n=1102$ ) than frequencies of stressors ( $n=741$ ), with coping frequencies fluctuating over time and mirroring peaks in stressor frequencies during week 2 (similar to Nicholls et al., 2005; Levy et al., 2009). Further, problem-focused coping strategies were cited more frequently than emotion-focused, similar to Nicholls et al., (2005); frequencies of the most common higher-order coping strategies, physical preparation, planning, social support and acceptance (which encompasses self-talk) were also similar to those reported by Levy et al. (2009).

Similar to Nicholls et al., (2005), overall frequencies of avoidance coping within this population were low (10%). This is either because dancers preferred using approach coping, or the use of cognitive avoidance was not recognized by participants, thus was not recorded. Further, when participants vaguely stated that they ‘carried on’ in response to stressors, responses were categorized under acceptance but could have alternatively been classified as cognitively avoiding the situation.

Communal coping meanwhile was most often used in relation to management, rehearsal/training and interpersonal issues. As suggested by Lyons et al. (1998), management and rehearsal/training stressors are likely to have been situations perceived as collectively stressful events to the individual, to which dancers responded communally. For instance, higher-order themes, ‘coming together with humour’, and ‘clarifying repertoire for mutual benefit’, were most often used in response to these general dimensions. Meanwhile, in relation to interpersonal issues, participants are suggested to identify with colleagues experiencing familiar stressors, with communal coping potentially arising out of compassion (Ibid.). This is reflected by the higher-order category,

‘support colleagues’, where participants supported others who had become injured or were worried about performing.

Corps dancers reported more coping than soloists, reflecting frequencies of stressors recorded by ranks. However, it is also interesting to note that while problem- and emotion-focused coping was used relatively evenly between ranks, soloists used disproportionately more avoidance, communal and lack of coping responses. This compares to a mixture of problem- (planning), avoidance (blocking) and emotion-focused (visualization) strategies utilized more by national/international athletes in Nicholls et al.’s (2005) study. It is possible that experience has lead dancers to put less effort into trying to change stressful situations, especially seeing as soloists used avoidance and emotion-focused coping more than corps dancers, even for situations with high perceived control. This could be reflecting soloists’ disengagement from dancing, given that avoidance/withdrawal coping has been negatively associated with the desire to continue sporting involvement (Kim and Duda, 2003), although further study is needed to better establish the direction between these factors.

Specific coping strategies varied for performance/rehearsal periods. Emotion-focused coping (particularly acceptance, behavioural avoidance, relaxation and emotionally driven social support) were more likely to be used during performance weeks. Meanwhile, problem-focused planning was more likely to be reported during rehearsal weeks, although communal and emotion-focused strategies, prosocial-active and releasing emotions, were also reported more in rehearsal weeks. These findings differ from Pensgaard and Ursin (1998), who found that emotion-focused strategies were employed more both before and after, compared to during competitions. Further, Nicholls et al. (2009) found that blocking, increased concentration and effort were most frequently used both during matches and performance, with varying amounts of lesser used strategies between match/training days. This may be a result of the different nature of performances compared to competition matches; performance weeks consist of sustained and

intense periods of performance (seven shows over five days), with equivalent match fixtures unlikely to occur in such intensity during sporting events. As a result, sporting athletes may be better able to focus on single events than dancers, who appear to experience a broad array of stressors during performance weeks, and in response, emotionally regulate.

Combinations of chosen coping strategies differed depending on primary appraisal. Similar to Holt (2003), problem-focused coping was predominantly used in response to threat and challenge appraisals, potentially to pre-empt situations that had not yet developed. However, rather than emotion-focused coping being solely associated with harm/loss appraisals (Ibid.), problem-focused coping was also used evenly in conjunction. This implies that as the situation was more often appraised to be uncontrollable, emotional regulation was used alongside problem-focused strategies; this mirrors the greater frequencies of emotion- than problem-focused coping for control ratings of 1, supporting the goodness-of-fit model (Folkman, 1992)

Problem-focused coping recorded higher average control ratings than emotion-focused coping, providing further evidence to support the goodness-of-fit model (following Kim and Duda, 2003; Holt and Dunn, 2004; Puente-Díaz and Anshel, 2005). Further, results reflect Ntoumanis and Biddle's (2000) findings, where high anxiety intensity led to more emotion-focused and avoidance coping than problem-focused coping. However, avoidance coping recorded higher than average control ratings, similar to Kim and Duda (2003), who suggested that this may be because avoidance coping is based more on situational and personality factors than appraisal (following Terry, 1991); results indicating that avoidance coping increased slightly with higher levels of stress intensity partially support this point. Meanwhile, communal and no coping recorded the lowest averages of control, the former presumably because of the need to depend on others, and the latter due to the perceived inability to emotionally regulate, or change the situation at hand.

Further, similar to Anshel and Wells (2000) and Anshel and Si, (2008), coping also appears to reflect the type of stressor experienced, although the aforementioned studies examined approach/avoidance coping in response to competition-specific stressors. Moreover, while personal wellbeing and touring stressors were mainly associated with problem-focused coping, they were also associated with higher average recordings of control, also supporting the goodness-of-fit model (Folkman, 1991; 1992). These stressors classifications more often related to the participant alone, potentially allowing them greater ability to influence events. Meanwhile, emotion-focused strategies were preferred when dealing with interpersonal and management issues, coinciding with lower perceptions of control and again reflecting the goodness-of-fit model (Ibid.), possibly because interactions with others reduced potential for participants to affect the situation. Injury is the exception here, as although associated with problem-focused coping, stressors recorded lower than average perceptions of control; while many strategies were available to help alleviate the symptoms of injuries and their use was actively encouraged by the injury clinic, participants may have felt they had less control over the cause of pain. Therefore, coping outcomes appear to depend on cognitive evaluation of the specifics of the situation (Aldwin, 2007).

#### **5.4 Trait versus State**

Endler et al. (2001) proposes that the level of trait anxiety can be determined by the number or intensity of anxious responses recorded. Participants A, C, H and J recording the highest stressor intensity and frequencies could therefore be described as having particularly high trait anxiety. Meanwhile, B, L, Q, and U, recording low stressor frequencies, could be described as having particularly low trait anxiety.

Some participants seemed particularly worried about certain issues; H recorded more SEGC stressors than anyone else while F, I and J all experienced unusually high injury stressor frequencies. However, some participants may have been more methodical in recording stressor

thoughts than other, and potentially more honest. Personal experience suggests that some participants may not have wished to disclose worries, especially about SEGC stressors, because of stigmas attached to appearing to care too much about one's career and achieving career goals. Further, I and J developed chronic injuries during the data collection period, thus potentially acting to increase injury stressor frequencies.

Inferring general coping styles is also possible using longitudinal studies assessing coping strategies of individuals over time and across situations, within the same person (Lazarus, 1993). Some participants showed greater propensity to cope with stressors in certain ways; participant B particularly used problem-focused coping; J, L, M, N, Q and U predominantly used emotion-focused coping; and participant P predominantly did not cope. However, following the majority of recent research supporting the transactional perspective (Nicholls and Polman, 2007), participants did not cope consistently over time by adopting one coping strategy that was automatically employed in response to a specific situation. When analysing different types of appraisals in response to the same stressors, varying frequencies of coping general dimensions were recorded, agreeing with findings by Anshel et al. (2001). This supports the premise that coping outcomes are a consequence of the transaction between the individual and environment (Aldwin, 2007).

These results justify the use of diaries to record stressors and their particular appraisals and coping response, as analysing responses over time, makes intra-individual comparison possible, and established that no obvious coping patterns were recorded among participants in response to similar stressors over time, even though overall results suggest otherwise (similar to Levy et al., 2009). Reasons for contradictions between overall and intra-individual findings could be that the relatively short study period made intra-individual patterns harder to note (Levy et al., 2009). Further, analysing general dimensions may have masked more subtle differences of overall coping patterns (Ibid.). Conversely, preferred coping across time could be a result of similarly

appraising stressful situations (Lazarus, 1993). Regardless, these findings support the author's decision to use a state based methodological approach to study coping, thus improving the validity of overall emergent patterns. As suggested by Ptacek et al. (2006), further research is needed to examine the application of coping style on particular situations, as they found that correlations between reported coping dispositions and weekly reporting of coping behaviours increased with the aggregation of data.

## 5.5 Injury

Comparisons of injury patterns with sport-specific injury literature are not discussed, as data, although prospective, was not recorded for long enough to establish comparable injury patterns; further, delineation of injury in terms of site and type, and data on overuse injuries was not able to be recorded, and is a limitation of this study. However, comparisons of basic injury frequencies and severity are possible against stress and coping data.

By using a broad injury definition to collate data, this study demonstrates how some dancers who were experiencing pain bad enough to cause them to stop dancing, continued because they did not wish to detrimentally affect their reputation, especially during performance weeks. Participant J, who 'marked' dancing  $n=18$  times because of extreme pain, did not record any full time-loss from activities. Thus frequencies of injury measured solely by time-loss should be viewed with caution, and it is recommended that time-loss is recorded alongside more inclusive definitions of injury.

Similar to Walden et al. (2005), duration of injuries overall were relatively even between performance and rehearsal weeks (as recorded by pain/days). However more acute onsets of injury were recorded for rehearsal weeks. Personal experience suggests this maybe because the body needs time to adjust to exercising new types of movement, becoming more efficient by the time performances begin. Other factors may be that participants were not in peak condition and

were dealing with the physical transition from holidays back to dancing, thus experiencing more acute onsets of injury. Indeed, preseason conditioning, functional training and sport-specific skills have proven to be effective preventative strategies against injuries (Abernethy and Bleakley, 2007), and may have acted to lower injury prevalence by later weeks. However, these results should be viewed with caution, as the first day under study, on which  $n=19$  injuries were initially recorded, fell on a rehearsal day and injury results do not consider incidence rates based on exposure (see Bronner et al., 2003).

As evidence relating skill level to injury incidence is contradictory within sport-injury research (Murphy et al., 2003), it is interesting to note that corps de ballet members recorded both more than average acute injury onsets and daily recordings of pain than soloists, coinciding with more recordings of stressors than soloists. Greater stressor and injury frequencies could have resulted from corps dancers having more rigorous schedules than soloists during performance weeks, as they perform every night (Schantz and Astrand, 1984 in Wyon, 2007), thus encountered greater stress and exposure to injury. Alternatively, they may not be as experienced at managing pain, as well as having less ability than soloists to manage their workload by communicating with staff because of the hierarchical nature of ballet.

Although there is a general positive correlation between participants' recording of pain/days and stressor frequencies (supporting findings by Mainwaring, 1993; Liederbach et al., 1994; Patterson et al., 1998; Ramel and Moritz, 1998; Adam et al., 2004; Noh and Morris, 2004), none exists for acute injury frequency/severity and stress intensity, suggesting that pain is associated with the stressor frequency rather than intensity. Further, it appears that an amalgamation of several stressors on the same day is linked to the onset of acute injuries, suggesting that a build-up of stress may cause dancers to become injured; this reflects studies finding a positive relationship between daily hassles and injury in both dance (Patterson et al., 1998; Adam et al., 2004) and sport (Ivarsson and Johnson, 2010). This may be as a result of increased muscle tension or

reduced concentration, as suggested by Anderson and Williams (1988; 1998), although physical markers were not measured in this case. It is also difficult to establish the direction of the link between the two variables, although the fact that frequencies of most stressor general dimensions were proportionately higher for injury onset days than those previously, suggests that stressors relating to injury are not entirely responsible for this result.

Meanwhile, there was no relationship between particular types of coping strategies and injury frequency/severity recorded participants, contrary to finding by Noh and Morris (2004) and Ivarsson and Johnson, (2010), indicating that coping cannot easily be categorized as adaptive or maladaptive, supporting Lazarus's (1993) assertion that coping styles cannot be universally categorized as good or bad but depend on context.

## **5.6 Limitations and Implications for Further Research**

Although the presented findings studied a broad array of organizational stressors, data collection fell after a mid-season break, during a period in which the repertoire had already been staged and performed; thus data will reflect more the monotony of repeating repertoire and getting back into shape, rather than the stress of creating new repertoire. Anecdotal evidence suggests associated management and scheduling stressors were more widely experienced in the previous months, as well as later on in the year, than in the period under examination. Thus, repetition during varying periods in the season might aid broader documentation of stressors.

Further, as suggested by Dunn et al. (2001), social desirability bias may have resulted in lower recordings of stress scores for some participants, who were potentially unwilling to admit they were affected by stress. For instance, L, who practiced daily meditation and believed in its power to regulate the mind, may have not wanted to admit feeling stressed. Further, ecological validity issues were raised with some answers to coping responses. Participants recorded what they planned to do in response to stressors, as opposed to what they actually did, with responses

potentially influenced by social desirability; one participant recorded how they planned to cope in response to injuries, stating ‘ideal’ physical recovery strategies instilled by the injury clinic, rather than how they actually did cope (F4-S1/2/3/4).

Further, multiple appraisals and coping strategies were recorded in response to each stressor with every appraisal being recorded rather than solely the predominant appraisal. Thus, when comparing coping to appraisal, it is difficult to decipher whether particular coping responses were attributed to particular appraisals. However this could be argued to mirror difficulties in analysing complex relationships at the heart of coping models, where many coping strategies might be employed and deemed necessary to respond to an array of appraisals of a stressful situation.

Additional limitations lay in the lack of injury epidemiology data collected through self-reports, either because participants did not know the injury’s exact description, or because they were not meticulous enough in their completion of the question. Thus, it became impractical to attempt to classify injuries either in a way which would facilitate meaningful analysis of injury type and cause, or that would be in line with consensus statements on the recording of injury (Fuller et al., 2006; Hägglund et al., 2005) and allow comparisons with sport. In future research, closed questions, providing checklists of both body parts and type of injury or diagrams on which participants could pinpoint where they felt pain (following Junge et al., 2008), may help to encourage participants to be more specific in their recording of injuries, providing they know such details.

Injury recording, although prospective, was also not collated for long enough to give an accurate picture of participants’ injury profiles; future research would ideally need to provide yearly accounts of data collection in line with injury consensus statements (Fuller et al., 2006; Hägglund et al., 2005), which could then be compared with diary accounts of tendencies to cope in certain

ways. This would allow more accurate analysis of stress/coping and injury relationships. However, self-reporting for this length of time is unlikely because of high rates of attrition, thus clinically recording data becomes essential. Given a greater time frame, ethical consent could be acquired for future research so that company injury data could be analysed alongside diaries. This may confirm anecdotal evidence suggesting that participants who recorded greater frequency and intensity ratings of stressors during the study, suffered from time-loss injuries lasting a week or more, later on in the season, further suggesting that high frequencies/intensities of stress positively correlate to injury severity.

Additionally, as longitudinal designs limit the generalizability of findings, replication of the study with different participants within the same, as well as different companies, both in the U.K. and abroad would allow broader analysis of inter-individual comparisons of relationships between stress/coping and injury. This would better validate results and allow for further development and analysis of stress and coping models, especially as it is possible that experiences of organizational stressors and subsequent coping might differ across companies.

Finally, while the current research demonstrates the transactional nature of coping, it highlights the complexities of studying relationships between situational and psychological factors and the limited scope of the study to consider further constructs which may also influence the coping response. For example, studying personal life stress was considered to lie outside the parameters of the study, even though it may have implications in relation to injury prevalence. Further, the role of emotion is argued to influence the coping response (Lazarus, 1999), and gender is also important to examine, as it is believed that females are more likely to emotionally regulate, whilst males may use more problem-focused strategies (Nicholls and Polman, 2007). While word restrictions limited the possibility of undertaking further examination of aforementioned constructs, they provide multiple avenues for future research.

## 5.7 Conclusion

While limitations of this research should be recognized, the current study was able to uncover broad dimensions of organizational stress pertinent to the population, which may also be applicable to sport-based settings. The most salient dimensions of stress related to; injury; and SEGC issues, although stressors experienced varied in accordance with activity. Recorded frequencies of stressors were greater for lower ranks than soloists, with differing concerns reflected their different positions within the company. Additionally, coping frequencies fluctuated over time alongside stressor frequencies, and while more problem-focused coping was recorded overall, use of coping strategies varied in relation to rank and activity (performance/rehearsal). Most appraisals recorded were either harm/loss or threat, rather than challenge. Further, while coping was found to be a function of stressor, primary appraisal and control, supporting the goodness-of-fit model (Folkman, 1991, 1992), coping was found to vary over time in response to the same appraisals of a particular stressful situation, supporting the transactional perspective. Finally, evidence suggested a slight positive relationship between stressor frequencies and recordings of pain, with an accumulation of stressors significantly related to onset of acute injuries.

These findings have implications for the targeting of psychological skills taught by practitioners to dancers to cope with stress, in order to reflect the different experiences and reactions of corps and soloists dancers to a broad array of organizational stressors, based on activity. However, greater examination of relevant coping skills are required to determine whether particular strategies are more effective than others, in combating stress in relation to injury as an outcome.

Strengths of the study lay in longitudinal data collection, able to capture variations in recordings of stress, appraisal and coping over time, with daily diaries recording individual stressors, reducing bias of cumulative reporting (Holt and Dunn, 2004). Furthermore, this study is unique in exploring stress and coping from a process-orientated perspective in relation to injury. It also

extends the knowledge base from sport-specific settings to dance, allowing comparison to athletes. Still, additional longitudinal, state-based investigation is needed to better establish the causality of relationships and to understand the complexities of the coping phenomenon.

19973 words

## 6. Appendix 1

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### 6.1 Key

Stressors:

General Dimension Names	Codes
Injury	INJURY
Inter-personal	INTER-P
Management issues	MI
Performance	PERF
Psychological states of mind	PSM
Personal wellbeing	PWB
Rehearsal/training	REH/T
Standards Goals and expectations	SEGC
Touring	TOURING

Appraisals:

General Dimension Names	Codes
Benefit	B
Challenge	C
Harm/Loss	H/L
Threat	T

Coping:

General Dimension Names	Codes
Avoidance coping	AV-C
Communal coping	COM-C
Emotion-focused coping	EM-F
Lack of coping	LOC
Problem-focused coping	PROB-F

Higher-Order Names	Codes	General Dimension
Acceptance	ACCEP	EM-F
Behavioural avoidance	BA	AV-C
Behavioural Changes	BHV-C	PROB-F
Blame	BLM	EM-F
Cognitive avoidance	CA	AV-C
Cognitive technique coping	C-TCH-C	PROB-F
Concentration/Effort	CON/EFF	PROB-F
Instrumental Communication	INST-COM	PROB-F
Lack of Coping	LOC	LOC
Physical preparation/recovery	PHSP/R	PROB-F
Planning	PLNG	PROB-F
Pro social Active	P-ACT	COM-C
Pro social Passive	PP	COM-C
Reflection	R	PROB-F
Relaxation	RLX	EM-F
Relaxation Techniques.	RLX-T	EM-F
Releasing Emotions	RLSG-E	EM-F
Social Support (Emotionally Driven)	SS-ED	EM-F
Technique orientated coping	TCH-OC	PROB-F

Miscellaneous Abbreviations:

Full Name	Abbreviation
Acute injury onset	AIO
Performance	PERF
Rehearsal	REH

## 6.2 Diary Sheet

Date: \_\_\_\_\_

1. Please think carefully about your entire day and list any work-related concerns that you have had today.

2. How stressful did you find each of these concerns on a scale of one to ten (please mark each concern on scale below)

*Not stressful  
at all*

*Somewhat  
stressful*

*Really  
stressful*

1

2

3

4

5

3. Regarding the incidents that you have mentioned above, what was it about each of them that you found most concerning? (Please list according to each incident).

4. Now please write what you did to deal with each of the concerns you have just written down.

5. Please state any physical complaints you have experienced today (*if reoccurring please use a symbol/date to identify when else you experienced this complaint*).

6. Please circle on the scale below the intensity of each physical complaint you felt today.

*Not painful*

*Somewhat*

*Really*

*at all*

*painful*

*painful*

1

2

3

4

5

## 6.3 Diary Instruction Sheet

### How to Fill Out your Diary Sheet

This diary sheet is to record your experiences and perceptions of sources of stress at work. There are no right or wrong answers and it is your opinion that counts.

You should complete a dated diary sheet on the evening of each day that you dance (on a performance or rehearsal day). It is important that you try to fill out your diary sheet each night so that you can accurately remember your experiences and thoughts. You are not required to complete the diary sheet on days when you haven't worked.

You should only record actual experiences. It is important that you record how you perceived and coped with the worries you faced that day, rather than what you would usually do or experience.

#### Question 1

Here is a list of potential work-related concerns experienced by dancers in other studies. They are not an exhaustive list and are provided just to jog your memory. You should write only about concerns you experienced that day.

- Tiredness
- Exhausted from rehearsals/performances
- Not satisfied with my dancing in performance/rehearsal
- Feeling out of condition (physically)
- Feeling unwell
- Trying to manage an injury whilst still dancing
- Not feeling flexible enough
- Worrying about what the director thinks of me

- Worrying about a relationship with a colleague
- Worrying about what ballet staff think of me
- Wanting to be promoted
- Trying to reduce my weight
- Trying to maintain a low body weight
- Hitting a slump/ don't feel like dancing
- Having to deal with the pressure of an important role
- Director/ ballet staff pointing out my mistakes in front of others
- Being unable to dance in the way I'd like

## Question 2

Here you can mark down each of the work-related concerns you have written about in question 1 onto the scale provided in question 2. Here is an example below:

How stressful did you find each of these concerns on a scale of one to ten (please mark each concern on scale below)

*Not stressful  
at all*

*Somewhat  
stressful*

*Really  
stressful*

1

2  
*Feeling really  
tired*

3

*Had argument  
with colleague*

4

*Worried about what  
director thinks of me*

5

### Question 3

This question is asking why you perceived each of the concerns you have mentioned to be stressful when they happened, even if this concern doesn't really bother you now and/or you found it not to be particularly stressful. These reasons may appear to be very mundane to you but are important to know in the context of this study. Here is an example below:

Regarding the incidents that you have mentioned above, what was it about each of them that you found most concerning? (Please list according to each incident).

- *Feeling tired- concerned me as it might affect my performance*
- *Argument with a colleague – makes working with them difficult and so makes work less enjoyable, worried about what they think of me*
- *Worried about what the director thinks of me- worried about him not giving me opportunities in the future*

### Question 4

This question asked how you dealt with these concerns. I have included a list below of coping strategies dancers have used in other studies. Please list your response to each concern that you have already mentioned. This is not an exhaustive list and these items are just to jog your memory:

- Go to bed early
- Pray
- Try and find the positive in the situation
- Drink alcohol
- Go shopping
- Watch a movie
- Listen to calming/energizing music
- Do other kinds of dance activities
- Talk to family

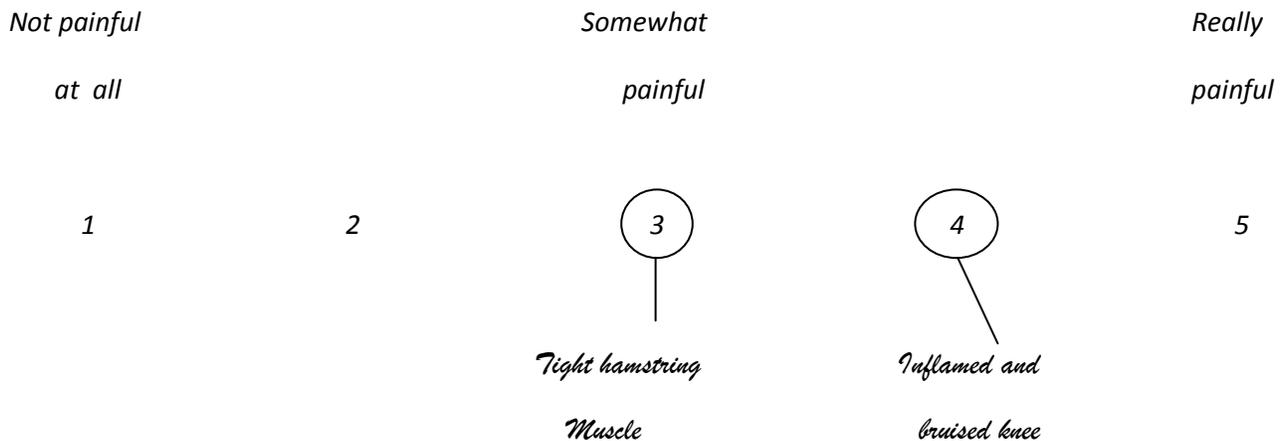
- Talk to colleagues
- Do nothing
- Try to avoid the situation
- Read a book

### Question 5

Here you can mark down **any physical complaint you experience, resulting from company performance, rehearsal, or class, irrespective of the need for medical attention or time-loss from dance activities** that you might have experienced at work today.

### Question 6

Similar to the first scale, here you can to mark down the intensity of the pain that any physical complaint mentioned above caused you on the scale provided. Here is an example:



That is the end of the diary. Thank you for your time!

### 6.4 Revised Diary Sheet

Date: \_\_\_\_\_

1. Please think carefully about your entire day and list any sources of stress that you have experienced at work today. Using the scale opposite, please also mark on a scale of one to five how stressful you found **each** incident.

Not stressful at all		Somewhat stressful		Really stressful
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>

2. Regarding the incidents listed above, what aspects of each of them did you find most concerning? (Please list according to each incident).

How much control over each source of stress do you feel you have?

No control at all	Some control		Complete control	
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>

3. Now please write what you did, if anything, to deal with each of the specific concerns that you have just written down.

4.

What physical complaints, if any, have you experienced at work today? Please mark reoccurring injuries with a date	What do you think was the cause of each physical complaint?	Please state whether each injury resulted in, if any, partial or full withdrawal from work-related activity.

## 6.5 Revised Diary Instruction Sheet

### How to Fill Out Your Diary Sheet

This diary sheet is to record your experiences and perceptions of sources of stress at work. There are no right or wrong answers and it is your opinion that counts.

You should complete a dated diary sheet on the evening of each day that you dance (i.e. any performance or rehearsal day). It is important that you try to fill out your diary sheet on the relevant night so that you can accurately remember your experiences and thoughts. You should not complete a diary sheet on any days when you have not worked.

You should only record actual experiences. It is important that you record how you perceived and coped with the worries you faced that day, rather than what you would usually do or experience.

#### Question 1

Here is a list of sources of stress experienced at work by dancers derived from previous research. This is not an exhaustive list and these examples are only provided to stimulate your memory. You should write only about concerns that you experienced on the day in question.

- Tiredness
- Exhausted from rehearsals/performances
- Not satisfied with my dancing in performance/rehearsal
- Feeling out of condition (physically)
- Feeling unwell
- Trying to manage an injury whilst still dancing
- Not feeling flexible enough
- Worrying about what the director thinks of me
- Worrying about a relationship with a colleague
- Worrying about what ballet staff think of me
- Wanting to be promoted
- Trying to reduce my weight
- Trying to maintain a low body weight

- Hitting a slump/ don't feel like dancing
- Having to deal with the pressure of an important role
- Director/ ballet staff pointing out my mistakes in front of others
- Being unable to dance in the way I'd like

You can mark down each of the work-related concerns you have written about in question 1 onto the scale provided. Here is an example below:

1. Please think carefully about your entire day and list any sources of stress that you have experienced at work today. Please also rate how stressful you found **each** incident on a scale of one to five.

*A. Feeling really tired*

*B. Had an argument with a colleague*

*C. Worried about what the director  
thinks of me*

Not stressful at all	Somewhat stressful	Really stressful
<u>1</u>	<u>2</u> *	<u>3</u>  *
		<u>4</u>  *
		<u>5</u>

Question 2

This question is asking why you found each of the above concerns to be stressful, regardless of whether each concern still bothers you or how stressful you found it to be. These reasons may appear to be very mundane to you but are important to know in the context of this study. This question also asks you rate

out of 5, how much influence/control you felt you had over the cause of each concern. Here is an example below:

2. Regarding the incidents that you have mentioned above, what aspects of each of them did you find most concerning? (Please list according to each incident).

- *Feeling tired- concerned me as it might affect my performance*
- *Argument with a colleague – makes working with them difficult and so makes work less enjoyable, worried about what they think of me*
- *Worried about what the director thinks of me- worried about him not giving me opportunities in the future*

How much control over each source of stress do you feel you have?

No control at all	Some control	Complete control		
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
		*		
	*			
	*			

Question 3

This question is asking how you dealt with these concerns. I have included a list below of examples of coping strategies dancers have used, again derived from previous studies. Please detail how you dealt with each concern that you mentioned. Again, this is not an exhaustive list and these items are just to stimulate your memory:

- Go to bed early
- Pray
- Try and find the positive in the situation
- Drink alcohol
- Go shopping
- Watch a movie

- Listen to calming/energizing music
- Do other kinds of dance activities
- Talk to family
- Talk to colleagues
- Do nothing
- Try to avoid the situation
- Read a book

#### Question 4

In the first column, please mark down **any physical complaints you might have experienced at work today, resulting from company performance, rehearsal, or class, irrespective of the need for medical attention or time-loss from dance activities.** If you have a diagnosis of the injury from a physician then please write this down. Please mark any reoccurring injuries with a date- these are defined as any injury of the same type and in the same site as the original injury, occurring within 12 months of you having returned to full participation.

In the middle column please can you record what you think was the cause of the physical complaint that day. This might be anything from landing a jump incorrectly to the floor surface being too slippery.

In the far column, please state the extent to which each physical complaint affected your ability to participate in activity at work. For instance, if the physical complaint did not affect your work and you were able to carry on as normal then write, *none*.

If the physical complaint partially affected your work, for instance, you participated in rehearsals but were not able to jump please write, *partial*.

If the physical complaint caused you to withdraw from dance activities completely then please write, *full*.

The next page gives an example.

Continued overleaf

What physical complaints, if any, have you experienced at work today? Please mark reoccurring injuries with a date.	What do you think was the cause of each physical complaint?	Please state whether each physical complaint resulted in, if any, partial or full withdrawal from any work-related activity today.
<p><i>Tight hamstring muscle- as on 9/10/2010</i></p> <p><i>Inflamed and bruised knee</i></p> <p><i>Sprained 5<sup>th</sup> metatarsal head</i></p>	<p><i>Fatigue</i></p> <p><i>Slippery floor caused fall</i></p> <p><i>Tripped over prop in the dark</i></p>	<p><i>None</i></p> <p><i>Partial</i></p> <p><i>Full</i></p>

That is the end of the questionnaire. Thank you for your time

## 6.6 Participant Information Sheet

My name is Samara Downs and I am conducting research for my Masters degree in Education in Dance at the University of Birmingham.

This study is to investigate what stressful situations dancers experience at work and what coping strategies they choose to deal with these. Additionally, it aims to gain greater understanding into how appraisal of stressful situations influences the choice of coping response and if there is evidence for any relationship between these factors and injury.

To obtain this information I am asking professional ballet dancers from a U.K. touring, ballet company to keep diaries for a month to record any sources of stress they experience at work, why they find these events stressful, the coping strategies they use to deal with them and any injuries they experience over this time. Participants are encouraged to write freely about their experiences.

All data will be kept confidential and only the course supervisors and I will have access to the names of anyone in the study. Data will be kept on a password secure computer and any paper copies will be kept in a locked filing cabinet. Participants' names will be changed to ensure confidentiality. I would like to stress that potential participants should feel under no pressure to take part in this study and are free to withdraw at anytime. This can be done by contacting me on the contact details below.

Phone: 07739415537

Email: [samara\\_downs@hotmail.com](mailto:samara_downs@hotmail.com)

## 6.7 Participant Consent Form

I, \_\_\_\_\_, give consent to participate in this study, investigating how dancers cope with and appraise stressful situation at work, and whether these factors have any relationship injury prevalence. I understand that I may withdraw at anytime and that my personal details will be kept confidential. I have read the participant information sheet and have an understanding of what the study is about.

Signed \_\_\_\_\_ Date \_\_\_\_\_

Witnessed by \_\_\_\_\_ Date \_\_\_\_\_

## 7. Appendix 2

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### 7.1 Excerpts from Stressor Classification Document (see CD for full document)

*7.1.1 Touring stressors- refers to stress relating to activities undertaken by the participant specifically required for the purpose of touring*

#### **Accommodation Concerns**

##### **Arranging shared accommodation/facilities**

A6-S3-2\* arranging digs (don't want to pay a ridiculous amount of money)

A8-S1-2\* only one key to flat- worried it could be hassle (potentially being tied to flat)

A9-S3-2\* sorting accommodation for venue (owners scamming people for using electricity)

A13-S2-3\* organizing the gym, as it was slow technology, not a person/reception (took a while to sort out)

D6-S2-3\* had to organise touring digs for (venue) just a week away- bit of indecision of how many people to be looking for (the thought of being homeless but also of making other people homeless if I didn't get on with it- also, not wanting to commit people to anything too expensive for them, whilst not wanting to get them somewhere shit)

F11-S1-3\* checking out of the flat in time to make class (needed to try class to see how my foot would react)

K12-S1-2\* digs (problems with keys on arrival at digs- wasted time and annoyed at colleague)

##### **Poor accommodation**

A12-S2-2\* flat freezing

A14-S2-3\* freezing flat (unnecessarily uncomfortable)

##### **Finding/settling into unknown accommodation**

D7-S1.2-2\*... finding digs at the other end (...and just the unsettled feeling of finding new accommodation and not knowing what it is going to be like)

F8-S2-5\* stuck in traffic jam trying to find accommodation (1hr and 15 mins to travel 2.6 miles to collect keys for flat- stressed about making the show- felt powerless)

### **Tension with flatmates stemming from issues at work**

L13-S1-3\* thoughts occurred to me that I might experience 'fall out' from previous incident, especially sharing flat with someone 'in the thick of it'- no way to vent- hard to keep restrained and you can't get away from situation/ people involved- happened on this day as settling into flat and testing environment (I might say something adding fuel to the fire- situation very sensitive and had to be more mindful- whole situation could flare up)

### **Adjusting to Inferior touring (working) facilities**

#### **Adjusting to new venue**

A8-S2-2\* new theatre/venue (stage floor not sprung/ moving set as (part), as there's not much room in the wings)

H8-S4-5\* worried about performing a solo in a new space with lighting/sets etc (worried \I would be blinded by the lights and get my placing wrong)

H13-S1-3\* class at unfamiliar venue (concerned that I wouldn't be physically prepared for later rehearsal/performance)

H13-S2-3\* rehearsal on a smaller stage (worried about being close to the edge of the stage whilst turning during solo)

H14-S1-5\* pressure of a solo on smaller stage (worried about performing the more technically difficult steps in a smaller space)

#### **Inadequate facilities**

B13-S1-2\* class on a very hard floor (I was concerned at how my body was going to react to the floor)

B13-S2-2\* very small stage (I wasn't sure whether I was going to be able to fit in certain parts of the choreography)

C11-S2-3\* feeling pain in lower legs from hard stage (feeling like doing class was doing more harm than good)

C13-S2-3\* finding being on tour in average studios and hard floor difficult (cold studio and hard floor make warming up difficult and jumping painful)

H8-S5-3\* heavy workload i.e. rehearsal, then a short break before the performance on a hard stage (anxious that I would do too much on a hard floor which I am not used to and end up with shin/joint pain)

J8-S2-4\* class didn't happen really (I really fucking hate class on tour because it is with the boys and it is fully packed and you can't do anything- the boys take all the places)

K9-S3-3\* hard stage (lower leg pain and stiffness from dancing on hard surface)

K13-S1.1-2\* class (poor size studio and floor- injury concern and wasted time- minimum level of expectation needs to be met otherwise wasting time)

K14-S2.2-3\* double show (hard stage, small stage- no space- detrimental to show for audience and threat to injury)

### **Tension in changing rooms because of inadequate facilities**

J8-S3-5\* the changing room- argggghh- it pisses me off (the students take too much space- it's already so tight in there and they use the whole space with their fat arses)

J9-S3-3\* the changing room (I hate (venue) changing room- there are too many people and students and every time that (friend) and I laugh we hear silence and some 'bffff' or 'ttrrr'- you get me- like it sounds like we are being very immature- but at least we live- these boring girls (I won't specify anyone in particular))

### **Inconsiderate scheduling of class on tour (because of touring specific scheduling pressures)**

K9-S1-2\* early class (not enough overnight rest, lack of communication as to why class was earlier than usual; tired- potential threat to standard of show and potential injury threat)

### **Stress caused by touring away from home**

#### **Not wanting to tour away from home/partner**

J8-S1-4\* going on tour (just the thought of it makes me feel down- I miss my man and I hate hotels)

R10-S1-3\* nearing the end of the week- I miss my partner and want to be at home with him and sleep in my own bed (my relationship suffers with weeks apart)

#### **Boredom on tour due to venue and schedule**

B15-S1-2\* I was bored (irritated... I wanted more to do in the day)

M11-S1-3\* double show day- hanging around (venue) (boredom- frustration at not having enough time to do anything enjoyable/worthwhile because of schedule/venue)

### **Effects of tour on other commitments**

P9-S1-5\* being on tour and trying to phone and email especially when there is bad reception and the connection keeps dropping out (as I am retiring I am having to email and phone to sort out various application- this is very difficult to do on tour as there is no privacy in the theatres and also because I can't phone/email because of lack of privacy/connection- this makes me look to the people who I am trying to contact as though I cannot be bothered or am not making an effort to respond to them)

R18-S1-2\* weekend was so short due to long travel (don't feel rested, still tired from late night Saturday travelling- harming work/life balance and affecting relationship)

### **Forgot to take kit on tour**

F8-S1-5\* forgot toe pads (very worried because toenail was painful and I couldn't have danced without them)

## **Travelling Issues**

### **Stress of packing to travel away on tour**

D7-S1.1-2\* stress of getting out of the house and... (making sure that the house was all locked up and safe for our time away)

D12-S2-4\* worrying about packing properly (getting stresses at only having 24 hrs to do washing and sort everything out for the next week of tour- not wanting to forget anything/ leave the house in a tip)

G7-S1-2\* wasn't particularly stressed today but I was worrying slightly about having to get up early to go on tour tomorrow, as I haven't been up before 9am for weeks (didn't want to miss my lift and be late for class)

### **Travelling effects on personal wellbeing**

A11-S3-2\* motion sickness on coach

A12-S3-2\* long car journey, muscles and bad knee bit sore (dead legs)

A17-S2-2\* dead legs in car journey home (uncomfortable)

H8-S2-2\* feeling tired after travelling to (venue) (concerned my concentration levels would be poor and affect performance)

K8-S1-3\* long hours due to early travel for tour (I was irritable and lacking in concentration by the end of the day- potential to spread to other people)

### **Travelling effects on personal wellbeing and standard of performance**

J13-S1-4\* travelling this morning for tour- 'grrrr' (travelling on tour really tires me and never do a good show on that day- my legs are gone from being sat in a small car)

H8-S3-2\* feeling stiff after the car journey (concerned I would find certain steps more difficult than usual)

N13-S1-3\* getting ready for travelling always stressful (the fact that others travelled the day before and we were paid to do so- makes you flustered- then have to do double show knowing you are going to be knackered)

### **Tiredness when travelling**

B17-S1.2-3\* very tired (was worried about the 2 shows that I had, and whether I would get through them and the long drive home)

D17-S2-2\* hoping that I wasn't going to be too tired for the drive home (double show plus three hour drive could = falling asleep on the motorway!)

H11-S7-2\* concerned about journey after the show (worried about taking it easy in the show to have enough energy to get home)

K17-S1-2\* long drive late at night (tiredness makes journey daunting- safety concerns and responsibility for others)

O17-S1-2\* tiredness (going through double show and drive back from (venue)- it's a lot- want to make sure you're awake- worrying about safety and those you drive)

R17-S2-2\* long drive home (the thought of the drive when you are feeling tired- you know you have to concentrate)

### **Travelling with passengers**

D12-S3-3\* worrying about driving well with passengers (I didn't want to drive badly with passengers because it's embarrassing and also packing the boot with stuff is stressful with Oscar's little boot)

## 7.2 Excerpts from Coping Classification Document (see CD for full document)

### 7.2.1 Avoidance Coping Categories

#### **Behavioural Avoidance**

##### **Avoided certain behaviours**

A9-S5 tried to drink as little tap water as possible

A10-S2 sat down

A11-S1 sat down and tried to cool down-

A11-S3 stopped reading

F18-S2 did my best to avoid conversation with colleagues and...

J5-S2 put anything I could grab first, shoved it in, closed it and...

O22-S1.1 avoid the space...

R5-S1 avoided working out,

S16-S1 hid from director...

##### **Left work environment (27)**

A2-S5/6 removed myself physically from the situation- stuck on one thought cycle and being in (injury centre) didn't help

C13-S3 did work and just left to get some head space

C17-S2 tried not to spend too much time moping at the theatre

C22-S1 left studio as soon as rehearsal finished...

E1-S2 went for a walk and left the building...

E4-S1 I went out in to town and...

E5-S2.1/2.2 got some air and...

H9-S1 went out... between shows to have a change of scenery...

J3-S1 ...ran out of class

J6-S1 went home after work...

J7-S1 well I simply left class and...

J9-S3 I'm trying to stay away from that changing room...

J15-S1 fucked off straight after the show

J16-S2 ...made sure I was out... more than be in there

J19-S2.1/2.2/2.3 I tried to get away from that building as soon as I could...

J20-S1.1/1.2 I ran out as soon as possible

J20-S3 ... also didn't finish class the next day before meeting

J22-S1.1/1.2 after class, went for ...breeze (fresh air)

O13-S1 ...physically took myself out of the room for my mental state...

R11-S2 ...spent time on my own

S11-S2 ...and then walked out

U20-S1 finished class early...

### **Behavioural distraction (27)**

A7-S4 read- distraction

A13-S2 played on my phone while I waited

A17-S4 ...and tried not to mope i.e. talk or do something

B15-S1 I went to watch a movie- distraction and entertainment which filled out time

C17-S2 went to gym... - distracting myself by going out and taking a mental break

C19-S3 distracted myself by going full out in rehearsals and practicing after

E4-S1 ...had a walk to have a breather from ballet- calms me and distracts

F14-S5 having (part) was a good distraction from feeling anxious for (friend's) show

H2-S2/3 listened to music, went for a drive- distraction

H7-S1 watched DVD series to take my mind off work, went shopping

H8-S1 went out for dinner

H13-S3 went out for dinner- distraction

H14-S1...read my book...

J15-S1 slept all day for the weekend to come quicker...

K6-S1 read the paper and...

N4-S1 used my time/frustration and went and did jobs in town that needed to be done

N7-S1 talked quietly through the rehearsal

N17-S1.1/1.2 ...and played 'blockus' (an ipod touch mind game), filling time and listening to my music-  
distraction and calming/relaxing

N22-S1.1/1.2 read a magazine- distraction from feeling as waiting around you get more nervous...

O6-S1 distraction- anything, watching tv to numb the mind...

O18-S1 kept busy, physically and mentally

R11-S2 went to the gym- used as mental break...distraction and makes mood improve

S14-S2 read a good book- distraction

S15-S1 read a good book...

## **Cognitive Avoidance**

### **Thought stopping**

A11-S2 tried to stop a negative spiral mentally

A17-S4 tried to stop my negative thought problems- tried to stop thinking about them...

A21-S1 tried not to dwell...

C2-S2 ...tried to forget about it

D8-S2 ignored it as best I could...

D12-S3 tried not to worry about it...

D20-S2 just ignored it to a certain extent- what can I do but try to concentrate myself?

F5-S1 tried not to get worked up and let frantic morning ruin the rest of the day...

F7-S1 tried to ignore it

F9-S4 I tried not to concentrate on how I was feeling

F13-S2 I tried not to get angry and frustrated and let his mood affect mine

F14-S3 ...also tried not to focus on the particular step I was worried about...

F14-S4 ...and not think about it

F17-S2 tried not to think about (friend) leaving

F22-S1 I decided I wasn't going to think ahead/estimate how long it would take to recover or what, if any damage had been done

G4-S2 tried to forget about the rehearsal and...

G13-S2 tried not to think about my solo in this evening's show

G14-S2 tried to not think about the solo I had performed...

G14-S3 ...try not worry about how displeased I was and pick it up again on Saturday...

G15-S1 tried to forget about my solo and pick it up on Saturday...

I9-S2 ...forget about the problem...

J5-S3 trying to ignore it, she's just trying to put me down

J6-S2 ...didn't think too much about it...

J17-S3.1/3.2 ...and try to not think too much as it goes even slower

M10-S2 dwelt on it, constantly thinking about it going wrong- in the end mentally tried to get on with it as was pissing myself off thinking about it

N20-S1 blanked the day...let it go over your head...

O3-S1 ignoring it...

O10-S1 not worry-if I had negative thoughts then mentally stopped it...

O14-S1/2 ...forgot about everything else

O22-S1.1...focus on task to not work myself up about it

Q8-S1 just take it a day at a time

Q13-S1 ...tried not dwell on it and not think about it... and not care what he was going to think or say

S11-S2 ignored them- mentally blocked them out of my head...

S21-S1 ...tried to forget about it...

U3-S1 ...stop yourself from thinking negative thoughts and move on

U6-S1 tried to ignore how I feel

### **Thought about future**

C14-S5 ... thought about future plans

D11-S1 tried my best but was just a bit disappointed- just told myself that it was almost home...

F5-S1 ...reminded myself that it would be the weekend soon

H22-S1/2/3/4 ...made plans for the weekend

I2-S2 ...think in the future that one day I will be able to dance the way I want

J11-S1 ...wait for my weekend to come, that makes me smile

J17-S3.1/3.2 I just try to think about the future...that makes me happy...

S15-S1 ...thought about glass of red wine at end of performance

### **Switch off**

M2-S1.1/1.2 today I just switched off totally...

M19-S1 just had to shut off in rehearsals as I fucking hate (ballet)

M19-S2.2 shut down and zone out- nod without thinking and stop listening so as not to snap at bloody (colleague)- it's quite difficult sometimes

N20-S1 ...disengaging, and just did it not really thinking too much because it wasn't difficult work-

### **Mentally move on**

A21-S1 ...and move on

J7-S2.1 today I just tried to let it go over my head

O13-S1 letting go of the complaints (of the balloon)...

C22-S1 got annoyed, got over it...

U3-S1 tell yourself to get over it

### **Deferring**

E8-S1 nothing- I'm stubborn- will discuss with colleague tomorrow

F6-S2 ...may ask to do tomorrow's rehearsal if I feel it's necessary

## 8. Appendix 3

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### 8.1 Excerpts from Classification of data by Participant (see CD for full document)

#### 8.1.1 Participant A

A1-S1-2\*: tiredness TIREDNESS (lack of motivation to work in injury clinic- slowing down physical improvement- so career can go forward) 1.LOSS MOTIVATION 2. HARM IMPROVEMENT 3.THREAT CAREER I had a lie down 1.PHYSICAL RECOVERY STRATEGIES

A1-S2-3\* indigestion PHYSICAL SYMPTOMS (lack of motivation to work in injury clinic- slowing down physical improvement- so career can go forward) 1.LOSS MOTIVATION 2.HARM IMPROVEMENT 3.THREAT CAREER tried to find productive things that didn't make me feel nauseous e.g. icing my knee 1.PHYSICAL RECOVERY STRATEGIES

A1-S3-2\* headache PHYSICAL SYMPTOMS (lack of motivation to work in injury clinic- slowing down physical improvement- so career can go forward) 1.LOSS MOTIVATION 2.HARM IMPROVEMENT 3.THREAT CAREER Took a Nurofen 1.TOOK MEDICATION

A1-S4-1.5\* new toe inserts- first time wearing them...had problems with toe CONCERNS ABOUT INJURY TREATMENT (may be doing more harm than good- potentially causing damage to foot) 1. THREAT INJURY removed toe inserts 1.TOOK ACTION TO ALLEVIATE PROBLEM

A2-S1-2\*-4\* headache PHYSICAL SYMPTOMS(range of stress depending on intensity- threat of coming down with illness and not being able to do job and playing catch up with everything) 1.THREAT WELLBEING 2.HARM STANDARD saw a masseuse to work into the areas around it which are tight and contributing 1.SEEKING PHYSICAL TREATMENT

A2-S2-3\* injured knee REOCCURENCE OF INJURY/PAIN (that I had remedied this at the end of last year- e.g. one step forward, two steps back- might get worse again- threat of not being able to do job and playing catch up with everything) 1.HARM IMPROVEMENT 2.THREAT INJURY 3.THREAT STANDARD kept hydrated and took Nurofen and Paracetamol 1.CONTROLLED NUTRITION/HYDRATION 2.TOOK MEDICATION

A2-S3-2\* technical inadequacy STANDARD OF DANCING- TECHNICAL STANDARD (inconsistency of technique, day to day is frustrating- striving to get technical capability- lost it temporarily and you don't know why- short term concern) 1.HARM SELF PERCEPTION 2.HARM IMPROVEMENT 3.HARM STANDARD tried to focus on the positives within class 1. POSITIVE REAPPRAISAL 1

A2-S4-3\* mental inadequacy to override negative thoughts CONCERN ABOUT NEGATIVE THOUGHTS (getting into a psychological rut- affects personal standard of class and teacher as they can affect your career)

1.THREAT MOTIVATION 2.THREAT STANDARD 3.THREAT REPUTATION 4.THREAT CAREER  
 tried to focus on the positives within class 1.POSITIVE REAPPRAISAL 2

A2-S5-3\* lack of motivation AMOTIVATION (that I am not acting on the motivation I can muster- because you should be- that's how you get ahead in the game- might affect long term career prospects) 1.THREAT IMPROVEMENT 2.THREAT CAREER 3.LOSS MOTIVATION removed myself physically from the situation- stuck on one thought cycle and being in (injury centre) didn't help 1. LEFT WORK ENVIRONMENT 1

A2-S6-2\* feeling I am actually not doing enough and working hard enough NOT WORKING HARD ENOUGH (because you should be- that's how you get ahead in the game- might affect long term career prospects) 1. THREAT IMPROVEMENT 2.THREAT CAREER removed myself physically from the situation- stuck on one thought cycle and being in (injury centre) didn't help 1. LEFT WORK ENVIRONMENT 2

A3-S1-4\* continuation of headaches and generally feeling ill PHYSICAL SYMPTOMS (coming down with threat of illness- wouldn't be able to dance- worried what staff might think but more that you were feeling crap there and then) 1.THREAT WELLBEING 2.THREAT CAREER 3.THREAT REPUTATION 4. HARM WELLBEING kept hydrated and ate plenty, took Nurofen and Paracetamol, had a nap and didn't push it 1.CONTROLLED NUTRITION/HYDRATION 1 2.CONTROLLED NUTRITION/HYDRATION 1 3.TOOK MEDICATION 1 4.PHYSICAL RECOVERY STRATEGIES 1 5. MODIFIED ACTIVITY 1

A3-S2-3\* tired TIREDNESS (keeping my focus- worried that I was losing focus-paying attention in rehearsals/keeping up with the game in class) 1.THREAT CONCENTRATION 2. THREAT STANDARD kept hydrated and ate plenty, took Nurofen and Paracetamol, had a nap and didn't push it 1. CONTROLLED NUTRITION/HYDRATION 2 2.CONTROLLED NUTRITION/HYDRATION 2 3.TOOK MEDICATION 2 4.PHYSICAL RECOVERY STRATEGIES 1 5.MODIFIED ACTIVITY 2

A3-S3-3\* trying to maintain problematic knee DANCING WITH INJURY/PAIN (pain during class- short-term- long term don't want it to develop into more serious injury) 1.HARM WELLBEING 3.THREAT OF INJURY saw masseuse, ice bathed, didn't aggravate it in class 1.SEEKING PHYSICAL TREATMENT 2.PHYSICAL RECOVERY STRATEGIES 3.MODIFIED ACTIVITY

A4-S1-4\* being ill PHYSICAL SYMPTOMS (harm to how I feel) 1.HARM WELLBEING took my pills 1.TOOK MEDICATION

A4-S2-3\* injured knee DANCING WITH INJURY/PAIN (painful when I dance- also affecting personal standard) 1.HARM WELLBEING 2. HARM STANDARD same as usual, ice and rest 1.PHYSICAL RECOVERY STRATEGIES 2.PHYSICAL RECOVERY STRATEGIES

A4-S3-2\* being forgetful with possessions at work PERSONAL BEHAVIOURAL EXPECTATIONS AT WORK (that I am aware I am forgetful and still forget things- wasting own time) 1.LOSS TIME 2.HARM STANDARD get a bit annoyed then go and retrieve the forgotten item 1. TOOK ACTION TO ALLEVIATE PROBLEM

A5-S1-4\* viral infection PHYSICAL SYMPTOMS (possible diagnosis...feeling lousy- just feel shit) 1.HARM WELLBEING pills, hydration, checked with nurse, rested 1.TOOK MEDICATION 2. CONTROLLED NUTRITION/HYDRATION 3.SEEKING PHYSICAL TREATMENT 4.PHYSICAL RECOVERY STRATEGIES

A5-S2-3\* injured knee DANCING WITH INJURY/PAIN (pain during jumps- also that it'll potentially develop into something more long term) 1.HARM WELLBEING 2. THREAT INJURY iced and rolled/stretched out muscles, did physio exercises 1.PHYSICAL RECOVERY STRATEGIES 2.PHYSICAL RECOVERY STRATEGIES 3.REHABILITATION EXERCISES

A6-S1-3\* injured knee DANCING WITH INJURY/PAIN (not as concerning as feel it is improving-worrying it would continue and stop me dancing/take me off) 1. THREAT INJURY 2.THREAT CAREER keeping on top of muscle tightness 1 PHYSICAL RECOVERY STRATEGIES

A6-S2-3\* viral infection PHYSICAL SYMPTOMS (it isn't worsening but it is persistent- affects standard of dancing and that it would continue) 1.HARM STANDARD 2.THREAT WELLBEING pills and fluid 1.TOOK MEDICATION 2. CONTROLLED NUTRITION/HYDRATION

A6-S3-2\* arranging digs ARRANGING ACCOMMODATION/FACILITIES (don't want to pay a ridiculous amount of money) 1.THREAT FINANCES checked out potential digs 1.GATHERED INFORMATION

A6-S4-2\* procrastination PERSONAL BEHAVIOURAL EXPECTATIONS AT WORK (I am aware I procrastinate and yet still put things off- annoyed at self because wasting own time) 1. HARM STANDARDS 2. LOSS TIME nothing, which is why it is annoying- vicious circle 1.NO COPING

A7-S1 -2\* knee DANCING WITH INJURY/PAIN (not as concerned as before- same concerns worrying about it continuing) 1.THREAT INJURY massage and rolled and stretched out muscles 1.SEEKING PHYSICAL TREATMENT 2.PHYSICAL RECOVERY STRATEGIES

A7-S2-3\* infection PHYSICAL SYMPTOMS (slightly more worried as pain at the back of my left lung is creating shortness of breath-affecting standard of dancing-immediate) 1.THREAT STANDARD pills and fluid 1.TOOK MEDICATION 2.CONTROLLED NUTRITION/HYDRATION

A7-S3-2\* feelings of detachment from family and friends FEELING DETACHMENT FROM FAMILY CAUSED BY WORK (because of work and procrastinating...procrastinating is creating it partly. Not acting upon ideas... losing touch- sense of relationship- in the present) 1.HARM RELATIONSHIPS going to ring parents finally, tomorrow 1.PLANNED COMMUNICATION

A7-S4-2\* being over-analytical CONCERN ABOUT NEGATIVE THOUGHTS (I get lost in a negative train of thought- puts me in a bad mood- harm to mood) 1.HARM AFFECTIVE STATE read- distraction 1.BEHAVIOURAL DISTRACTION

A8-S1-2\* only one key to flat- worried it could be hassle ARRANGING ACCOMMODATION/FACILITIES (potentially being tied to flat- worrying about being able to get out/ access flat when necessary) 1. THREAT TIME kept in contact if I wasn't going the same place as (flatmate) 1.INCREASED COMMUNICATION

A8-S2-2\* new theatre/venue ADJUSTING TO NEW VENUE (stage floor not sprung/ moving set as the (character), as there's not much room in the wings- it did affect performance going wrong- worried about staff and audience- worried about creating bad performance) 1. HARM REPUTATION 2. HARM SHOW/COMPANY REPUTATION just got on with it 1.PHYSICALLY CARRIED ON

A9-S1-4\* (character)- MAKING MISTAKE IN PERFORMANCE (forgetting to take the bloody head dress on and not performing to my fullest because of it- harmed personal standard of performance) 1. HARM

**STANDARD 2.HARM REPUTATION** remembering that it happens to everyone and it didn't ruin the show  
1.RATIONALIZATION

A9-S2-2\* remembering (part) GOING WRONG IN PERFORMANCE (I remembered fine but prepared a lot because of the previous incident- worried would go wrong in show for self/audience/staff) **1.THREAT STANDARD 2. THREAT REPUTATION 3.THREAT SHOW/COMPANY REPUTATION** went over it in my head 1.GOING OVER CHOREOGRAPHY

A9-S3-2\* sorting accommodation for (venue) ARRANGING ACCOMMODATION/FACILITIES (dig owners scamming people for using electricity-annoyed that it was shit and would be stuck without electricity-frustrating because of time wasting- couldn't use computer) **1.HARM JUSTICE 2.HARM AFFECTIVE STATE 3.HARM RELAXATION 4.LOSS TIME** rang/emailed the owner to arrange 1.INCREASED COMMUNICATION

A9-S4-2\* timing meals correctly TIMING MEALS (varying energy levels- affecting standard of performance for self/audience/staff) **1.THREAT STANDARD 2. THREAT SHOW/COMPANY REPUTATION 3.THREAT REPUTATION** checked the timetable so I knew when I had time 1.GATHERED INFORMATION

A9-S5-3\* bad stomach CONCERNS ABOUT PHYSICAL SYMPTOMS AFFECTING WORK (had to leave class, could be extremely painful and had loose stools!- harm (pain)- personal standard affected there and then) **1. HARM WELLBEING 2. HARM STANDARD** tried to drink as little tap water as possible 1.AVOIDED CERTAIN BEHAVIOURS

A10-S1-2\* can't breathe in costume PROBLEMS WITH COSTUME/SET (affects personal performance there and then) **1. HARM STANDARD** told myself I wasn't going to pass out 1.POSITIVE THINKING/SELF TALK

A10-S2-3\* get excessively hot and sweaty in costume PROBLEMS WITH COSTUME/SET (dehydration potentially affects performance/ risk of injury- threat) **1.THREAT STANDARD 2.THREAT INJURY** had a drink of water and sat down 1. CONTROLLED NUTRITION/HYDRATION 2.AVOIDED CERTAIN BEHAVIOURS

A10-S3-2\* danced with someone I'd never danced with before NEW CHANGES OF PARTNER (last minute change of casting- ... we might go wrong- worried about standard personal/audience/staff) **1.THREAT STANDARD 2.THREAT SHOW/COMPANY REPUTATION 3.THREAT REPUTATION** prepared ourselves and went over anything that needed clarifying 1.INCREASED CONCENTRATION/ATTENTION 2.GOING OVER CHOREOGRAPHY

A11-S1-2\* hot in costume PROBLEMS WITH COSTUME/SET (very sweaty- getting dehydrated and annoying) **1.HARM WELLBEING 2.HARM AFFECTIVE STATE** sat down and tried to cool down 1.AVOIDED CERTAIN BEHAVIOURS

A11-S2-3\* friends watched class and I wasn't on form STANDARD OF DANCING/SOCIAL EVALUATION (I had a bad class- worried about bad impression for friends) **1.THREAT SHOW/COMPANY REPUTATION** tried to stop a negative spiral mentally 1.THUGHT STOPPING

A11-S3-2\* motion sickness on coach TRAVELLING EFFECTS ON PERSONAL WELLBEING (felt sick- just annoying- harm) 1.HARM AFFECTIVE STATE stopped reading 1.AVOIDED CERTAIN BEHAVIOURS

A12-S1-4\* tried jump after class and landed on bad knee REOCCURENCE OF INJURY/PAIN (knee painful from impact- it might get worse- may cause you to be off- career concerns) 1.HARM WELLBEING 2.THREAT INJURY 3.THREAT CAREER saw physio and iced 1.SEEKING PHYSICAL TREATMENT 2.PHYSICAL RECOVERY STRATEGIES

A12-S2-2\* flat freezing POOR ACCOMMODATION (so so cold-harm) 1.HARM WELLBEING turned heating on full, wrapped up and left heating on 1.TOOK ACTION TO ALLEVIATE PROBLEM 2.ADAPTED TO CONDITIONS 3. CHANGED BEHAVIOUR

A12-S3-2\* long car journey, muscles and bad knee bit sore TRAVELLING EFFECTS ON PERSONAL WELLBEING (dead legs- short term effects for class-standard) 1.HARM WELLBEING 2.THREAT STANDARD walked it off 1.PHYSICAL RECOVERY STRATEGIES

A13-S1-3\* still feeling effects of landing in knee but not as bad as I expected DANCING WITH INJURY/PAIN (pain on some movements- harm and threat of it continuing) 1.HARM WELLBEING 2.THREAT INJURY didn't push it, during/after class or in the gym 1.TOOK IT EASY/DIDN'T PUSH IT 2. MODIFIED ACTIVITY

A13-S2-3\* organizing the gym, as it was slow technology, not a person/reception ARRANGING ACCOMMODATION/FACILITIES (took a while to sort out- waste of time- loss) 1.LOSS TIME played on my phone while I waited 1.BEHAVIOURAL DISTRACTION

A14-S1-3\* hot and sweaty in costumes PROBLEMS WITH COSTUME/SET (very hot in changing room- just harm- just put up with it) 1.HARM WELLBEING took off some of the costume 1.ADAPTED TO CONDITIONS

A14-S2-3\* freezing flat POOR ACCOMMODATION (unnecessarily uncomfortable- felt a bit cheated) 1.HARM WELLBEING 2.HARM JUSTICE wore more layers 1.ADAPTED TO CONDITIONS

A15-S1-4\* crashed in (part) MAKING MISTAKE IN PERFORMANCE (looked a bit and went wrong- threat of appearance ruined in eyes of staff- potentially tarnishing show for audience- harming personal standards) 1.THREAT REPUTATION 2.THREAT SHOW/COMPANY REPUTATION 3.HARM STANDARD reassured myself that these things happen and it wasn't solely my fault 1.RATIONALIZATION 2.REAPPORTIONED BLAME

A15-S2-3\* didn't perform to my fullest STANDARD OF DANCING- FAILURE IN RESPONSIBILITY (failure in responsibility- mainly personal because you want to give best performance every night- also worried about what staff might think and audience) 1.HARM PROFESSIONAL EXPECTATIONS 2. THREAT SHOW/COMPANY REPUTATION 3. THREAT REPUTATION made sure I tried to do it better next time 1.PLANNED TO DO BETTER FUTURE PERFORMANCE

A16-S1-5\* had the worst show possible- lots of small problems MAKING MISTAKE IN PERFORMANCE I made so many mistakes- didn't do best and failure of responsibility- potentially harmed show for audience- personal standards harmed- actually did harm presentation of work to staff) 1.HARM PROFESSIONAL

**EXPECTATIONS 2.THREAT SHOW/COMPANY REPUTATION 3.HARM REPUTATION 4.HARM STANDARD** had a vent 1.VENTED

A17-S1-3\* tired- only one day weekend to recover **FEELING TIRED FROM HEAVY WORK SCHEDULE** (worrying about next week- threat to ability to work next week) **1.THREAT STANDARD** slept in car 1. **PHYSICAL RECOVERY STRATEGIES**

A17-S2-2\* dead legs in car journey home **TRAVELLING EFFECTS ON PERSONAL WELLBEING** **PERSONAL WELLBEING** (uncomfortable- harm because of pain) **1.HARM WELLBEING** moved around a lot 1. **PHYSICAL RECOVERY STRATEGIES**

A17-S3-2\* hot in costume **PROBLEMS WITH COSTUME/SET** (dehydrating, health affecting- potential for muscle fatigue) **1.HARM WELLBEING 2.THREAT WELLBEING** rehydrated 1. **CONTROLLED NUTRITION/HYDRATION**

A17-S4-3\* bad in class- ballet staff watched...really quite bad **WORRIED ABOUT ARTISTIC STAFF WATCHING/ACHIEVING CAREER GOALS** (worried what they might think potentially and harm to standard on personal level) **1.THREAT REPUTATION 2.HARM STANDARD** tried to stop my negative thought process- tried to stop thinking about them and tried not to mope i.e. talk or do something 1.**THOUGHT STOPPING 2.BEHAVIOURAL DISTRACTION**

A17-S5-4\* back locking (isn't the first time this has happened) **REOCCURENCE OF INJURY/PAIN** (worried that it would happen again and long term rather than day to day- reflection that something is wrong with me) **1.THREAT INJURY 2.THREAT WELLBEING** saw physio to try and release it and iced it later on 1.**SEEKING PHYSICAL TREATMENT 2.PHYSICAL RECOVERY STRATEGIES**

A18-S1-2\* sore back **DANCING WITH INJURY/PAIN** (it could become worse and affect my personal standard of dancing and worried about long term injury-impact on career) **1.THREAT INJURY 2.THREAT STANDARD 3.THREAT CAREER** iced as a precaution and saw physio 1.**PHYSICAL RECOVERY STRATEGIES 2.SEEKING PHYSICAL TREATMENT**

A18-S2-2\* picking up choreography as 2<sup>nd</sup> cast **REMEMBERING REPERTOIRE** (I will potentially get thrown into rehearsal and blank/not pick up choreography properly- concerning because I should- harming personal pride- and potentially staff might think badly of you) **1.HARM SELF PERCEPTION 2.HARM REPUTATION** picked up as much as possible- concentrated slightly more 1.**INCREASED CONCENTRATION/ATTENTION**

A19-S1-2\* learning rep properly as 2<sup>nd</sup> cast with 2 spots **HAVING TO LEARN MULTIPLE ROLES AT ONCE** (that I will look bad in eyes of staff and colleagues and I haven't picked up the small details- worrying about getting shows and not knowing it- personal/staff and audience) **1.THREAT REPUTATION 2.THREAT REPUTATION/PEER 3.THREAT STANDARD 4.THREAT SHOW/COMPANY REPUTATION** tried my best to pick up as much as possible- went through it in my head again 1.**GOING OVER CHOREOGRAPHY**

A19-S2-3\* had a bad class- body wasn't responding **STANDARD OF DANCING- TECHNICAL STANDARD** (untechnical and sloppy- gives me negative thoughts...not improving enough- affected morale and worried for career reasons) **1. HARM STANDARD 2.HARM SELF PERCEPTION 3.THREAT CAREER** tried to find specific things to concentrate on rather than the lacklustre class as a whole 1.**FOCUSED ON SPECIFIC ASPECT OF WORK**

A20-S1-2\* retaining choreography REMEMBERING REPERTOIRE (remembering order of dances- worried that I'm not as sharp as I once was- potential threat of loss of ability to pick up quickly- also remembering order because might affect show standard- personal/audience/staff) 1.THREAT SELF PERCEPTION 2.THREAT STANDARD 3.THREAT REPUTATION 4.THREAT SHOW/COMPANY REPUTATION watched the DVD and took notes 1.LEARNING REPERTOIRE 2.LEARNING REPERTOIRE

A20-S2-3\* not feeling so fresh for mat class...self induced TIREDNESS POTENTIALLY AFFECTING STANDARD OF WORK (muscles not the best they've been after drinking last night- worrying might have had a bad class-threat) 1.THREAT STANDARD rehydrated as much as possible 1. CONTROLLED NUTRITION/HYDRATION

A21-S1-4\* had a really bad class today- not functioning STANDARD OF DANCING- TECHNICAL STANDARD (reflects badly on me, personally makes me feel bad, body wasn't responding- messy untechnical- harm to appearance in eyes of staff and colleagues- potential threat to career prospects- harm to morale) 1.THREAT REPUTATION 2.THREAT MOTIVATION 3.HARM AFFECTIVE STATE 4.THREAT REPUTATION/PEERS 5.THREAT CAREER 6.HARM STANDARD tried not to dwell and move on 1.THOUGHT STOPPING 2.MENTALLY MOVE ON

A21-S2-4\* sore back CHRONIC INJURY (more so than usual...it's getting worse- potential to become an injury- potential to take you off) 1.THREAT INJURY 2.THREAT CAREER saw physio and iced 1.SEEKING PHYSICAL TREATMENT 2.PHYSICAL RECOVERY STRATEGIES

A22-S1-2\* remembering rep properly REMEMBERING REPERTIORE (looking bad in front of staff and peers- harm to appearance, and personally should be able to remember but still blanked- frustration and harm to pride) 1.HARM REPUTATION 2.HARM REPUTATION/PEERS 3.HARM SELF PERCEPTION 4. HARM AFFECTIVE STATE tried to double check anomalies before doing 1.GATHERED INFORMATION

## 9. Appendix 4

### 9.1 Results Figures

Figure 1:

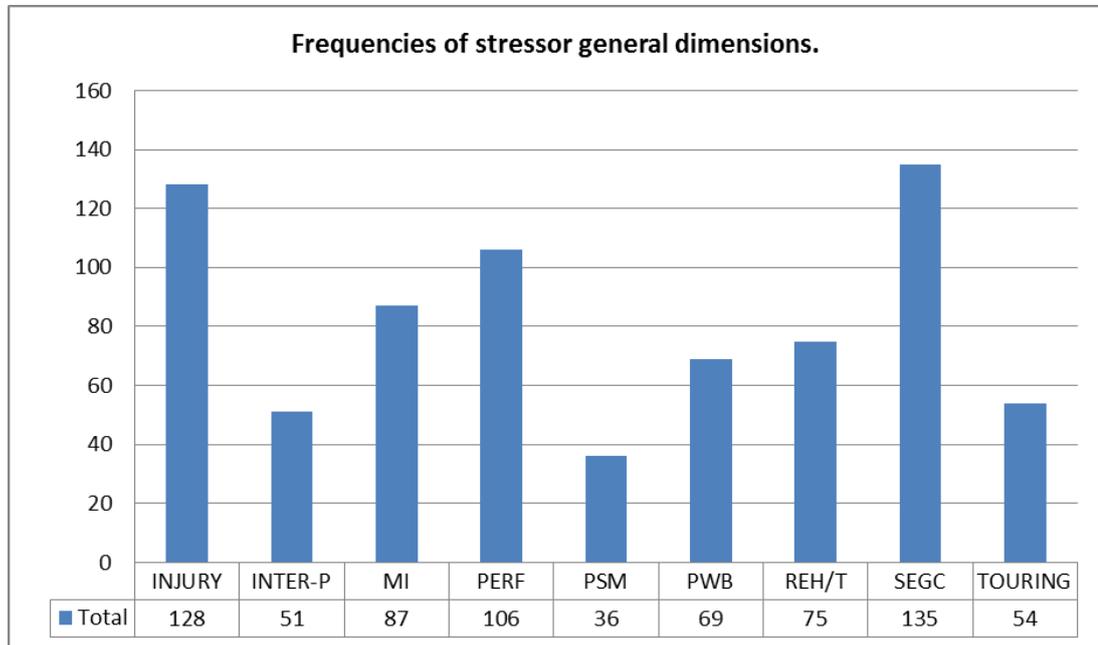


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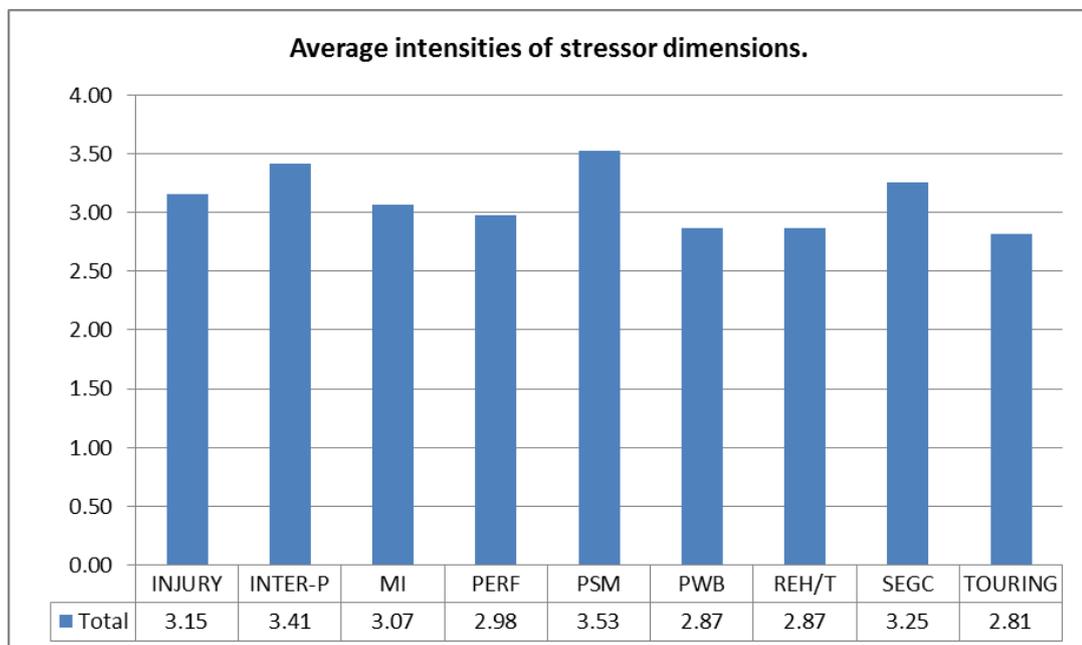


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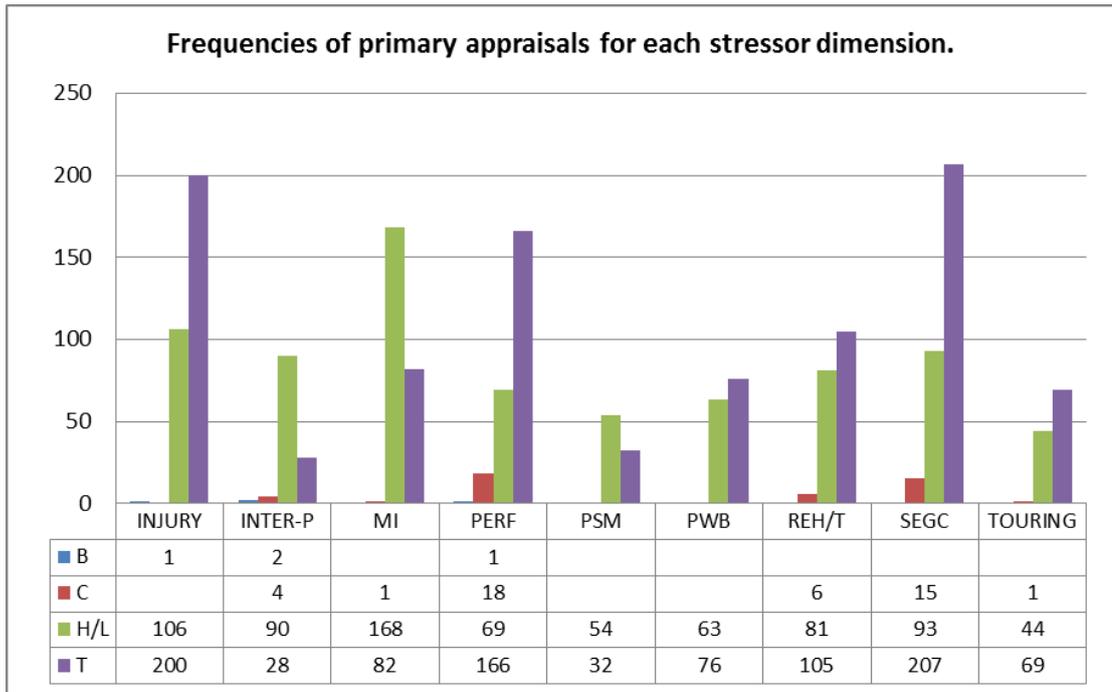


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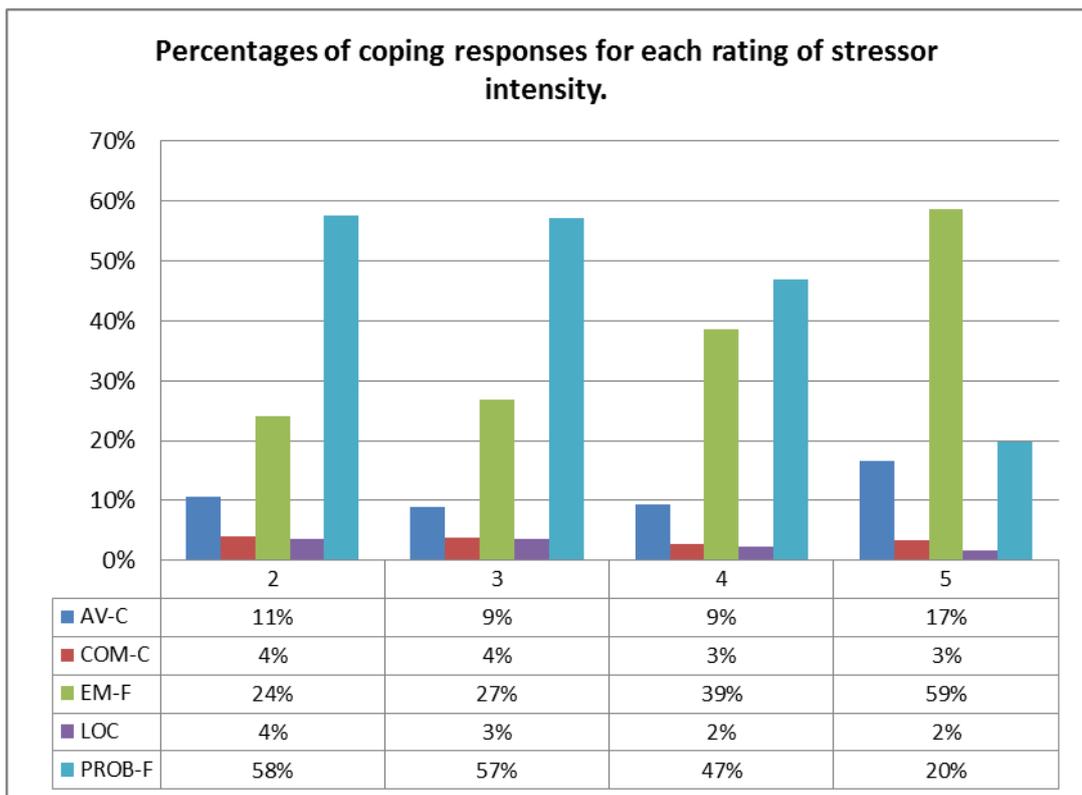


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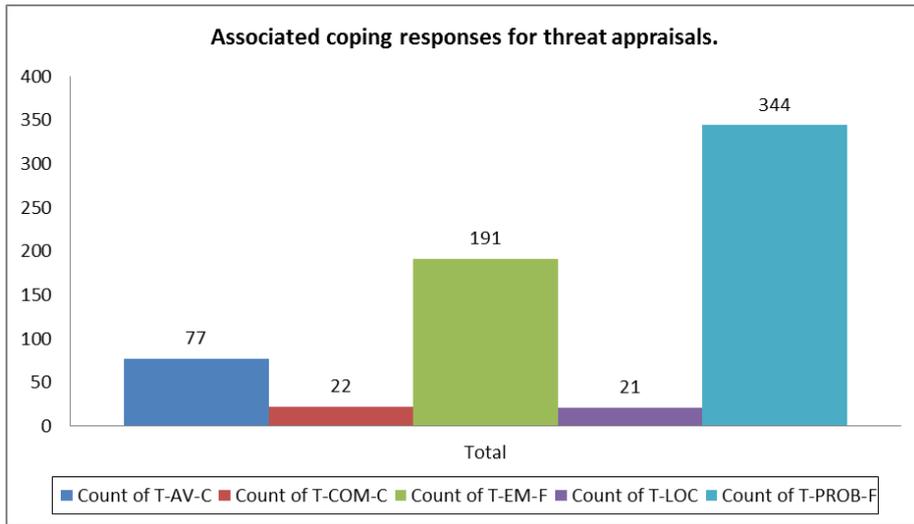


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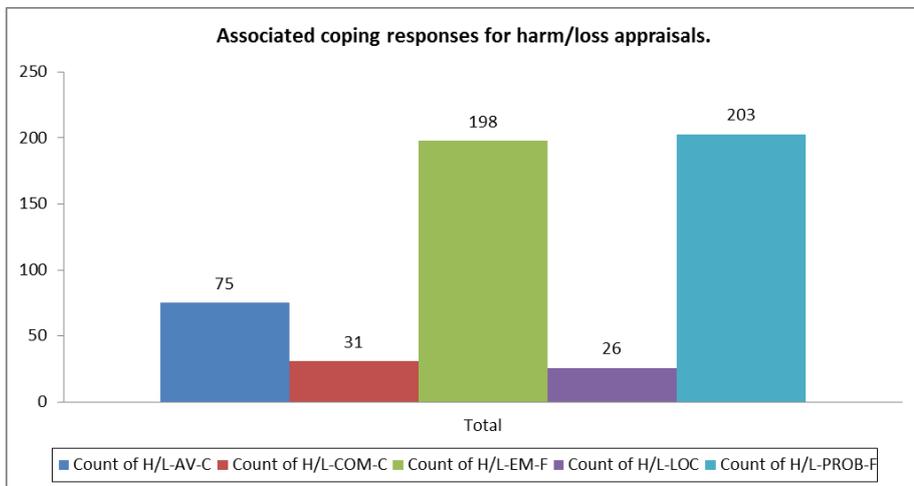


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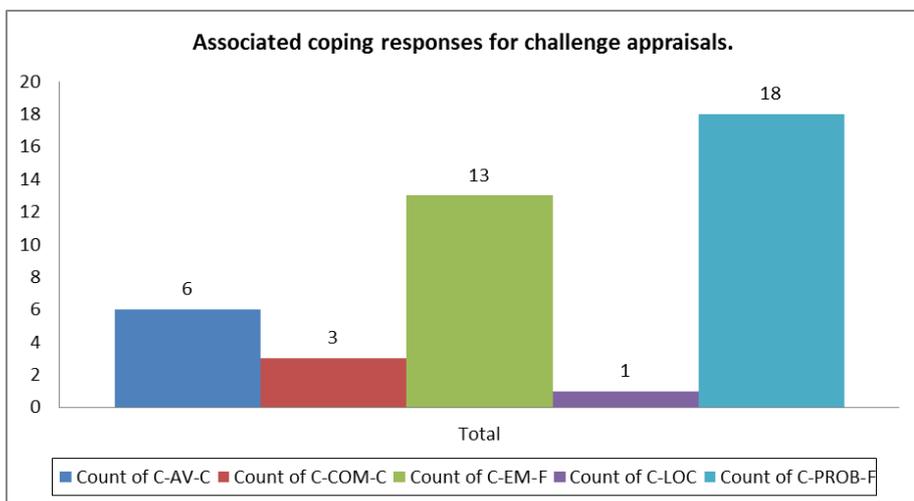


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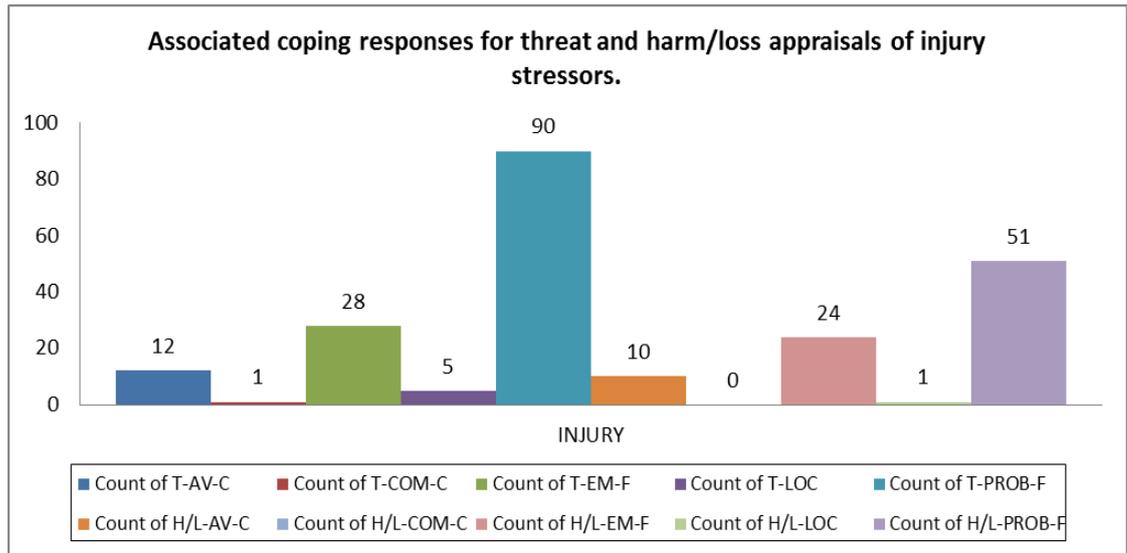


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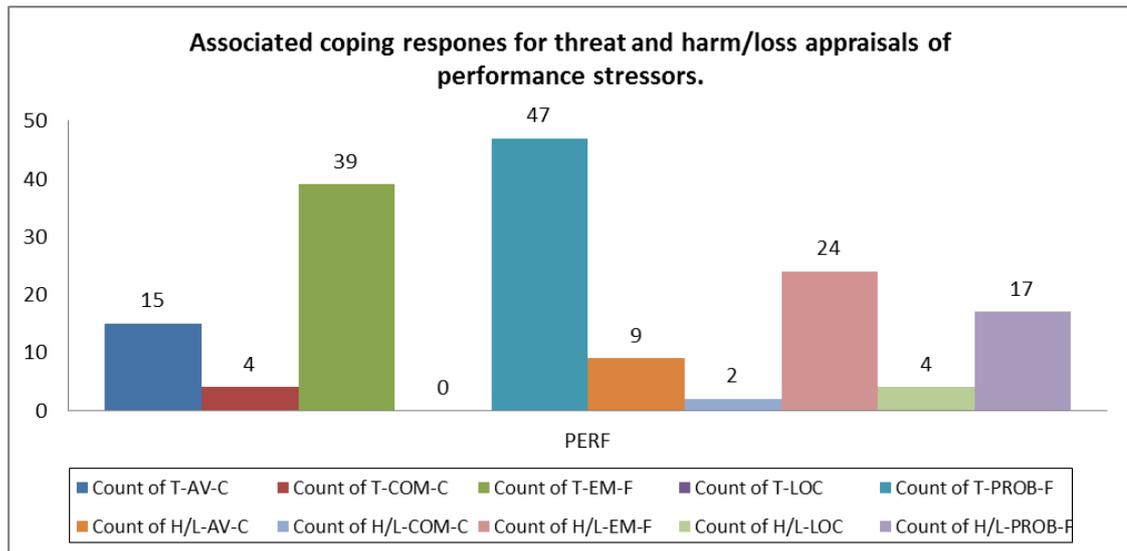


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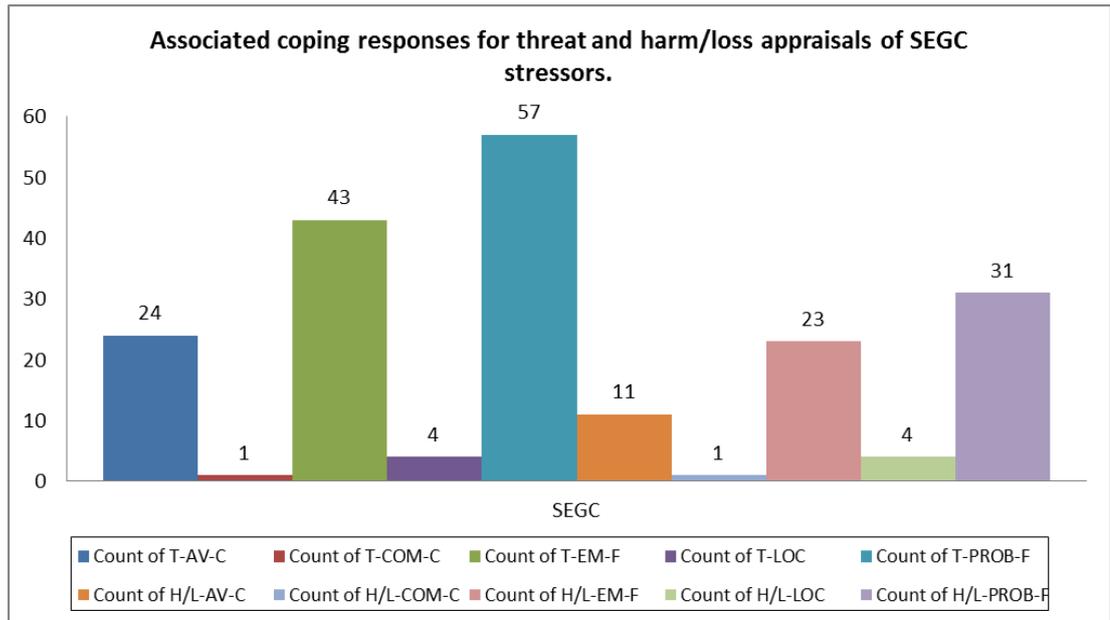


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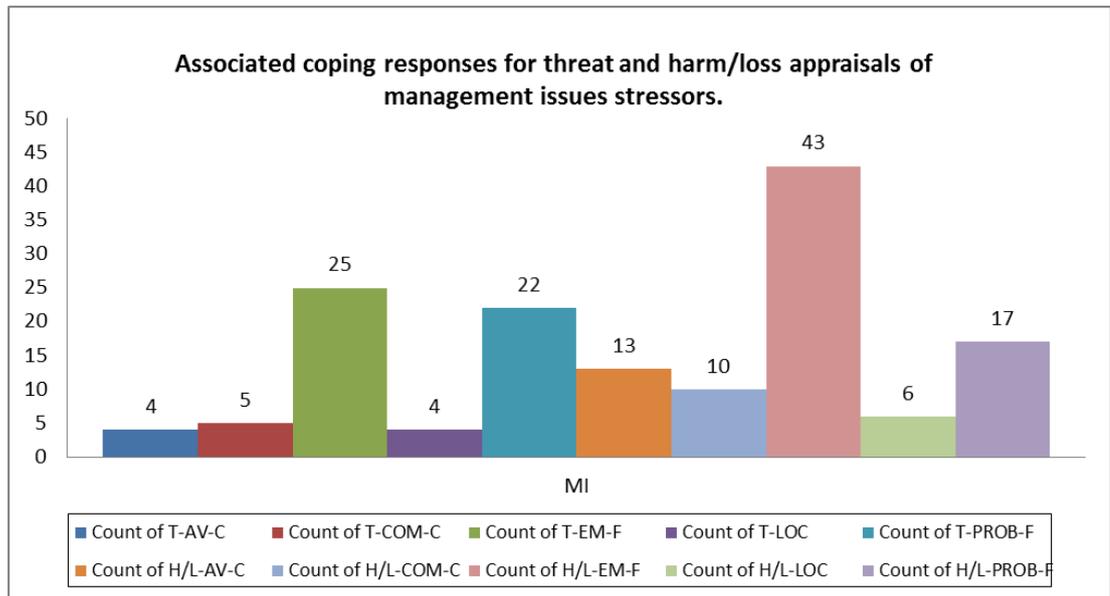


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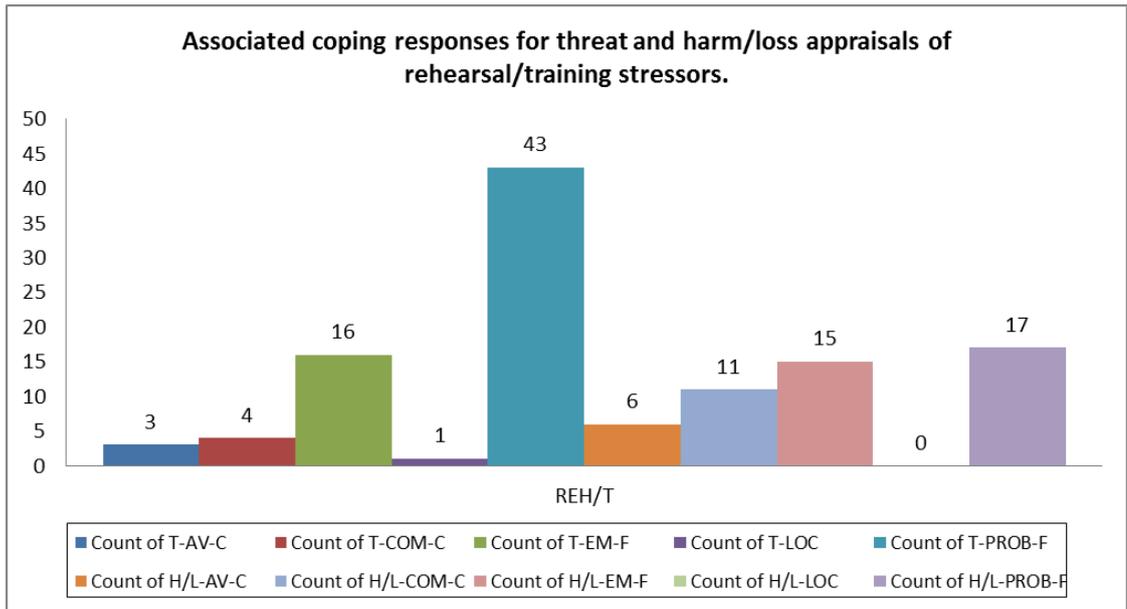


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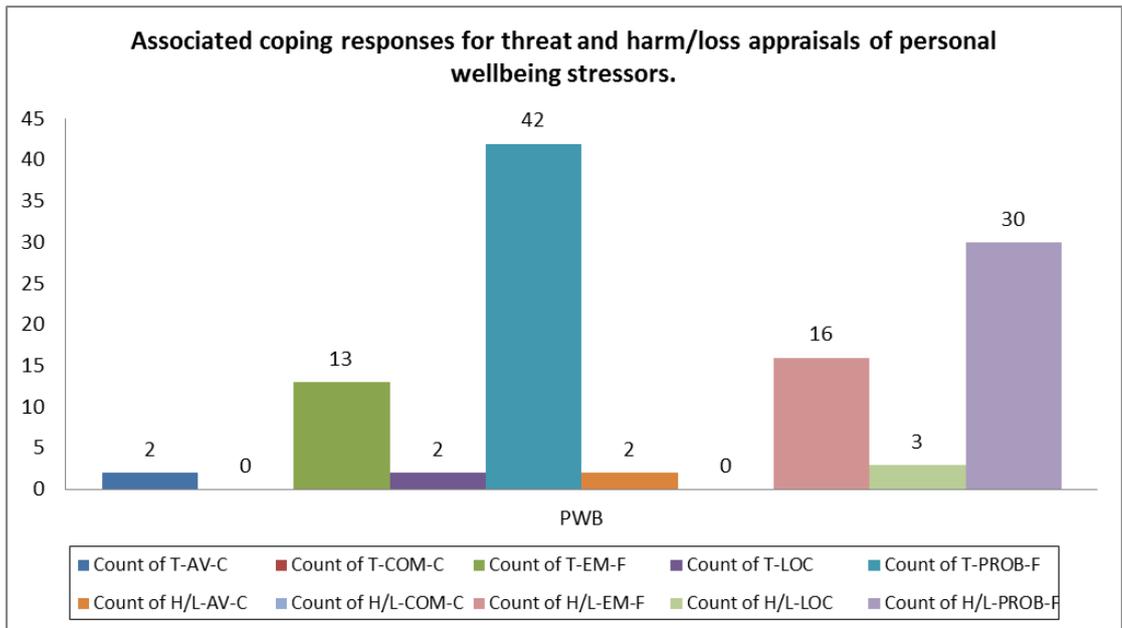


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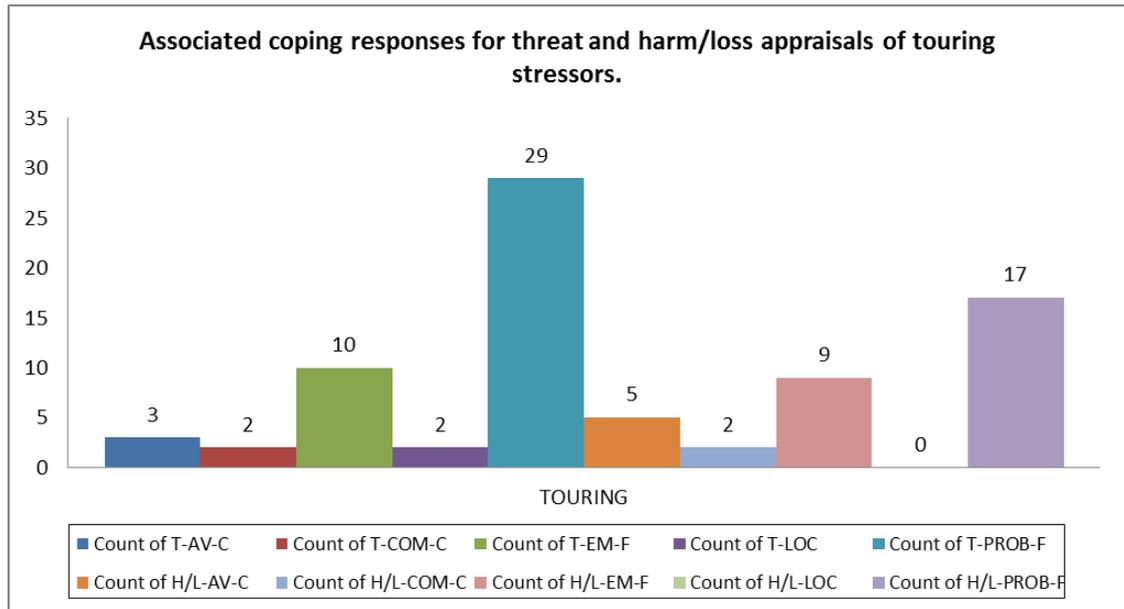


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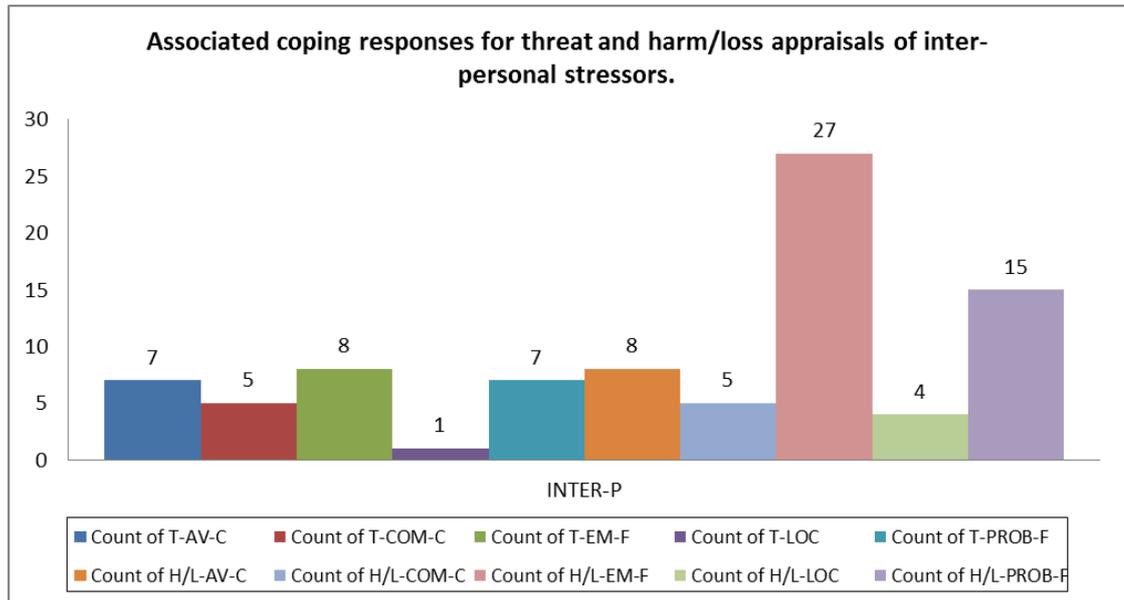


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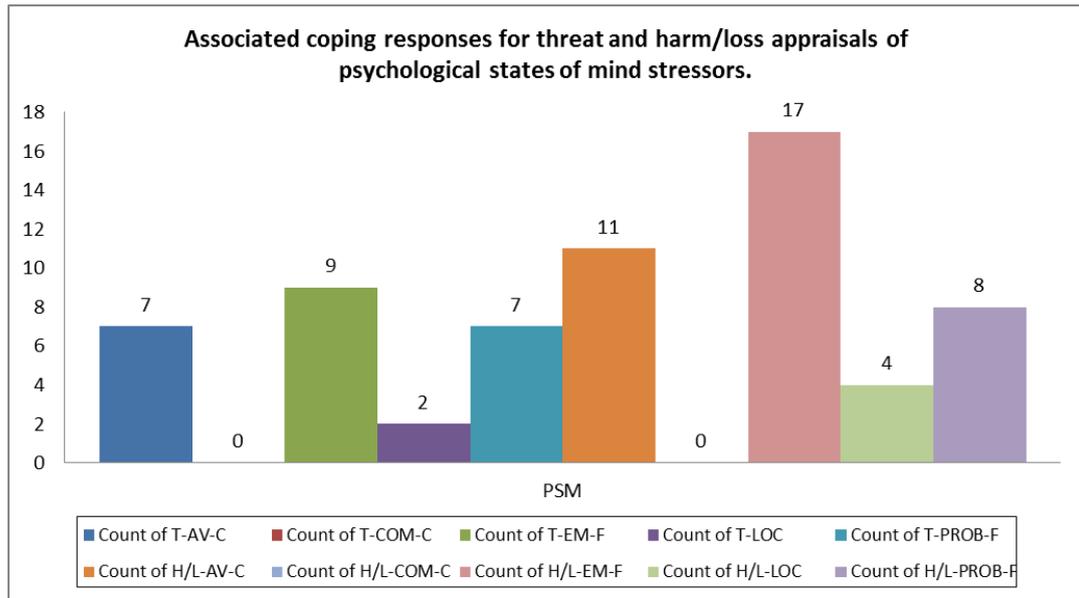


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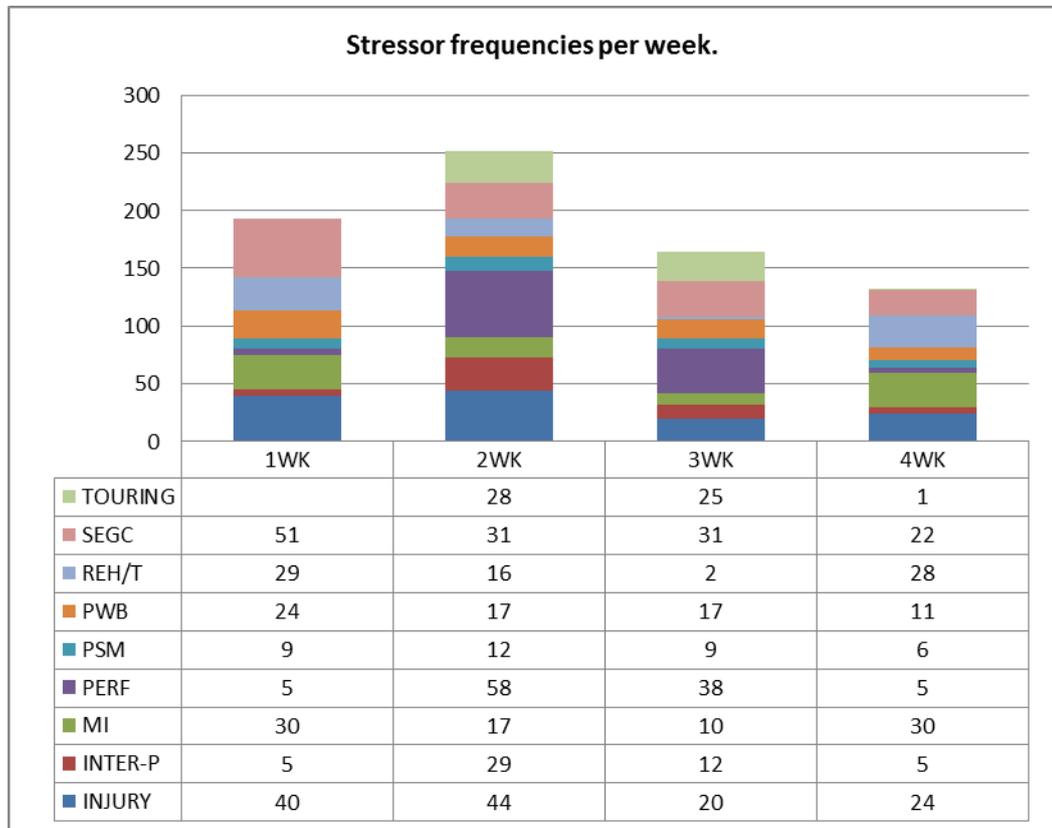


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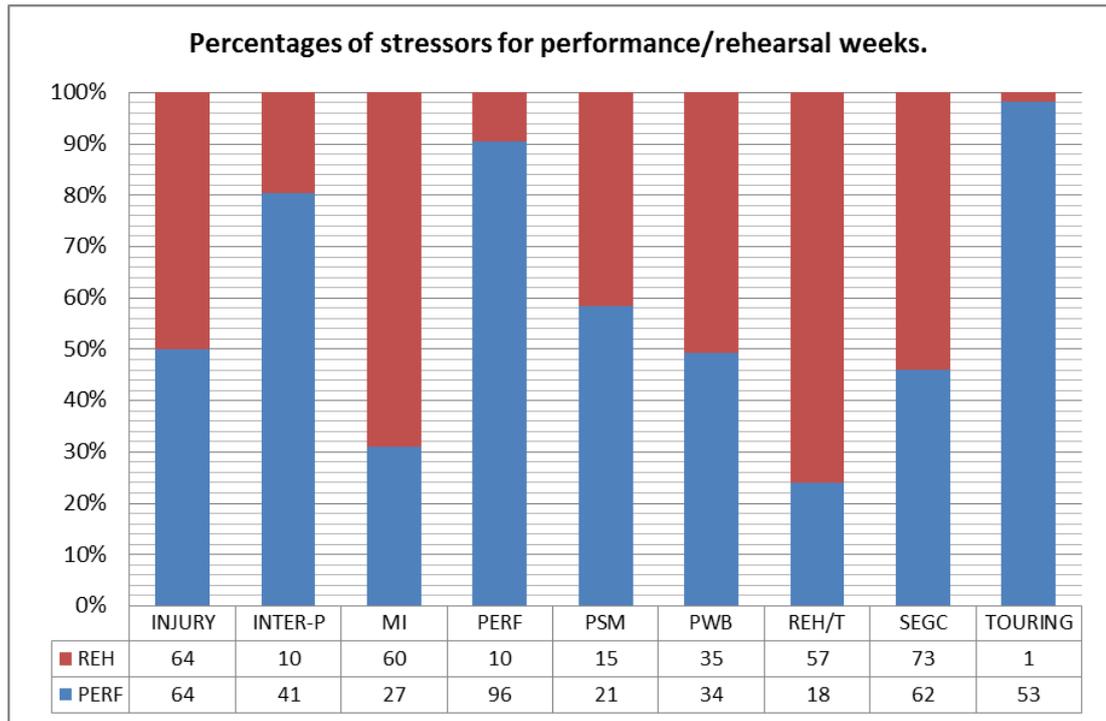


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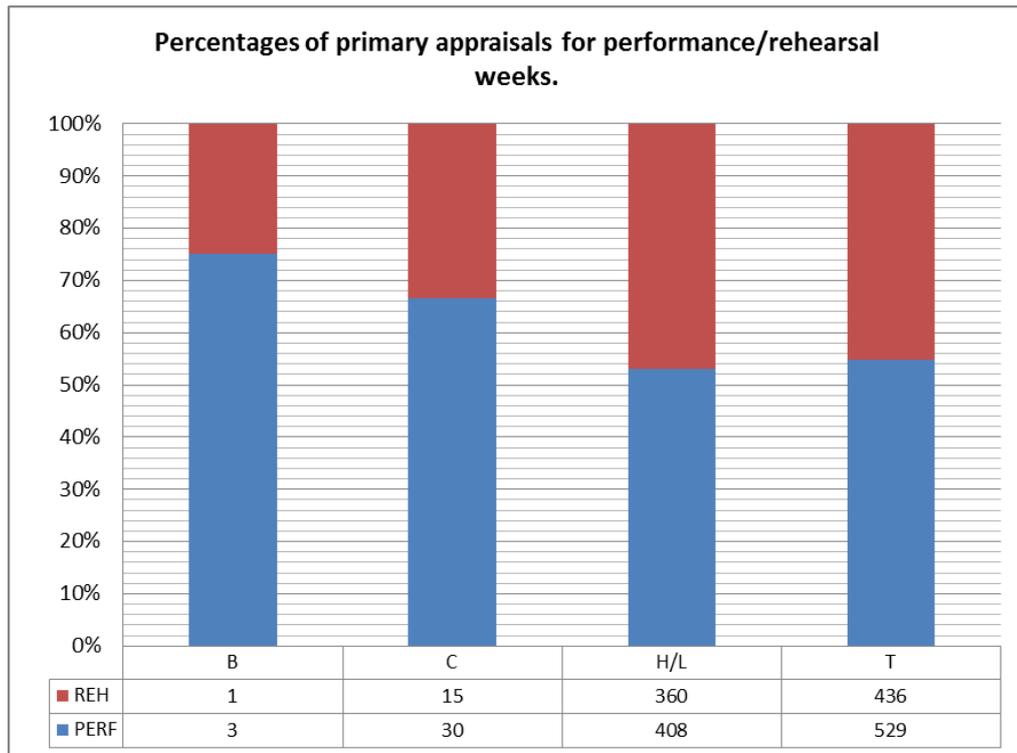


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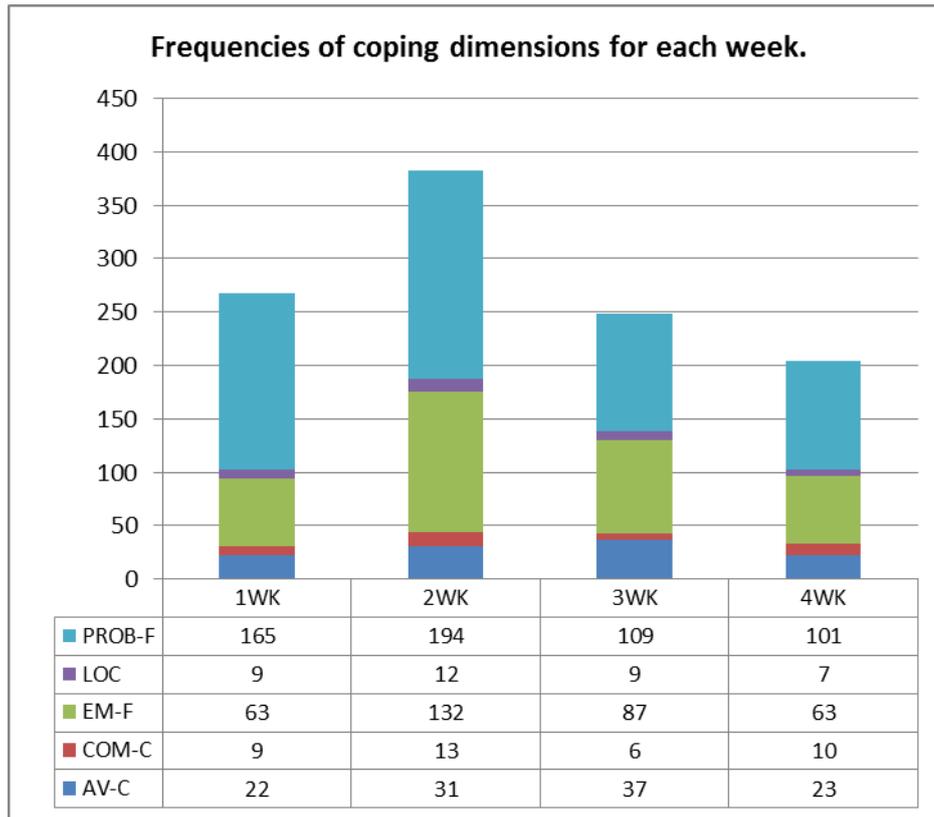


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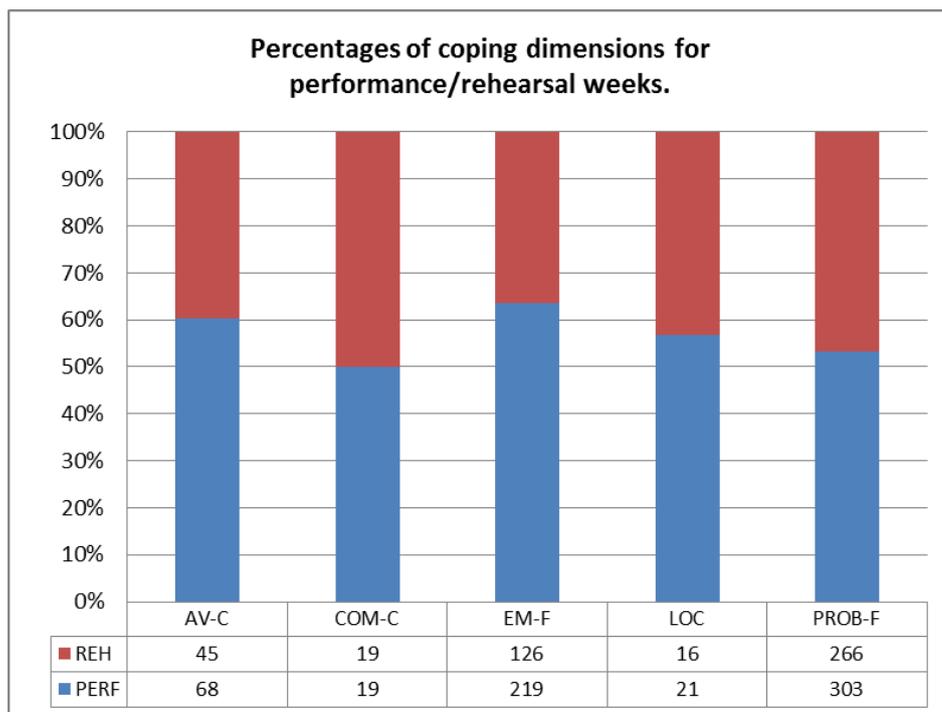


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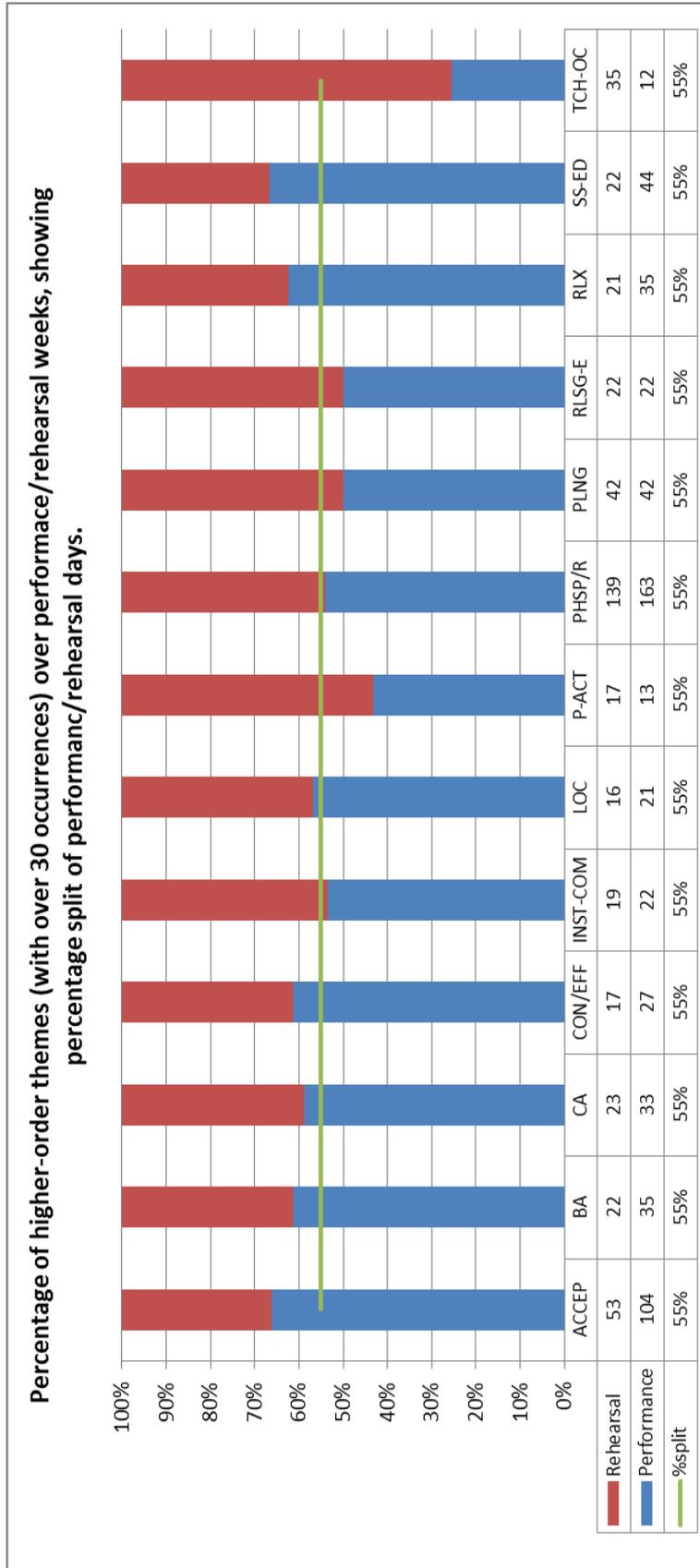


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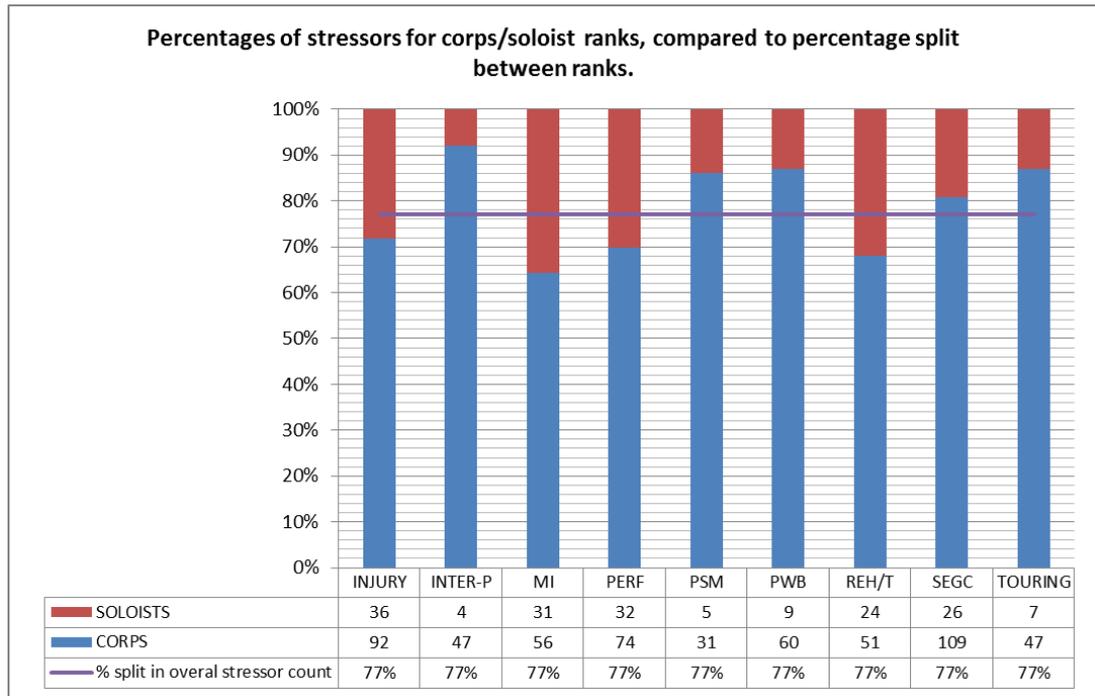


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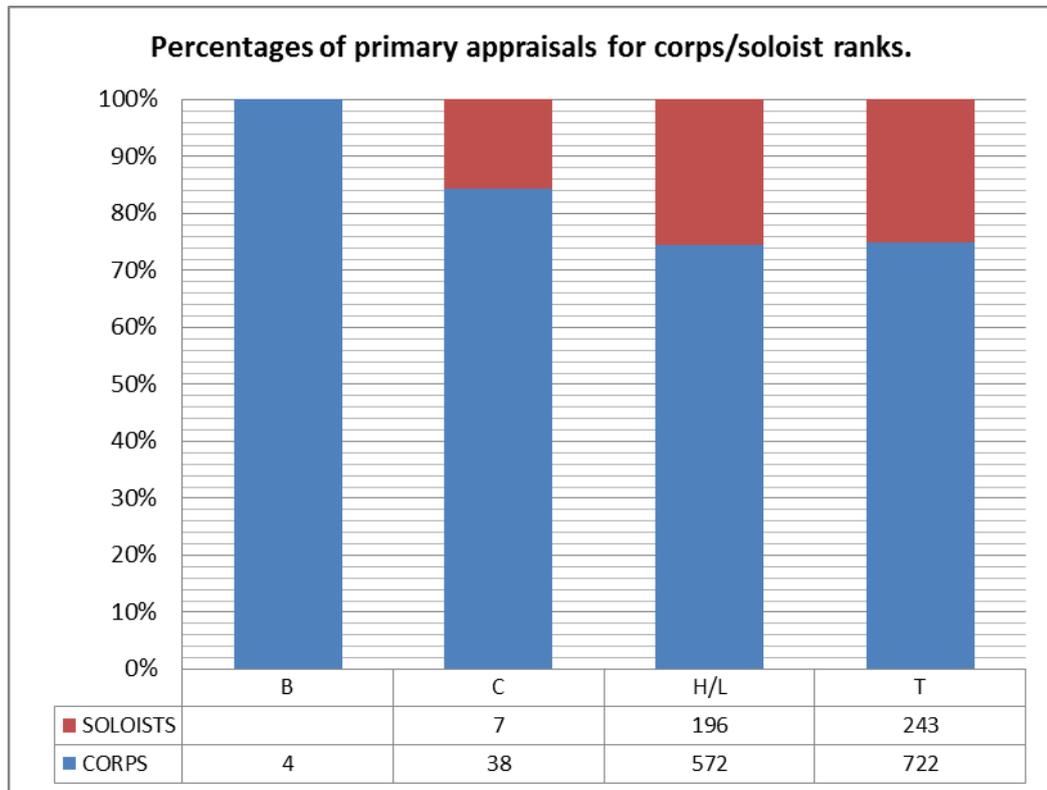


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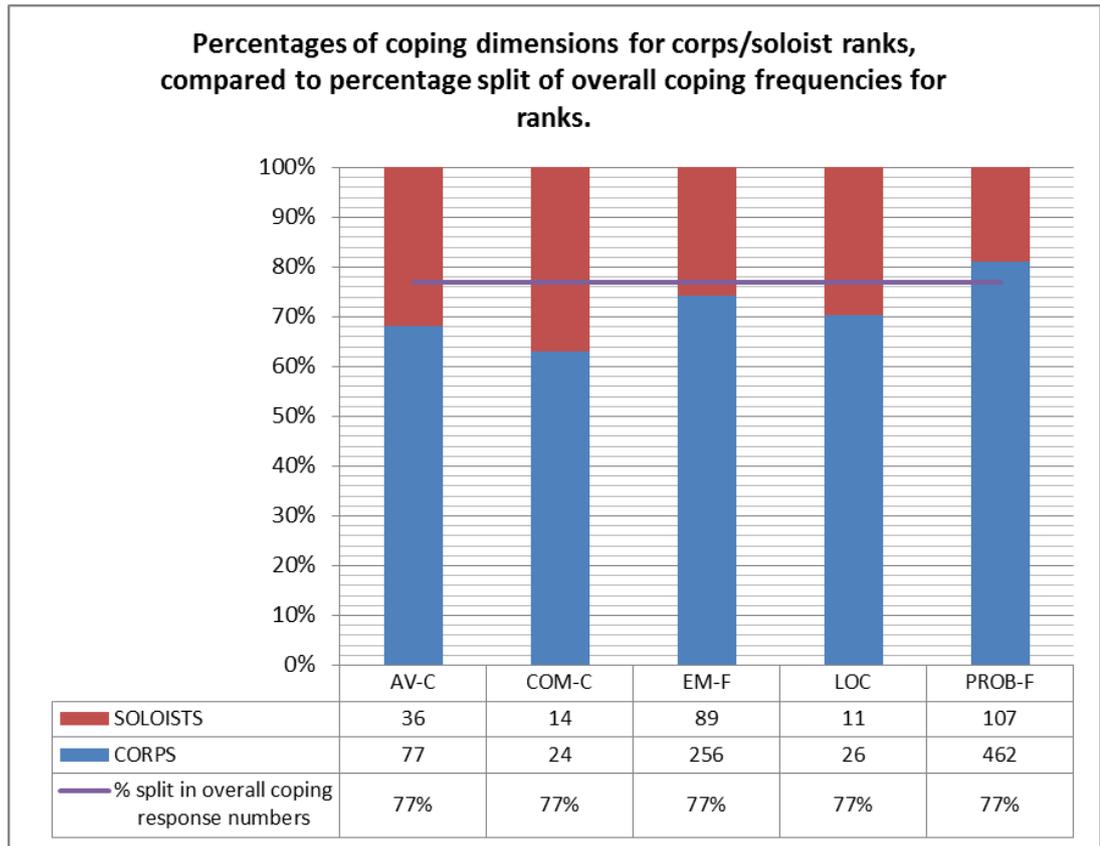


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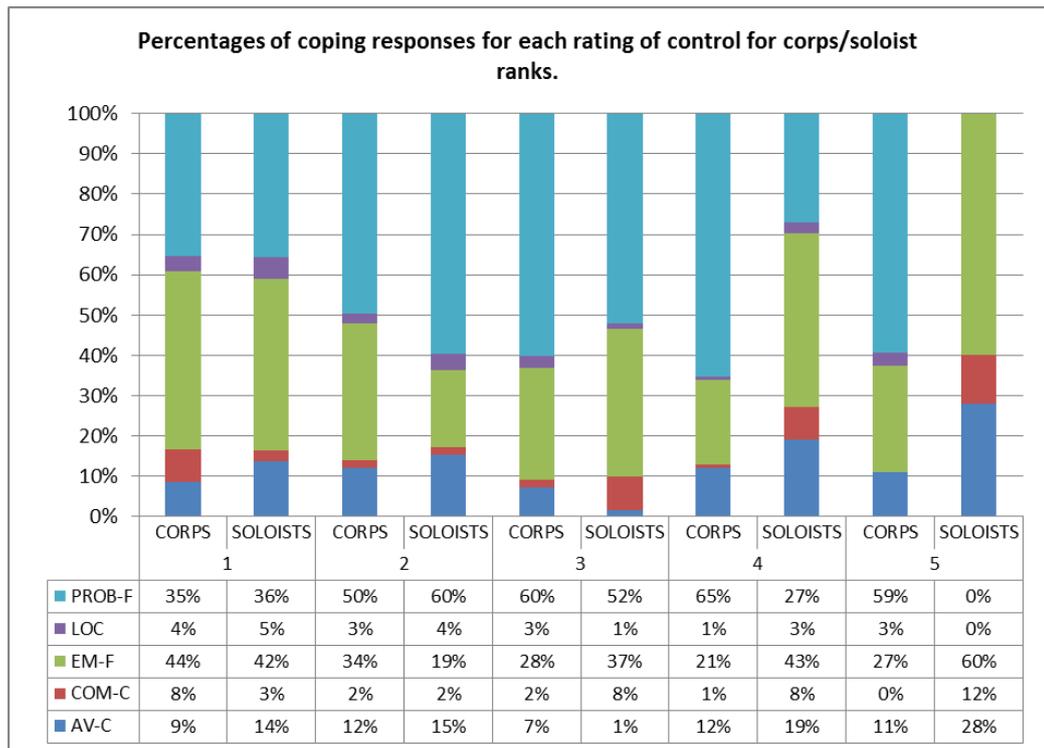


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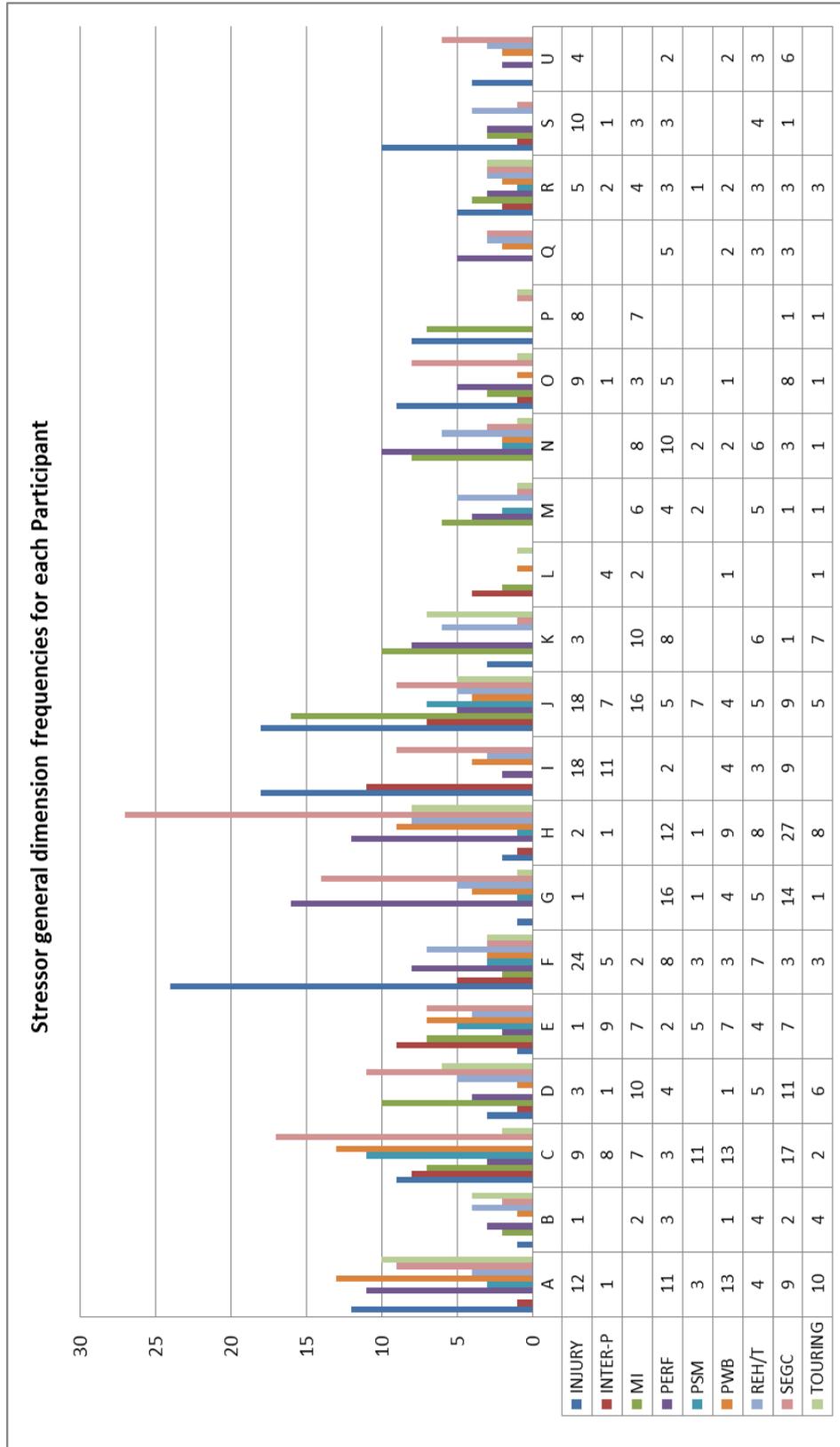


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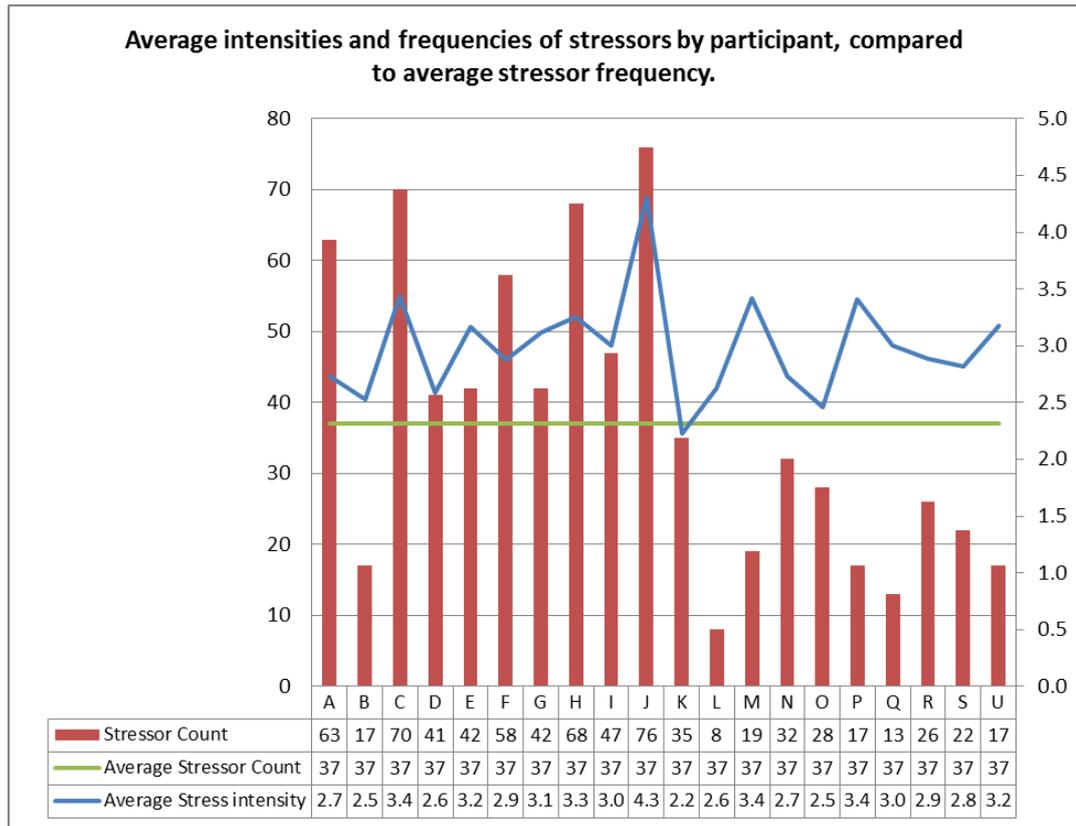


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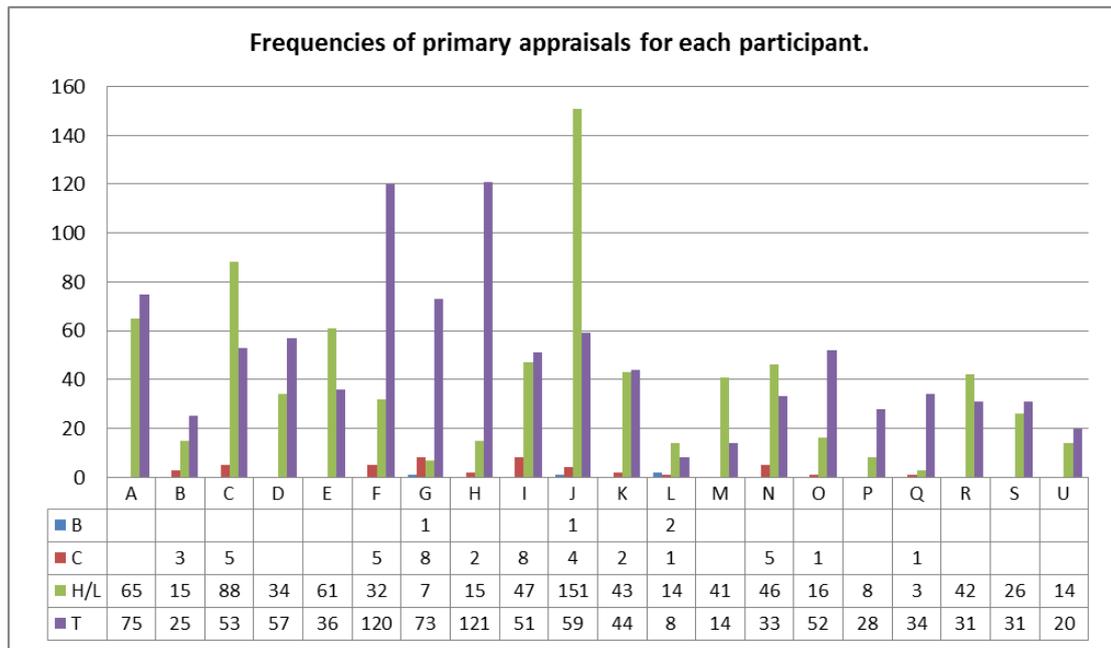


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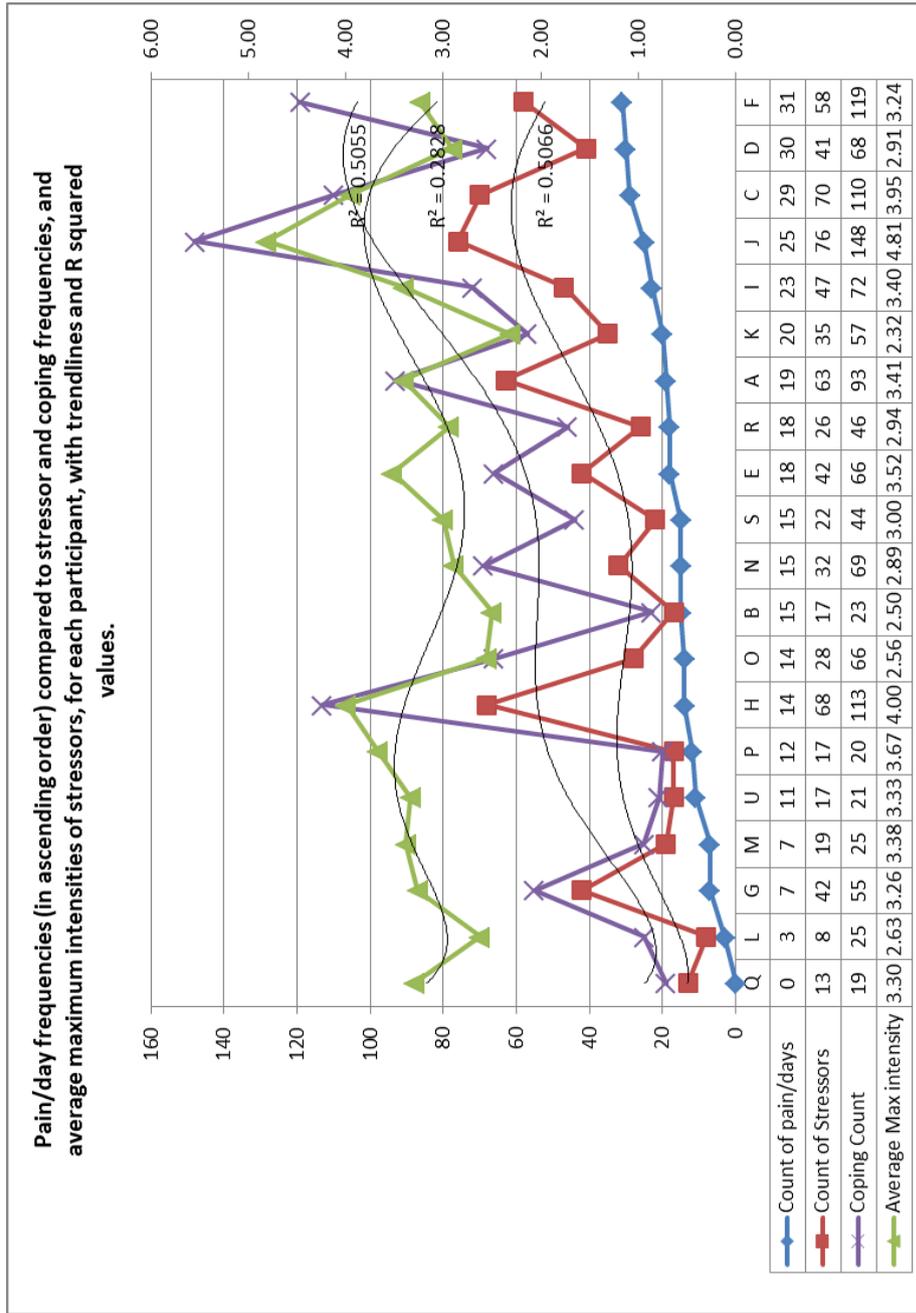


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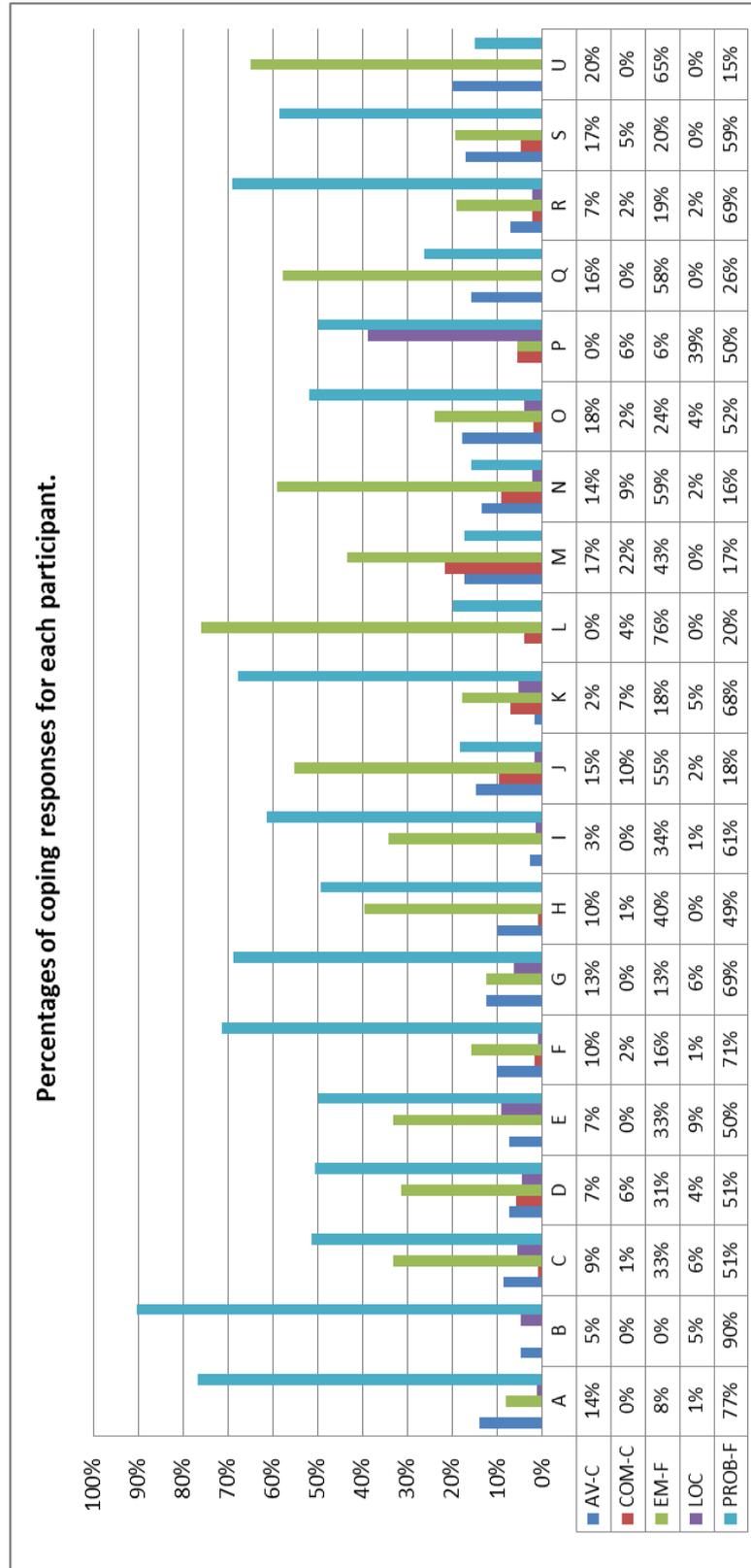


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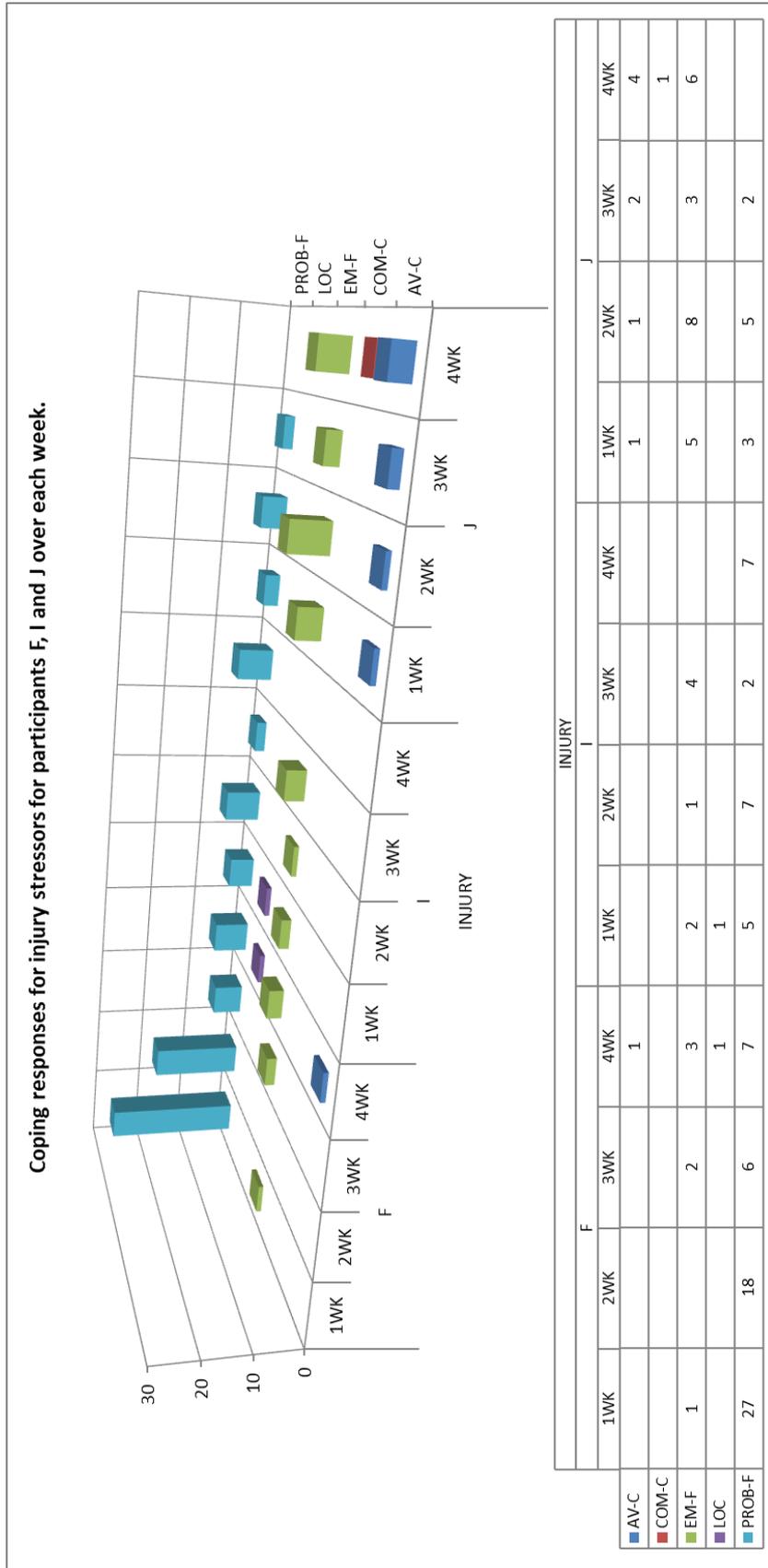


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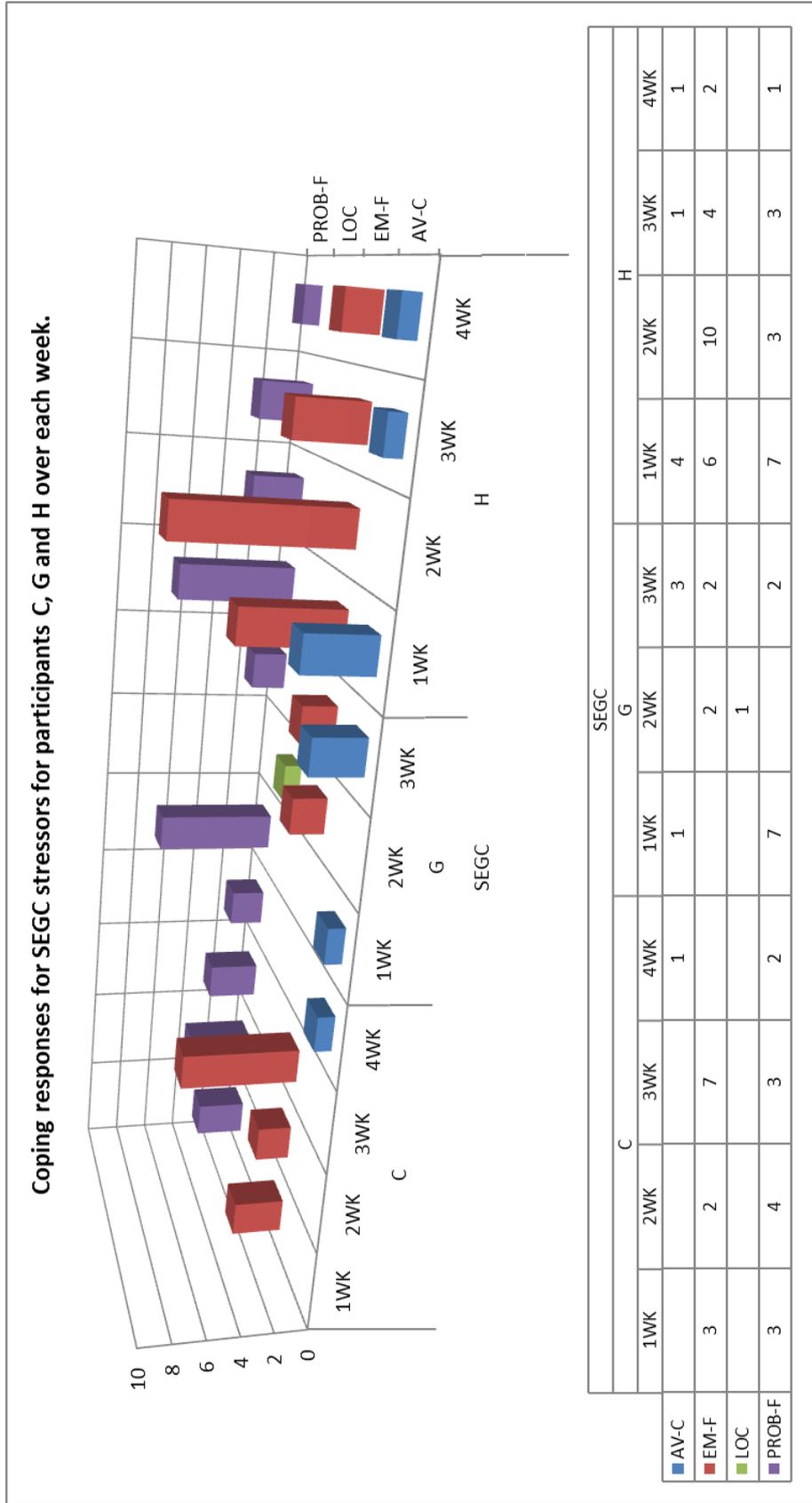


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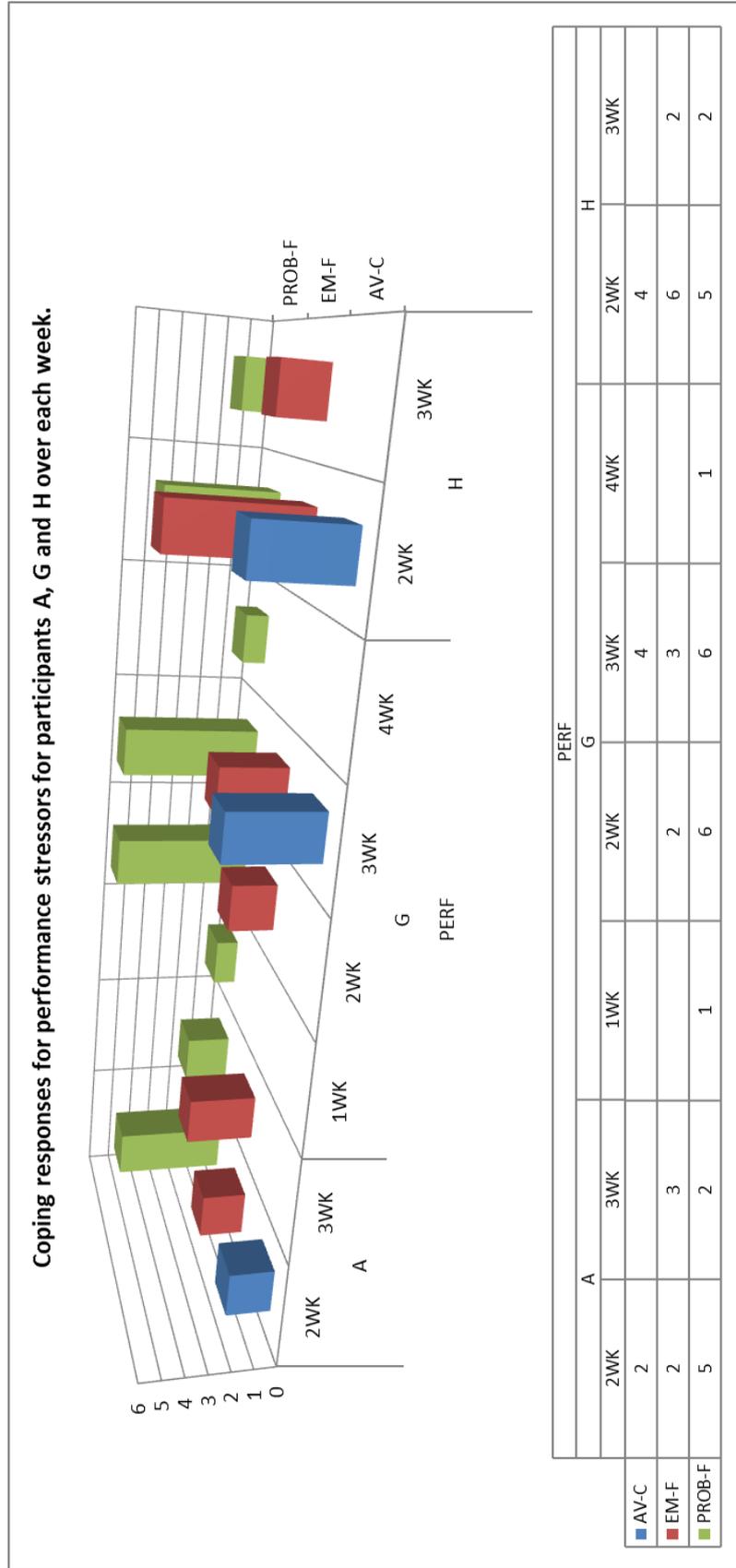


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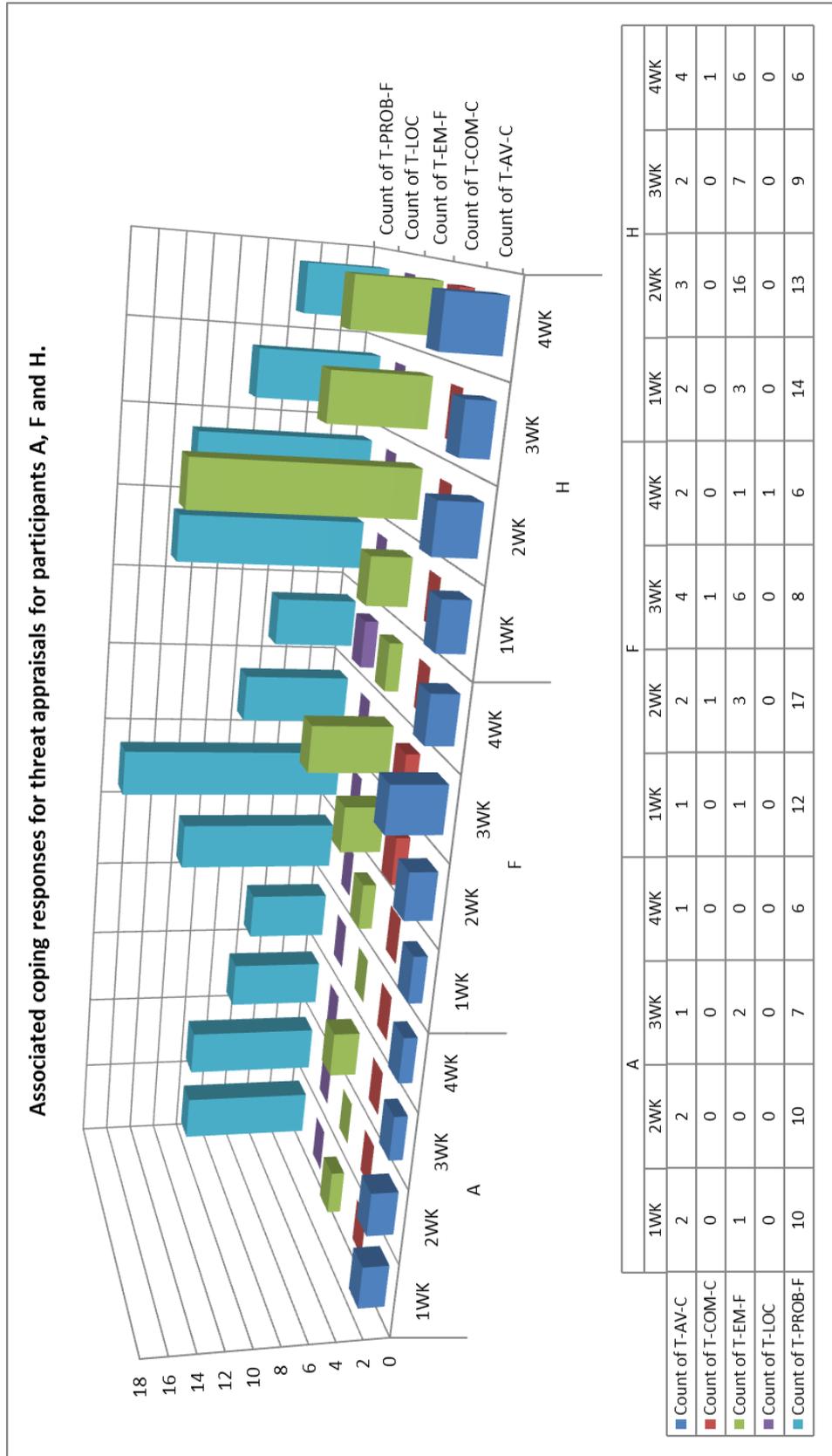


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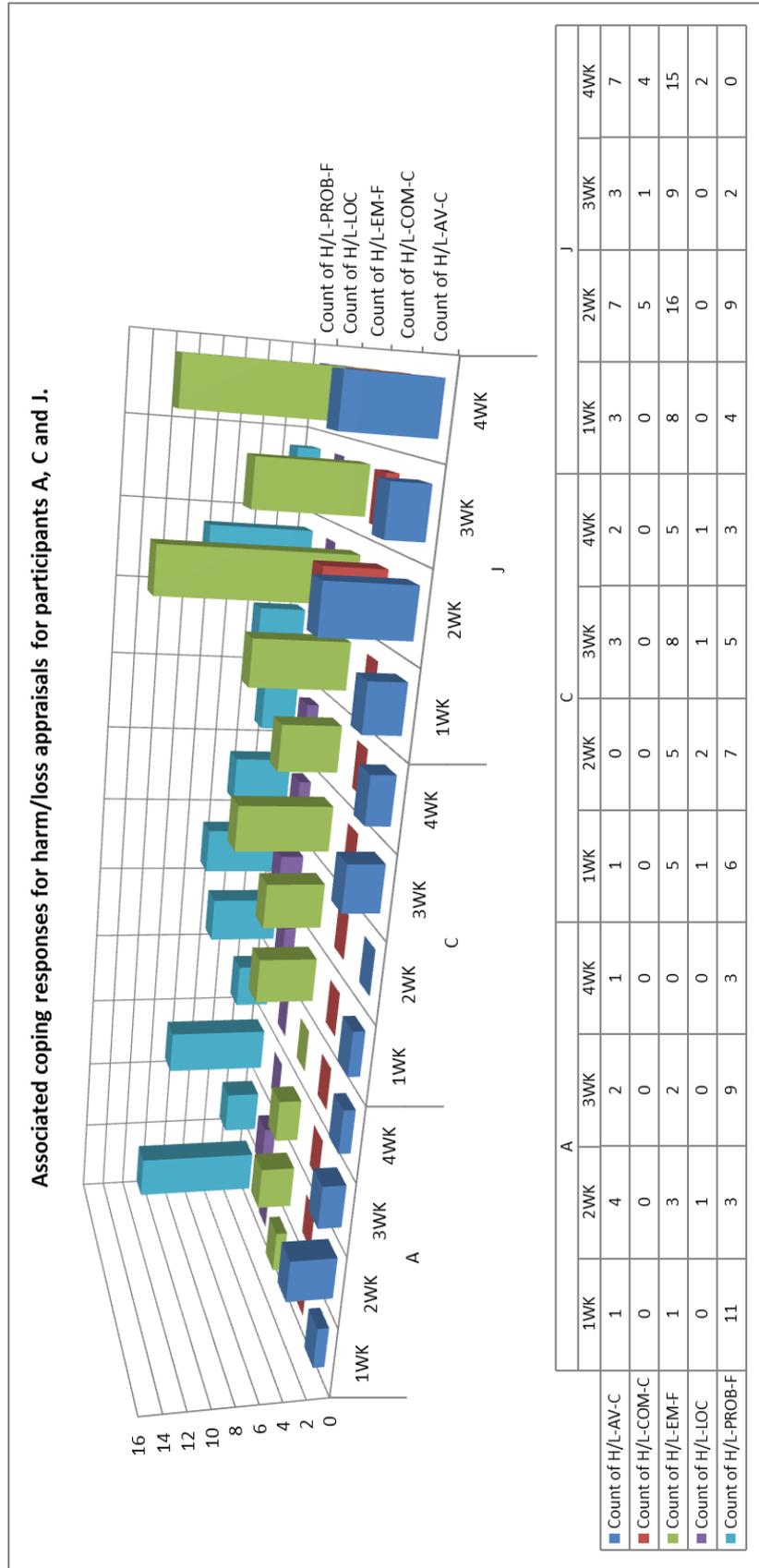


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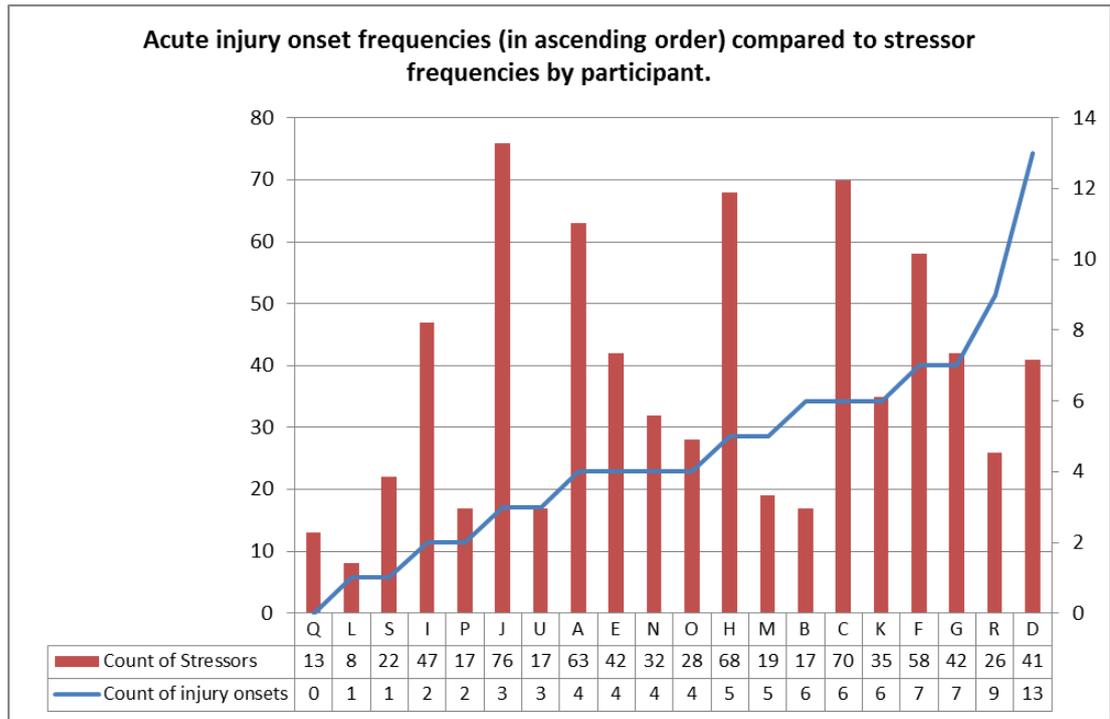


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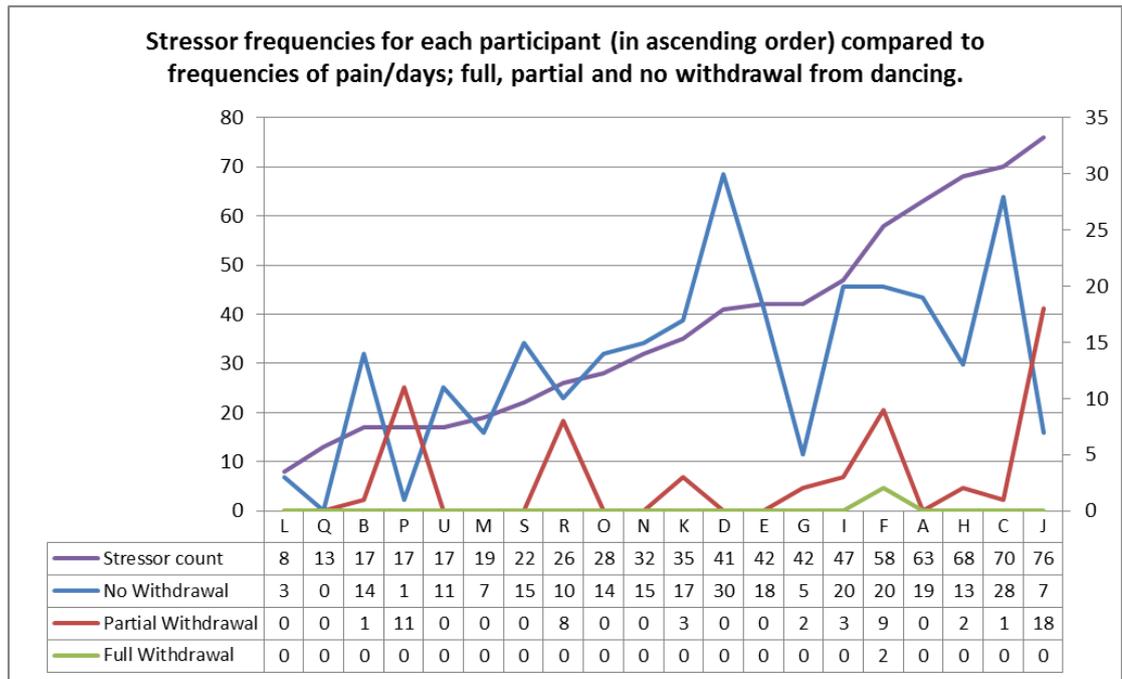




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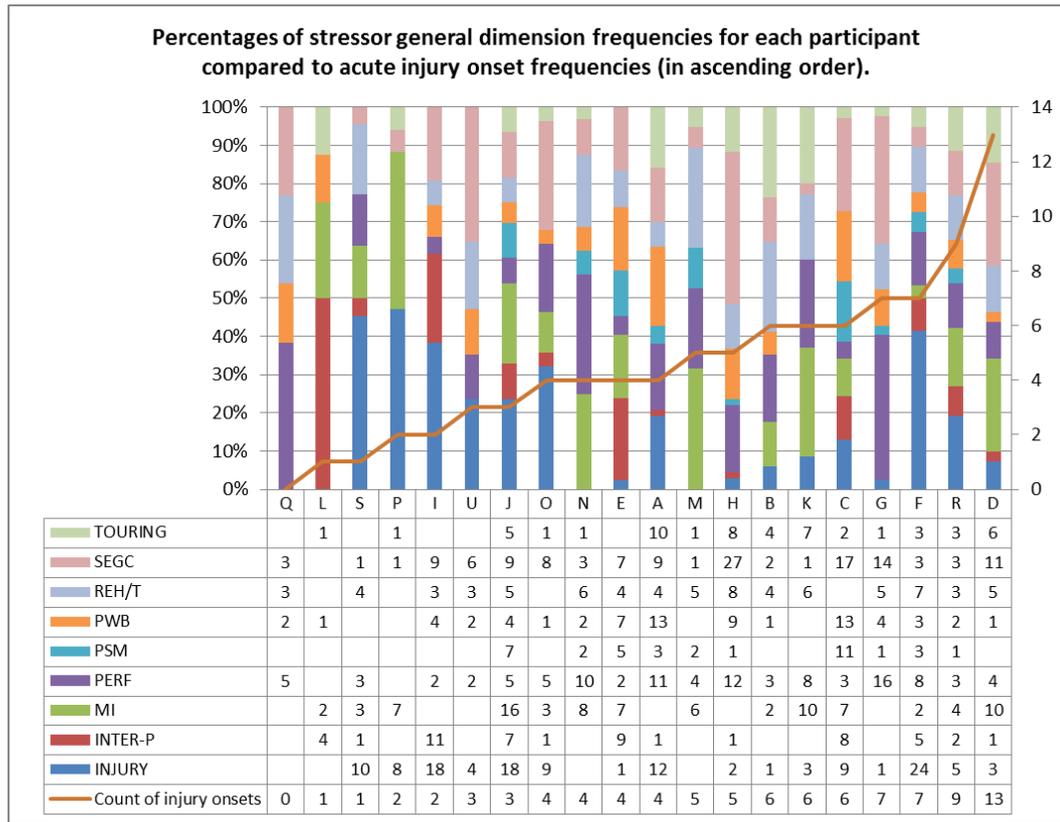


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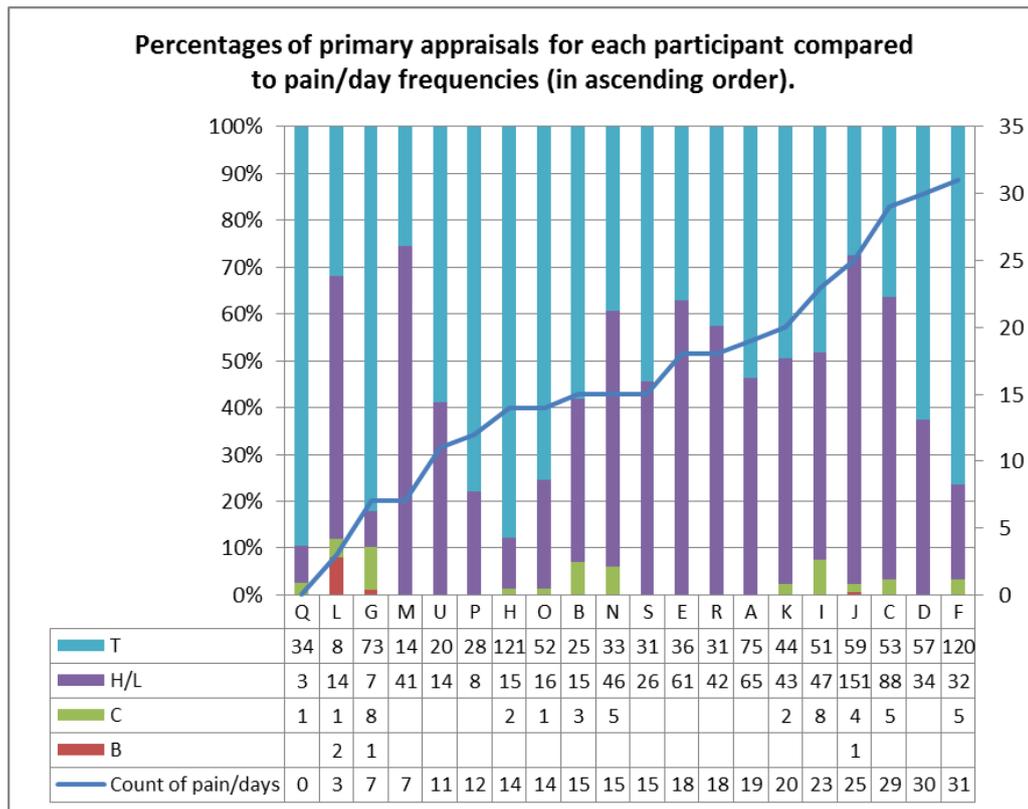


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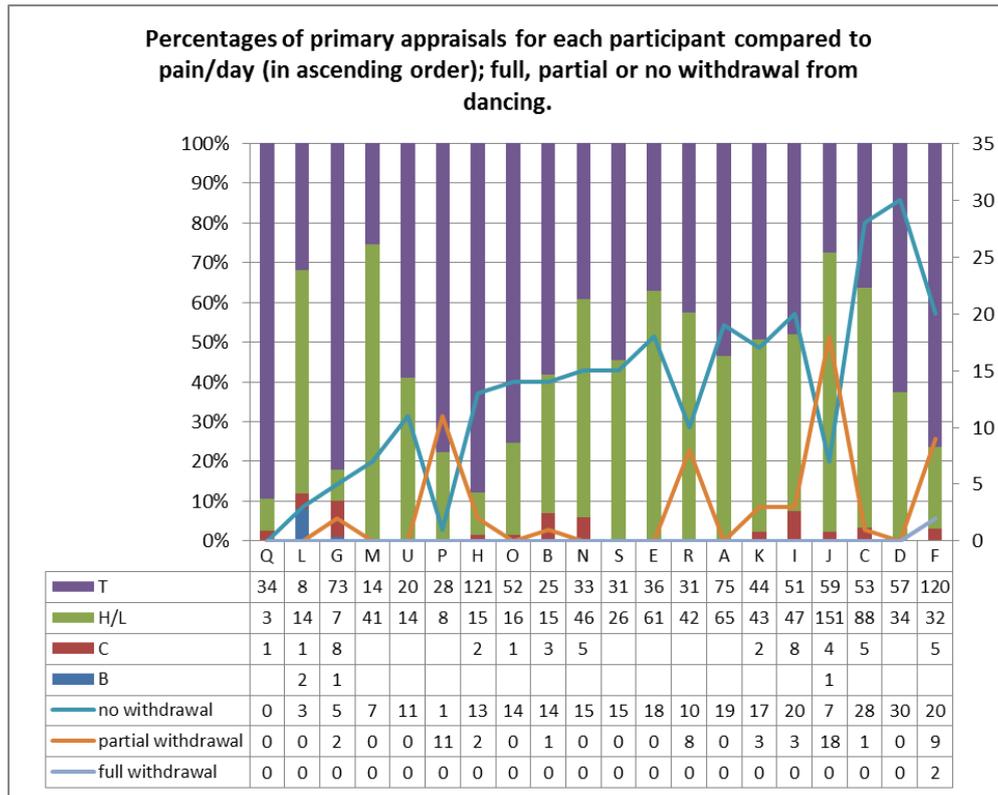


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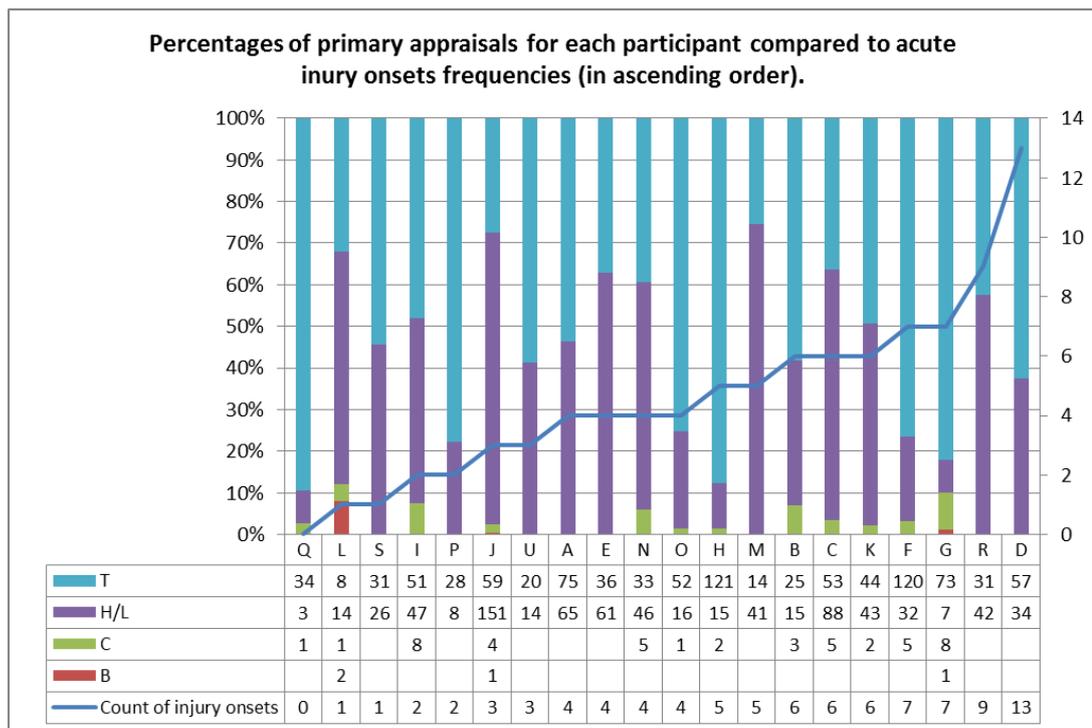




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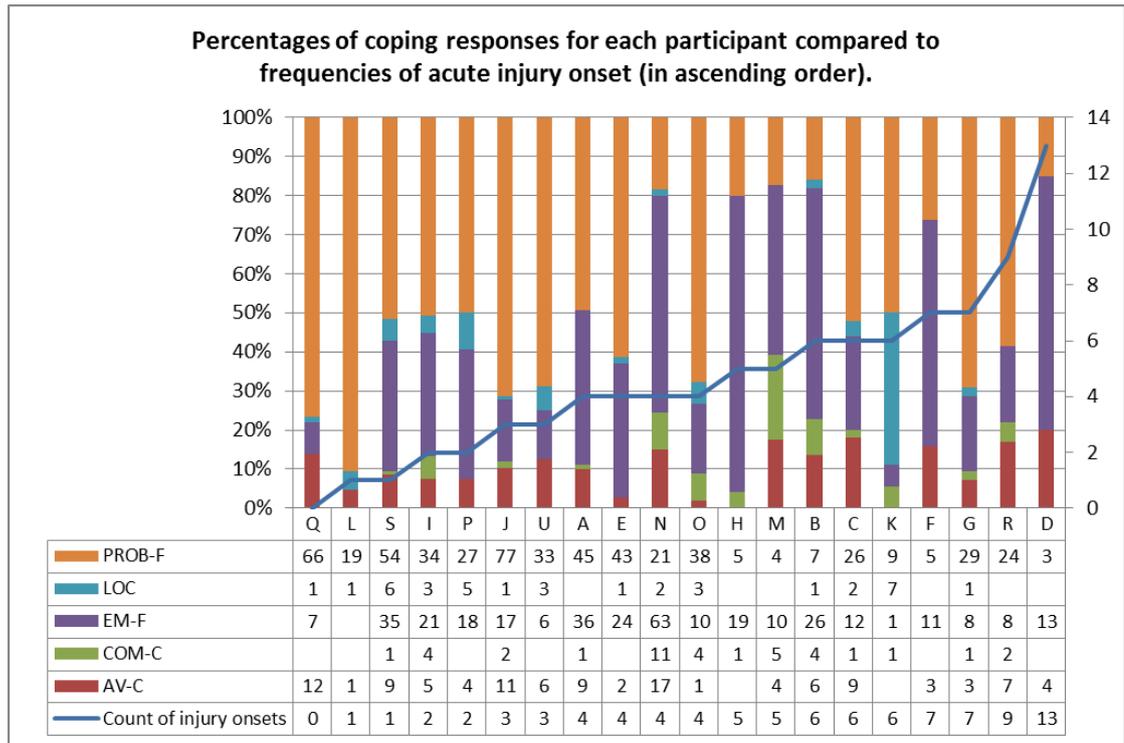


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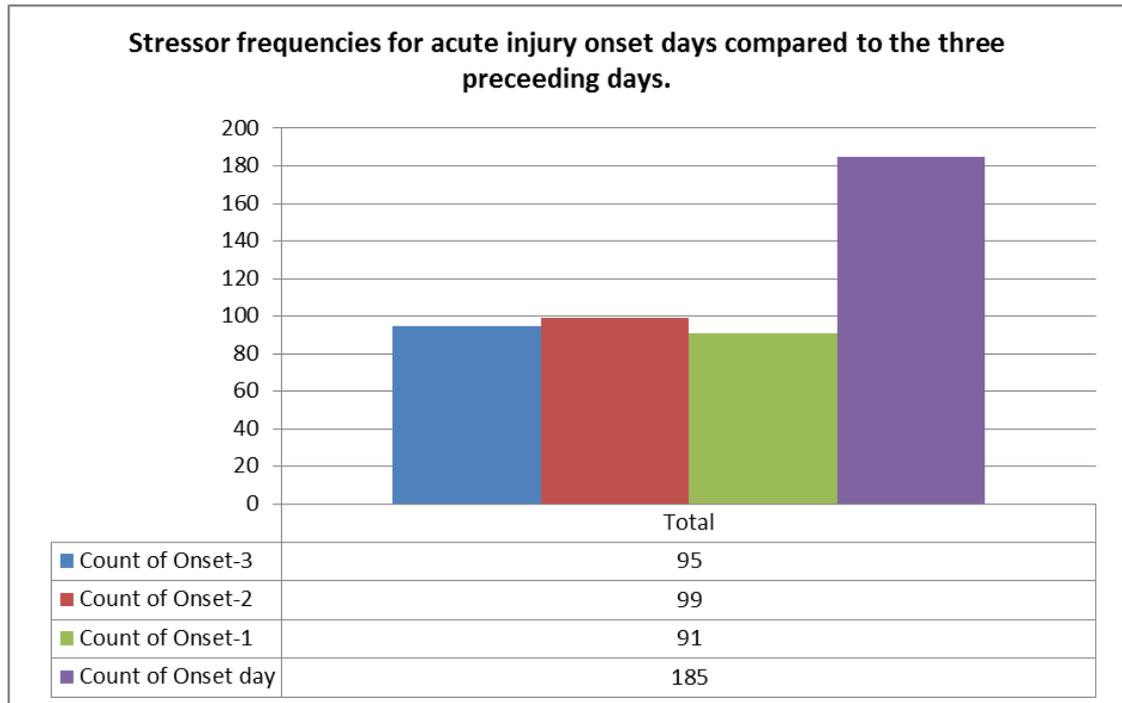


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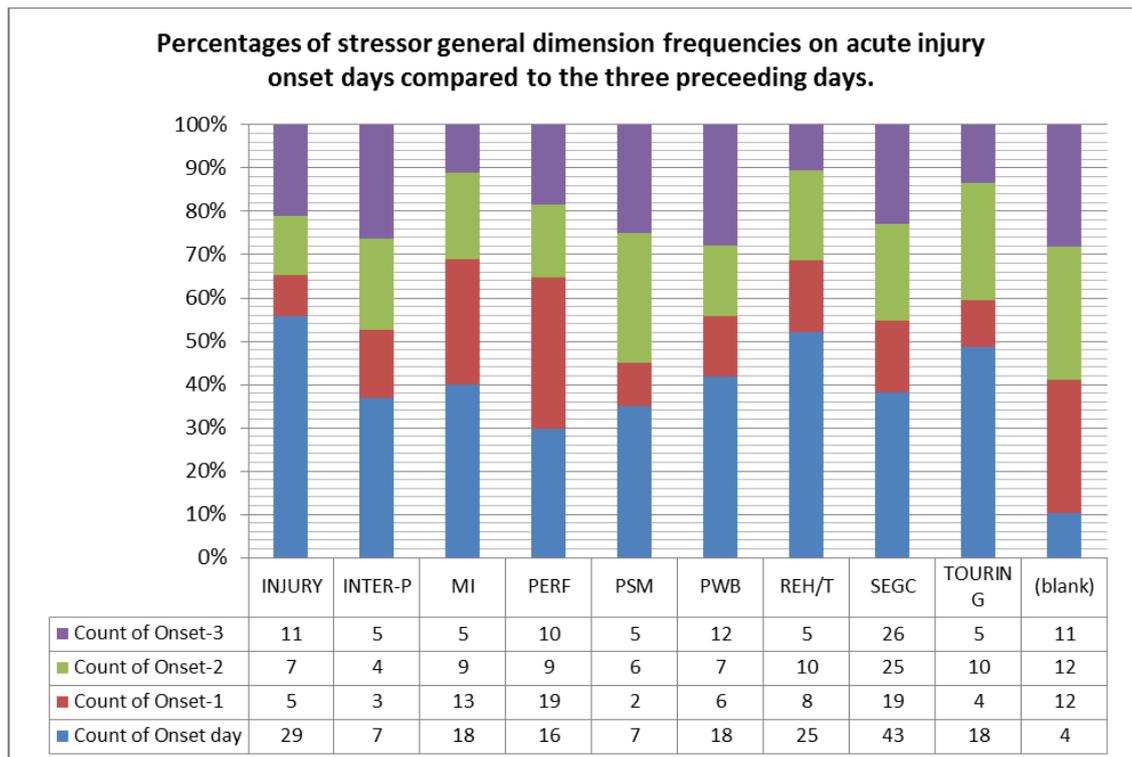


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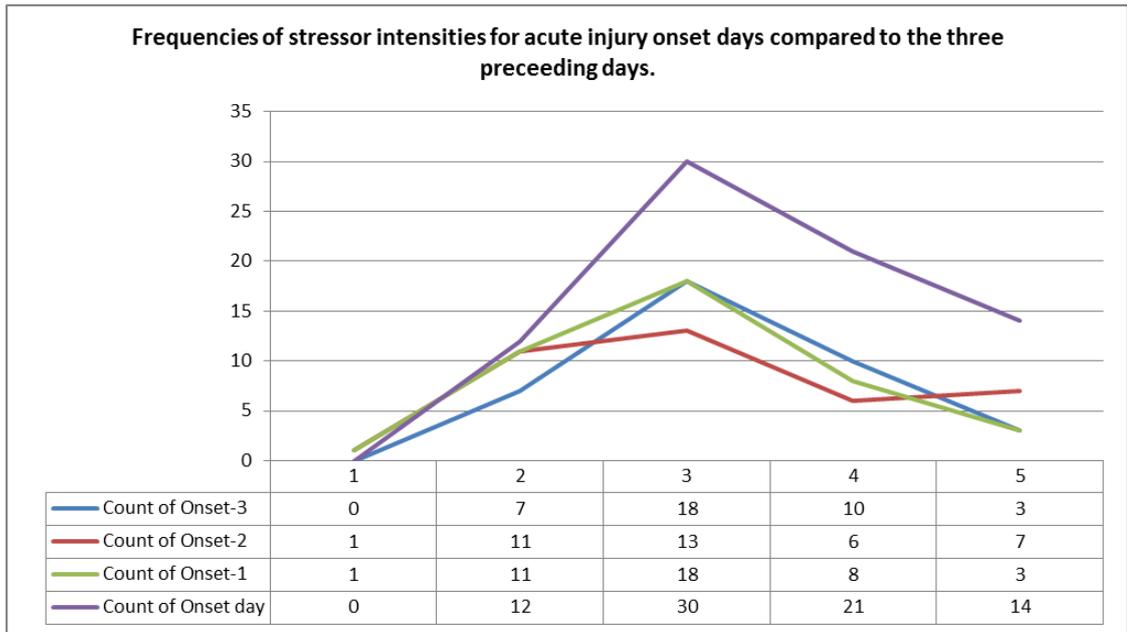


Table 2:

Appraisal frequencies for each rating of control, showing average control ratings for each appraisal dimension					
Control	B	C	H/L	T	Grand Total
1	1	6	205	177	389
2		2	219	231	452
3	2	17	207	329	555
4	1	17	72	147	237
5		2	37	74	113
<b>Grand Total</b>	<b>4</b>	<b>44</b>	<b>740</b>	<b>958</b>	<b>1746</b>
Average	2.8	3.2	2.3	2.7	2.6

Table 3:

Stressor general dimension frequencies for each control rating, showing average control for each stressor dimension										
Control	INJURY	INTER-P	MI	PERF	PSM	PWB	REH/T	SEGC	TOURING	Grand Total
1	25	11	37	19	4	5	17	22	10	150
2	44	16	17	16	12	26	13	34	6	184
2.5	2									2
3	45	13	20	38	10	24	19	47	18	234
4	6	8	8	18	2	10	14	22	14	102
5	5	1	4	14	7	2	9	8	6	56
<b>Grand Total</b>	<b>127</b>	<b>49</b>	<b>86</b>	<b>105</b>	<b>35</b>	<b>67</b>	<b>72</b>	<b>133</b>	<b>54</b>	<b>728</b>
Average	2.4	2.4	2.1	2.9	2.9	2.7	2.8	2.7	3.0	2.6

Table 4:

Appraisal frequencies for each stressor intensity, showing average intensity ratings for each appraisal dimension					
Stressor Intensity	B	C	H/L	T	Grand Total
1			7	3	10
1.5			2	3	5
2	2	14	209	293	518
3	1	25	244	368	638
3.5		1	3	1	5
4		3	155	200	358
5	1	2	144	95	242
<b>Grand Total</b>	<b>4</b>	<b>45</b>	<b>764</b>	<b>963</b>	<b>1776</b>
Average	3.0	2.9	3.3	3.1	3.2

Table 5:

Coping general dimension frequencies for each control rating, showing average control for each coping dimension						
Control	AV-C	COM-C	EM-F	LOC	PROB-F	Grand Total
1	26	17	114	11	92	260
2	43	6	98	10	174	331
2.5	2		4			6
3	23	12	113	10	225	383
4	22	4	42	2	91	161
5	14	3	32	2	38	89
<b>Grand Total</b>	<b>130</b>	<b>42</b>	<b>403</b>	<b>35</b>	<b>620</b>	<b>1230</b>
average	2.6	2.3	2.4	2.3	2.7	2.6

Table 6:

Coping general dimension frequencies for each stressor intensity, showing average intensity for each coping dimension						
Intensities	AV-C	COM-C	EM-F	LOC	PROB-F	Grand Total
1	1		1		7	9
1.5			1	1	2	4
2	39	15	88	13	211	366
3	38	16	115	15	245	429
3.5					2	2
4	24	7	99	6	120	256
4.5	1		2		2	5
5	30	6	106	3	36	181
<b>Grand Total</b>	<b>133</b>	<b>44</b>	<b>412</b>	<b>38</b>	<b>625</b>	<b>1252</b>
Averages	3.3	3.1	3.5	2.9	2.9	3.2

Table 7:

Average stress intensity of each stressor general dimension for performance/rehearsal weeks				
Stressors	PERF	REH	Grand Total	Difference
INJURY	3.2	3.1	3.2	0.1
INTER-P	3.4	3.4	3.4	0.0
MI	3.1	3.0	3.1	0.1
PSM	3.8	3.2	3.5	0.6
PWB	2.9	2.8	2.9	0.1
REH/T	3.1	2.8	2.9	0.3
SEGC	3.2	3.3	3.3	-0.1
<b>Grand Total</b>	<b>3.2</b>	<b>3.1</b>	<b>3.1</b>	<b>0.2</b>

Table 8:

Average stress intensity of each stressor general dimension for corps/soloist ranks				
Stressors	CORPS	SOLOISTS	Grand Total	Difference
INJURY	3.3	2.9	3.2	0.3
INTER-P	3.4	3.0	3.4	0.4
MI	3.1	3.1	3.1	0.0
PERF	3.1	2.8	3.0	0.3
PSM	3.5	3.8	3.5	-0.3
PWB	2.9	2.4	2.9	0.5
REH/T	2.8	3.0	2.9	-0.2
SEGC	3.3	3.0	3.3	0.4
TOURING	2.8	2.9	2.8	0.0
<b>Grand Total</b>	<b>3.1</b>	<b>2.9</b>	<b>3.1</b>	<b>0.2</b>

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