

Person and Situation Variables Related to Stress
and Challenge Appraisals in Rugby Players

by


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B.Sc., 1998

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

MASTER OF ARTS

in the School of Physical Education

We accept this thesis as conforming to the required standard


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ABSTRACT

In this study, person and situation variables related to appraisals of acute taxing events in rugby were identified. One hundred seven competitive male rugby players, including club to national level athletes, completed four questionnaires: The Competitive Orientation Questionnaire (Gill and Deeter, 1988), The Athletic Coping Skills Inventory-28 (ACSI-28, Smith, Smoll, Schutz, and Ptacek, 1995), The Athletic Identity Measurement Scale (Brewer, Van Raalte & Linder, 1993), and the Rugby Game Events Questionnaire (RGEQ). The RGEQ measures stress and challenge appraisals of ten categories of events in preseason, regular season and playoff games. Skill error events were the most stressful. Game outcome events were the most challenging. Profile Analyses revealed that older and higher caliber players reported lower stress. Freedom from worry, confidence and motivation to compete were also related to lower stress. Goal setting, motivation to win and motivation to achieve personal standards were correlated with higher stress. Neither motivations nor resources were related to challenge appraisals. Further research should focus on identifying the underlying causes of these relationships.

Examiners

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Acknowledgements

I have enjoyed the process of researching and writing this thesis immensely. My greatest rewards have been the relationships with those who have guided and supported me over the past two years.

I thank Dr. Howe for his patience, guidance and high standards throughout my career at UVic. I thank Dr. Hunter for his enormous assistance in making sense of my findings and Dr. Gibbons for her valued input in the planning stages of this project. I also thank Dr. Sinclair for agreeing to take the time to be a part of my examination and for helping me to see outside the world of academia. I would also like to thank Dr. VanGyn for her enthusiasm and inspiration.

I thank the players and coaches of the University of Victoria, Oak Bay Castaway-Wanderers, James Bay Athletic Association, and Pacific Pride for their participation. I thank my fellow graduate students for providing the lighter side to these past few years. I also thank my parents for their interest and support and Jack and Cheryl for their encouragement and assistance.

Finally, I thank Kristen for keeping me on track, sane and happy. Above all, I thank her for always being on my side.

Stress. It is a concept with which many people feel they are intimately familiar. As Selye (1991, p.21) writes, "it seems everyone is talking about stress". Indeed, a search of an on-line book company reveals that there are at least 1035 books about stress and stress management available to Canadian consumers (Chapters, 2000). Interest in stress is not limited to the popular press: a PsychInfo search provides 78,884 academic sources on the topic. This interest seems well founded, as stress has been linked to such illnesses as coronary heart disease (Taylor, 1990) and depression (Rabkin, 1982).

Based on this evidence, the search for ways of coping with stress is an important endeavor. Along with relaxation, nutrition and social skills training, exercise has been a popular stress management prescription (Belle, 1991). As competitive athletes are more active than most of the population, it would seem logical that this group should have lower levels of stress. Ironically, many athletes report, that rather than acting as a buffer, many aspects of sport are in fact sources of stress. Not only can stress decrease one's enjoyment of sport, but it may also negatively affect performance (Burton, 1988; Gould, Petlichkoff, Simons & Vevera, 1987). Stressed athletes have been found to exhibit less risk taking behaviour, poorer ability to focus attention (Anshel, 1990), increased muscular tension, reduced muscle coordination (Anshel, Brown & Brown, 1993) and errors in choice reaction tests (Jones, Cale & Kerwin, 1988) .

Psychological stress has been defined as a relationship between an individual and his or her environment in which the individual appraises the demands of the situation as taxing or exceeding his or her personal resources (Lazarus, 1966; Folkman & Lazarus, 1984). This relationship between an event and the amount of stress an individual experiences is not a simple one (See Figure

1). In fact a situation that one individual perceives as a source of stress, another may actually perceive as a source of enjoyment (Scanlan, 1991). Even when two athletes agree that an incident is taxing, their appraisals of whether it is challenging or threateningly stressful may differ. The goal of this research project was to uncover the variables that determine the extent to which events are perceived as negatively stressful and/or challenging for an athlete.

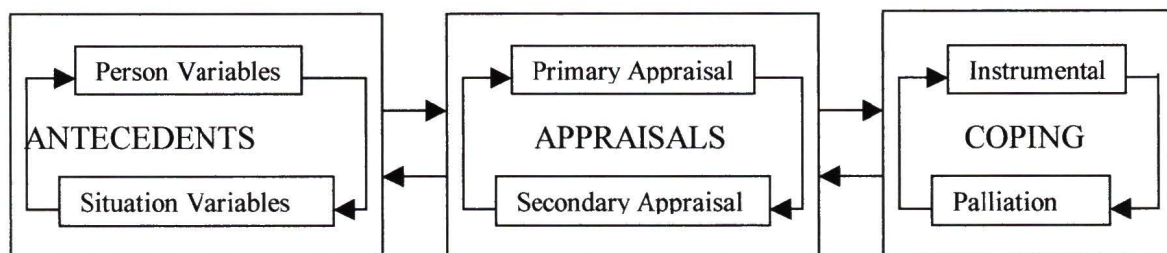


Figure 1. Lazarus' Model of the Stress Process

According to Lazarus (1966) initial appraisal of any event or circumstance can be divided into primary and secondary appraisals. Primary appraisal examines the nature of the stimuli and determines if the event is to be perceived as irrelevant, positive or stressful. Stressful appraisals can take three forms: harm, threat or challenge. Harm refers to psychological or physiological damage that has already occurred, threat pertains to potential future harm and challenge refers to taxing situations in which there is potential for gain or benefit. As they were the dependent variables in this study it is important to note that threat and challenge appraisals “are not poles of a single continuum; they can occur simultaneously, and must be considered as separate although often related constructs” (Lazarus & Folkman, 1984, p.53).

Secondary appraisal compares the demands of the situation with the resources of the individual to determine his or her coping potential specific to the

situation or event. Secondary appraisals are similar to Bandura's concept of outcome expectations, in which an individual estimates the likelihood of his or her ability to produce a desired outcome in a specific situation (Bandura, 1977, 1986, 1997). In summary, primary appraisal would determine the nature of the stressor (harm, threat and/or challenge), while secondary appraisal would help determine how taxing the event is.

Research using the Lazarus model of appraisal is widespread (Lazarus, 1999) and its terminology is equally pervasive (e.g. Anshel, 1990). However the title of primary and secondary appraisals "are unfortunate as they seem to indicate that one precedes another in time" (p. 31, Lazarus & Folkman, 1984). This interpretation was not intended, as primary and secondary appraisals occur simultaneously and have influence upon each other (as suggested in Figure 1).

The idea that the nature of the situation and the individual characteristics of the athlete interact and influence subsequent cognitive appraisals is vital in Lazarus' conceptualization of the stress appraisal process. However, most authors have chosen to either identify the stressful situations within a sport across competitors (e.g. Scanlan, Stein & Ravizza, 1991) or distinguish the motivational or personal characteristics of athletes or coaches which predispose them to negative short and long term consequences of stress (e.g. Kelley & Gill, 1993; Kelley, 1994).

Both of the above lines of inquiry are valid and important to the understanding of the stress appraisal process. However, as noted by Scanlan and her colleagues (1991) in their study of elite figure skaters, "individual differences exist between elite athletes' specific stressors...moreover a particular event (e.g. performing in front of an audience) can produce stress for some athletes and

enjoyment for others”. Few researchers have attempted to uncover which motivations and characteristics will moderate the relationship between the type of situation and the type of cognitive appraisal an athlete makes.

One example of this interactionist approach is a study of acute stressors in competitive basketball. Madden, Kirby, McDonald, Summers, Brown & King (1995) have examined the stress appraisal process by first identifying which aspects of a basketball game are potentially stressful and then investigating the moderating effect that person variables, such as commitment –a motivation variable, might have on stress appraisals of a variety of circumstances within a game.

The authors reported that level of commitment, as measured by amount of training, was a significant predictor of stress appraisals, but only in team performance situations. Players who reported that they trained more indicated a higher level of stress concerning team performance issues. This finding supports the Lazarus (1966, 1984) position which predicts that appraisals of threat or challenge can only occur if the event is meaningful to the individual. As commitment was related to appraisal, but only in one specific type of circumstance, the results also support the idea that the nature of the situation determines which person variables influence perception at any given time.

The current study expands on the acute sport stress research of Madden et al. (1995) in a number of ways. First, where Madden et al. (1995) examined the influence of two person variables (experience and commitment) on stress appraisals of six types of events, the current study analyzed the relationships between personal coping resources –as measured by the Athletic Coping Skills Inventory-28 (Smith, Smoll, Schutz & Ptacek, 1995), athletic identity –as

measured by the Athletic Identity Measurement Scale (Brewer, Van Raalte & Linder, 1993), motivations –as measured by the Sport Orientation Questionnaire (Gill & Deeter,1988), four demographic variables(age, experience, player caliber and playing position) and initial appraisals of ten types of game events.

Second, the current study asked players to report initial appraisals of potential taxing game events in three game contexts: preseason, regular season and playoffs. Game context was not specified in the Madden et al. (1995) study of basketball players.

Finally, while previous studies (including Madden et al, 1995 and Scanlan et al., 1991) have examined the concept of sport stress, no distinction has been made between threatening stress and challenging stress appraisals. In the current study, players not only reported how stressful they appraised an event to be but also how challenging. In addition to challenge and stress appraisal scores of each event type, an overall appraisal, or difference score, was calculated by subtracting the stress score from the challenge score. The resultant score gave an indication of whether the athlete perceived the event as more challenging than stressful or vice-versa.

Research Questions

The following research questions refer to analyses based on stress, challenge and difference appraisals:

Main Effect of Event Type

Will rugby players appraise some game events differently than others?

Main Effect of Context

Will rugby players appraise events in preseason, regular season and playoffs differently?

Main Effect of Person Variables

Are there relationships between person variables (coping resources, athletic identity, motivations and demographic variables) and event appraisals?

Interaction of Game Context and Person Variables

Are differences in appraisals between game contexts related to person variables?

Interaction of Event and Person Variables

Are certain person variables related to appraisals of some game events but not others?

Method

Participants

Participants were male senior club rugby players (N=107, age 18-32, $M=22.607$, $SD=3.107$) active in competitive rugby in either the Vancouver Island First Division or the British Columbia Premier Division. English was the first language of all the participants.

Operational Definitions

Type of Event

The sources and categories of stressors were modeled after work with basketball players (Madden et al, 1995; Wells & Anshel, 1994), figure skaters (Scanlan et al. 1991), golfers (Cohn, 1990), wrestlers (Gould, Horn & Spreeman, 1983) and other athletes (James & Collins, 1997). Sources of stress were limited to events and situations that occur during a game. Potential stressors that appear to be specific to rugby were modified and added after consultation with a small group of experienced rugby players. The author is also an experienced rugby player. The ten categories of events were:

- 1) Interpersonal Conflicts

- a. Argument with teammate
 - b. Argument with coach
 - c. Argument with referee
- 2) Outplayed by the Opposition
- a. You miss a tackle on your opposite number.
 - b. You were lazy in support and the other team got the ball.
 - c. The opposition wrestles the ball away from you.
- 3) Skill Errors
- a. Your pass is intercepted by the opposition.
 - b. You are responsible for a mistiming on a back maneuver or line-out which results in a turnover.
 - c. You knock the ball on.
- 4) Referee Decisions
- a. Poor refereeing decision against you (e.g. offside)
 - b. Poor refereeing decision against a teammate (e.g. forward pass)
 - c. Continuous penalties called against you –referee marches you 30 meters down the field.
- 5) Outcome
- a. Your team is winning but the other team is coming back and the momentum is in their favour.
 - b. The other team scores two quick tries at the very beginning of the game.
 - c. Your team is losing by two points in the final minute of the game.
- 6) Injury

- a. You must leave the game due to an injury.
- b. You are cut badly and are bleeding heavily.
- c. A teammate is injured badly (e.g. neck injury or broken leg).

7) Opposition Aggression

- a. You are rucked or punched by the opposition
- b. Trash talk or baiting by the opposition.
- c. Extreme violence such as biting or gouging.

8) Physiological Symptoms

- a. You have little energy during the game.
- b. Your fitness is poor and you feel out of breath during the game.
- c. You feel slow and sluggish during the game.

9) Environment

- a. It is windy and raining.
- b. The field is in poor condition.
- c. The opposition crowd is harassing you.

10) Team Behaviour

- a. Your teammates keep knocking the ball on resulting in turnovers
- b. Your teammates seem to have little or no energy. They are being lazy.
- c. Your team's tactics are limiting your offensive opportunities.

Note: Event order was randomized on the Rugby Game Event Questionnaire (see Appendix C).

Event Context

Players rated each event in three contexts: A pre-season game, a regular season game and a playoff game.

Motivation Variables

Athletic Identity (Brewer et al., 1993) was used as a measure of psychological commitment. The Athletic Identity Measurement Scale (AIMS) measures the extent to which sport is a part of an individual's overall identity. The AIMS has demonstrated internal consistency (coefficient alpha = .93) and reliability (14 day test-retest correlation = .89). The construct validity of the AIMS is suggested by its high correlation ($r=.83$) with the Perceived Importance Profile –importance of sports competence scale (Fox, 1987) and the fact that AIMS scores increase with level of competition (Brewer et al.,1993).

The Sport Orientation Questionnaire (SOQ, Gill & Deeter, 1988) served as the measure of motivations. Factor Analysis of SOQ items has produced three separate but often related scales that measure the motivational constructs of Win, Goal and Competitiveness orientations. The Win construct indicates an individual's motivation to win in sport. The Goal construct reflects a person's motivation to achieve personal standards in sport. Competitiveness is defined as the desire to enter and succeed in sport (Gill & Deeter, 1988). The SOQ is both internally consistent (alpha coefficient ranges from .80 to .95) and reliable (test-retest correlations range from $r=.73$ to $r=.89$). Construct validity was demonstrated by correlations with other achievement orientation measures, such as the Work and Family Orientation Questionnaire (Helmreich & Spence, 1978) and the fact that people in competitive sports have higher SOQ-scores than those who do not participate in competitive sport (Gill & Deeter, 1988).

Personal Resources

The seven subscales of the Athletic Coping Skills Inventory-28 (ACSI-28) (Smith et al., 1995) were used as the measures of personal resources. The ACSI-28 contains seven sport specific subscales, including Coping with adversity, Peaking Under Pressure, Goal Setting, Concentration, Freedom From Worry, Confidence and Coachability. Each of the seven of the subscales has been shown to have sufficiently strong factor structure to be used as a specific measure (Smith et al. 1995).

The ACSI-28 has demonstrated construct validity by correlating with other measures such as the Self Efficacy Scale (Coppel, 1980) , the Self Control Scale (Rosenbaum, 1980), and the Sport Anxiety Scale (Smith, Smoll & Schutz, 1990). Research with high school athletes (Smith et al., 1995) has shown that the constructs of ACSI-28 can distinguish between overachievers and underachievers and can successfully predict level of performance in elite athletes (Smith & Christensen, 1995). The authors do not assume that these variables exhaust the psychological skills that contribute to performance.

Demographic Variables

Age and total rugby experience were measured in years. Players also reported the position they played the most. In rugby players are numbered according to the position they play on the field.

Front row = 1,2,3

Second Row = 4,5

Back Row = 6,7,8

Halfbacks = 9,10

Centers = 12, 13

Wings = 11,14 (numbered 14 for this study)

Fullback = 15

Finally, players indicated the highest caliber of competition in which they had participated. While all players played in the Premier or First Divisions on Vancouver Island, many also competed in Varsity competitions, the Rugby Canada Super League, for a Provincial Senior Men's Team or for the National Team (full and sevens versions). Players were grouped according to the highest caliber of play in which they had competed:

- 1) Low: First Division (n=37)
- 2) Mid: Varsity, Premier League, Rugby Canada Super League (n=37)
- 3) High: Provincial or National Team (n=32)

Appraisals

Stress and Challenge appraisals of each of the thirty events were measured on 5 point likert scales with anchors of "not stressful at all" and "very stressful" for stress appraisals and "not challenging at all" and "very challenging" for challenge appraisals. Stressful was defined as "an event or situation that is difficult and negative. These events are often tension filled and/or frustrating." Challenging was defined as an event or situation that is "difficult but potentially positive and stimulating. These events are often exciting and provide opportunities." Each participant rated each of the situations in the context of three different game situations: Pre-season, regular season, playoffs. (See Game Events Questionnaire in Appendix C). Finally, a difference score was calculated by subtracting the stress appraisal rating for each event from the challenge rating for that event. A positive difference score would indicate that the event had been perceived as more of a challenge than a negative stressor.

Summary of Variables

Event Type - 30 events, ten event types.

Event Context - Preseason, regular season and playoff.

Motivational Variables - Athletic Identity

- Sport Orientation subscales (Win, Compete, Goal)

Personal Resources – Athletic Coping Skills Inventory subscales

(Coping with adversity, Peaking under pressure, Goal

Setting, Concentration, Freedom from worry, Confidence

and Coachability)

Demographic Variables - Age

- Experience

- Position

- Caliber (Low, Mid, High)

Appraisals - Stress, Challenge and Difference

Procedure

All participants completed the Athletic Coping Skills Inventory-28 (ACSI-28) (Smith et al.1995), the Athletic Identity Measurement Scale (AIMS) (Brewer et al., 1993), the Sport Orientation Questionnaire (SOQ) (Gill et al., 1988) and the Rugby Game Events Questionnaire (RGEQ) at a single sitting. Originally, all players were to complete the questionnaires in individual study carrels on BC Ferries while in transit to a regular season weekend game. However, scheduling changes made it necessary that many of the participants (47%) answered prior to a Thursday evening training session. These players responded at a personal desk in a silent classroom or meeting room at the team's training site. While this difference in testing venue and timing was not ideal, there were no significant

differences in stress, challenge or difference appraisals between those players who answered at practice and those who responded on BC Ferries ($p > .05$).

Statistical Analyses

Event Type Categories

As outlined in the operational definitions section of this thesis, the ten event types for this study were created by modifying acute sources of stress found in a variety of athletes in sports other than rugby. As the majority of these studies used content analysis of in-depth interviews to create stressor categories (see Appendix A for a more complete review of relevant literature), it was decided that a factor analysis procedure would not be an appropriate way of categorizing events in this study.

Profile Analyses

Profile analysis is a special application of multivariate analysis of variance (MANOVA) in which several dependent variables (DVs) are measured on commensurate scales (Tabachnick & Fidell, 1996). Profile analyses of stress, challenge and difference score appraisals were conducted using the SYSTAT GLM program. These analyses allowed the investigator to test multiple DVs, such as the appraisals of ten different types of events, at the same time.

Three main tests occur in a profile analysis:

- 1) Test of Flatness of the Profiles, in which the main research question is “Do the DVs all elicit the same average response?” (Tabachnick & Fidell, 1996, p.442). The test of flatness is analogous to the test of the within subjects main effect in repeated-measures ANOVA. The main effects of event type and game context were tested using the test of flatness.

- 2) Test of Levels of the Profiles, in which the main research question is “Does one group, on average score higher on the collected set of measures than another?”(Tabachnick & Fidell, 1996, p.442). This test is analogous to the test of the between subjects main effect in a repeated measures ANOVA. While this definition seems to imply that categorical variables must be used as the between subject variable, the moderating effect of a continuous variable on the profiles can also be tested. For example, the relationship between player caliber (categorical variable) and appraisals as well as the relationships between appraisals and the rest of the personal variables of age, experience, player caliber, player position, ACSI-28 subscales scores, SOQ subscale scores and AIMS scores (continuous variables) were all analyzed using the test of levels.
- 3) Parallelism of Profiles, in which the main research question is “Do different groups have parallel profiles?” (Tabachnick & Fidell, 1996, p.442). The test of parallelism is analogous to the test of the interaction term in an ANOVA. Test of parallelism was used to test the interaction of event type with person variables as well as the interaction of game context with person variables.

T-Tests

A previously mentioned, an overall appraisal, or difference score, was created for each event by subtracting the stress rating from the challenge rating. Independent T-Tests were performed on the resultant scores. If the score was significantly higher than zero, then the event had been perceived as significantly more challenging than stressful. If the resultant score was significantly less than zero then the event had been perceived as significantly more stressful than challenging.

Delimitations and Limitations

Delimitations

Participants

The participants in this study were Canadian competitive, male rugby players, age 18-32. As such, the findings may not generalize to athletes involved in other sports or those of different age, participation level or culture.

Person Variables

The person variables in this study were chosen to measure age, experience, playing position and caliber of play. Coping resources (ACSI-28) and motivations (SOQ and AIMS) were also measured. These variables are among a number of psychological constructs, but were specifically chosen because of their potential relationships with appraisals of taxing events within a sporting context. The questionnaires selected to assess these constructs were chosen for their reliability and validity, as described in the operational definitions section.

Events

The thirty events in the Rugby Game Events Questionnaire do not represent all of the potentially taxing acute situations that can occur in a rugby game. Furthermore, only appraisals of acute taxing events were measured. Perceptions of events and circumstances surrounding competition were not included. The events were also limited to potential taxing situations in preseason, regular season and playoff game contexts. Appraisals of other types of events and the influence of other contexts, such as trial matches or recreation games, were not measured.

Appraisals

Appraisals were restricted to stress and challenge. Appraisals of enjoyment were not included. Finally, This study examined the appraisal of taxing events. Behaviours and other coping responses to these taxing events were not assessed.

Limitations

All of the measures were self report questionnaires. As such, the accuracy of the findings depends on the honesty and self-knowledge of the participants. In addition, the events described in the RGEQ represent hypothetical situations and not actual events. Given the fact that same day recall of appraisal and coping differs markedly from seven-day retrospective reports (Smith, Leffingwell & Ptacek, 1999), appraisals of actual game events would need to be given shortly after each occurrence. While coaches and players were willing to respond at practice and prior to games the likelihood of participation following a game seems low. Also, recall of appraisals may be biased by the outcome of the game; winners may perceive events differently than losers. Finally, as Crocker and Graham (1995) noted, a common performance stressor is impossible in a naturalistic setting. While the hypothetical nature of the RGEQ does not guarantee that each player interpreted each description in the same way, the questionnaire does attempt to obtain appraisals of the same thirty events from each player.

Results

The results chapter of this thesis is organized into three sections. The first section outlines the results concerning player stress appraisals. The second section deals with challenge appraisals. The final section examines the difference scores (challenge rating – stress rating) that were described in the methods section. In each section analyses of the following effects are presented:

1) Main Effect of Event Type

Will rugby players appraise some game events differently than others?

2) Main Effect of Context

Will rugby players appraise events in preseason, regular season and playoffs differently?

3) Interaction of Game Context and Event Type

Are the changes in appraisals across contexts equal for all event types?

4) Main Effect of Person Variables

Are there relationships between person variables (coping resources, athletic identity, motivations and demographic variables) and event appraisals? This effect was examined across contexts and specifically in the most important context – playoff games.

5) Interaction of Game Context and Person Variables

Are differences in appraisals between game contexts related to person variables?

6) Interaction of Event and Person Variables

Are certain Person variables related to appraisals of some game events but not others?

At the end of each section a summary of the notable findings is presented.

Section I - Stress Appraisals

Main Effect of Event Type- Do rugby players appraise some game events as more stressful than others?

A) Pre-Season Game Context

The test of flatness (within subjects) of stress appraisals for the ten event types in the pre-season game context revealed that not all events were rated as equally stressful $F(9,954)=18.325$ ($p<.001$). Follow-up hypothesis tests found that “being outplayed by the opposition” events ($M=2.255$) and injury events ($M=2.330$) were rated as significantly more stressful than the average of the other eight event types ($F(1,105)=84.298$, $p<.001$). Opposition aggression ($M=1.734$) and environmental circumstances ($M=1.356$) were rated as significantly less stressful than the average of the other eight event types, $F(1,105)=89.360$, $p<.001$ (See Figure 2 for graphical representation and Table 1 for mean values).

B) Regular Season Game Context

The test of flatness (within subjects) of stress appraisals for the ten event types in the regular season game context revealed that not all events were rated as equally stressful $F(9,954)=45.773$ ($p<.001$). Follow-up hypothesis tests found that “being outplayed by the opposition” events ($M=2.928$) and skill error events ($M=2.816$) were rated as significantly more stressful than the average of the other eight event types ($F(1,105)=70.294$, $p<.001$). Opposition aggression ($M=1.934$) and environmental circumstances ($M=1.718$) were rated as significantly less stressful than the average of the other eight event types, $F(1,105)=189.928$, $p<.001$ (See Figure 2 for graphical representation and Table 1 for mean values).

C) Playoff Game Context

The test of flatness (within subjects) for stress appraisals in the ten event types in the playoff game context revealed that not all events were rated as equally stressful $F(9,954)=81.880$ ($p<.001$). Further follow up hypothesis tests found that “being outplayed by the opposition” events ($M=3.504$) and skill error events ($M=3.486$) were rated as significantly more stressful than the average of the other eight event types ($F(1,105)=154.033$, $p<.001$). Opposition aggression ($M=2.121$) and environmental circumstances ($M=2.103$) were rated as significantly less stressful than the average of the other eight event types, $F(1,105)=326.696$, $p<.001$ (See figure 2 for graphical representation and Table 1 for mean values).

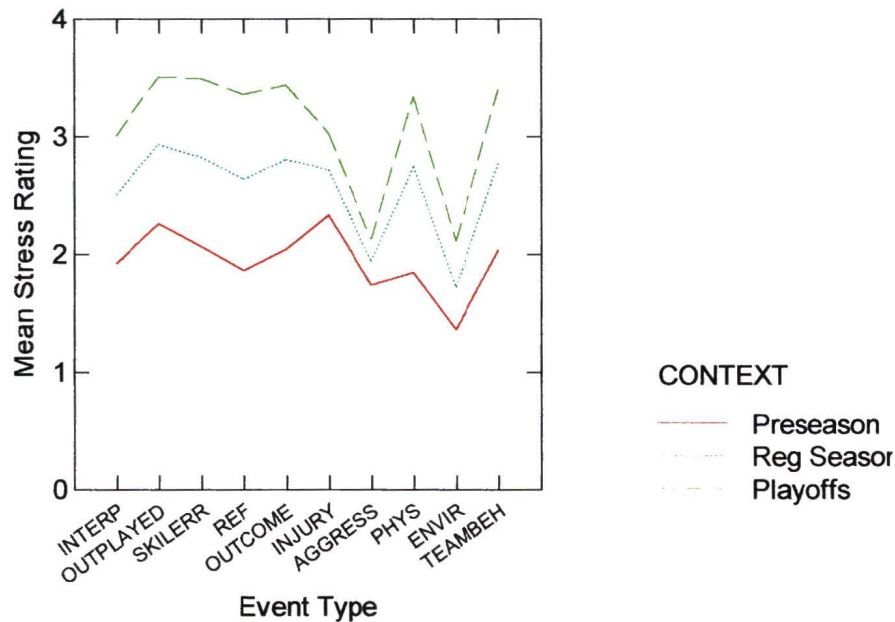


Figure 2. Mean Stress Ratings for Ten Event Types in Preseason, Regular Season and Playoff Game Contexts.

D) Overall-Across Contexts

The test of flatness (within subjects) of stress appraisals for the ten event types averaged across all three contexts revealed that not all events were rated as equally stressful, $F(9,954)=48.206$ ($p<.001$). Further follow up hypothesis tests

found that being outplayed by the opposition events ($M=2.896$) and skill error events ($M=2.838$) were rated as significantly more stressful than the average of the other eight event types, $F(1,105)=84.298$, $p<.001$. Opposition aggression ($M=1.930$) and environmental circumstances ($M=1.726$) were rated as significantly less stressful than the average of the other eight event types, $F(1,105)=200.75$, $p<.001$ (See Figure 3 for graphical representation and Table 1 for mean values).

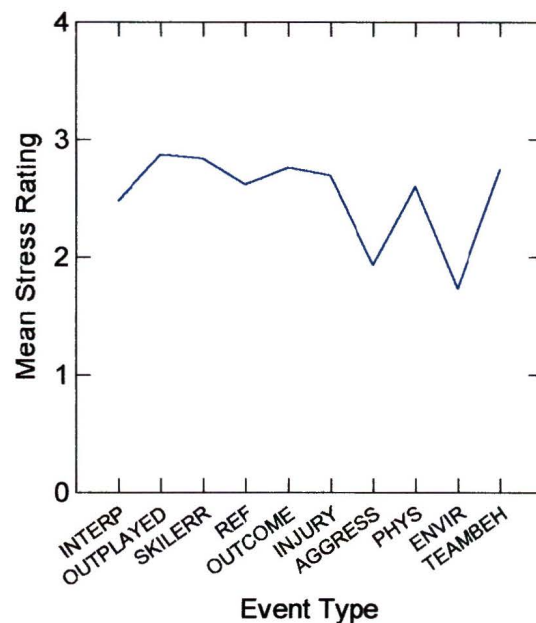


Figure 3. Mean Stress Ratings for Ten Event Types Overall (across all three contexts)

Main Effect of Game Context -Do rugby players' stress appraisals vary according to the game context in which the event is placed?

The test of flatness (within subjects) of the average stress appraisals in each of the three game contexts revealed that stress appraisals in the three contexts were not equal, $F(2,212)=418.72$ ($p<.001$). Mean stress ratings in the playoff

context ($M=3.076$) were significantly higher than those in the regular season game context ($M=2.554$) which were significantly higher than those ratings in the preseason context ($M=1.940$) (See Figure 2 and Table 1 for mean values of each event type in the three contexts).

Table 1
Mean Stress Ratings for Ten Event Types Overall and in the Three Game Contexts

Context	INTERP	OUTPLAYED	SKILERR	REF	OUTCOME
Preseason	1.915	2.255	2.059	1.854	2.037
Reg. Season	2.503	2.928	2.816	2.632	2.798
Playoffs	3.004	3.504	3.486	3.354	3.433
Overall	2.474	2.869	2.838	2.613	2.756
	INJURY	AGGRESS	PHYS	ENVIR	TEAMBEH
Preseason	2.33	1.734	1.836	1.356	2.026
Reg. Season	2.71	1.935	2.738	1.718	2.763
Playoffs	3.025	2.121	3.337	2.103	3.393
Overall	2.688	1.930	2.597	1.726	2.738

Interaction of Game Context with Event Type -Are the changes in stress appraisals across contexts (preseason, regular season and playoffs) equal for all event types?

As is suggested by Figure 2, the effects of game context and event type interacted, $F(18,1908)=37.899$, $p<.001$, such that while all events were perceived as more stressful in “more important” contexts, some events showed greater increases in stress appraisal between contexts than others. Specifically, injury ($\Delta_{\text{stress}} \text{ preseason-playoffs}=+.358$), opposition aggression ($\Delta_{\text{stress}} \text{ preseason-playoffs}=+.387$), and environmental events ($\Delta_{\text{stress}} \text{ preseason-playoffs}=+.747$) showed smaller increases in stress appraisals than the other seven event types (Mean $\Delta_{\text{stress}} \text{ preseason-playoffs} =+1.36$) (See Table 1 for mean values of each event type in the three contexts).

Main Effect of Person Variables –Are there relationships between person variables and stress appraisals?

Overall-Across Contexts

Players who reported higher freedom from worry scores had lower overall stress appraisals across all event types than those players who reported lower freedom from worry scores, $F(1,105)=11.727$ ($p<.001$), $r=-.317$. None of the other person variables were significantly related to overall stress appraisals (see Appendix B for full report of relationships between person variables and overall stress appraisals).

Playoffs

While freedom from worry was the only person variable associated with stress appraisals across the three game contexts, freedom from worry, age and player caliber were all related to stress appraisals across the ten event types in the playoff context (See Table 2). A full report of relationships between person variables and playoff stress appraisals is included in Appendix B. Older players, higher caliber players and players with higher freedom from worry scores rated events as less stressful than did younger players, lower caliber players and players with lower freedom from worry scores (See Figure 4 for graphical representation and Table 3 for mean playoff stress ratings of the low, mid and high caliber player groups).

Table 2
Relationships Between Person Variables and Playoff Stress Appraisals

Variable	df	F-value	p-value	Correlation with Playoff Stress Score
Age	1,105	4.302	.041	-.199
Caliber	1,105	4.963	.009	-.295
Freedom from Worry	1.105	9.227	.003	-.280

Note: Playoff Stress Score is the mean of stress appraisals of all thirty events in the playoff context.

Table 3
Mean Playoff Stress Ratings

Caliber	Mean Playoff Stress Rating (SD)
First Division (Low)	3.236 (.386)
Premier/Varsity/Super League (Mid)	3.089 (.512)
Provincial/National Team (High)	2.871 (.551)

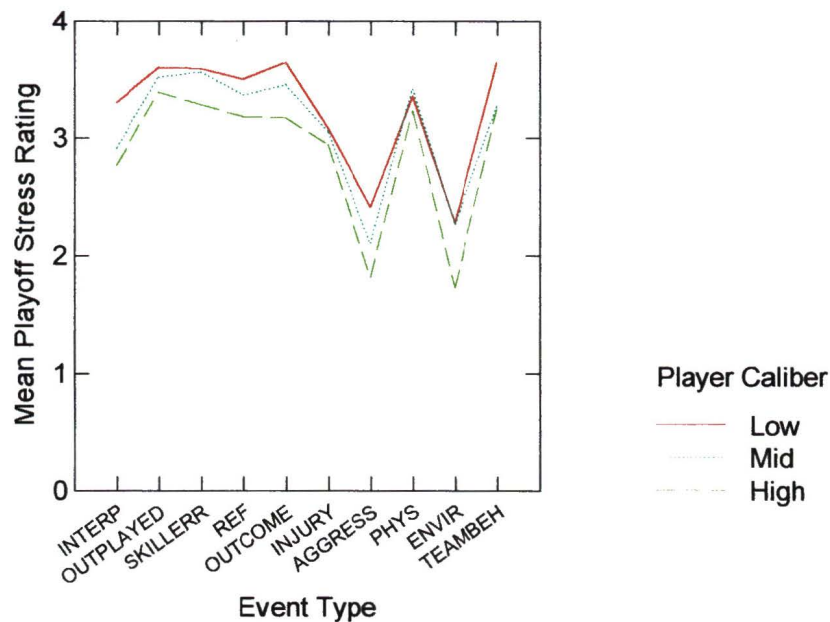


Figure 4. Mean Stress Ratings on the Ten Event Types for Three Calibers of Players

Interaction of Game Context and Person Variables - Are differences in stress appraisals across contexts (preseason, regular season, playoffs) related to person variables?

Age, caliber of player, goal setting and SOQ-compete variables were all related to changes in stress appraisals from “less important” to “more important” game “contexts. Older players, players of higher caliber, and players who reported

higher goal setting and SOQ-competete scores reported smaller increases in stress appraisals (see table 4 for details, see figure 5 for graphical representation of player caliber-context relationship).

Table 4
Relationships between the Increase in Stress Appraisals Between Contexts and Person Variables (Statistically Significant Interactions in Bold)

Variable	Follow Up Hypothesis Test	Df	F-value	p-value	Correlation with increase in stress between contexts
Age		2,210	4.469	.013	
	AgeXpre-playoff	1,105	4.932	.029	-.211
	AgeXreg-playoff	1,105		>.05	N.S.
Caliber		2,210	5.442	.005	
	CaliberXpre-playoff	1,105	5.587	.020	-.225
	CaliberXreg-playoff	1,105	6.022	.016	-.233
Goalset (ACSI-28)		2,210	9.749	<.001	
	GoalsetXpre-playoff	1,105	10.671	.001	-.305
	GoalsetXreg-playoff	1,105	10.813	.001	-.306
SOQ-Compete		2,210	4.918	.008	
	CompXpre-playoff	1,105	5.488	.021	-.224
	CompXreg-playoff	1,105	5.425	.022	-.223

Note: See Appendix B for complete results of relationships between increases in stress appraisals between contexts and personal

variables.

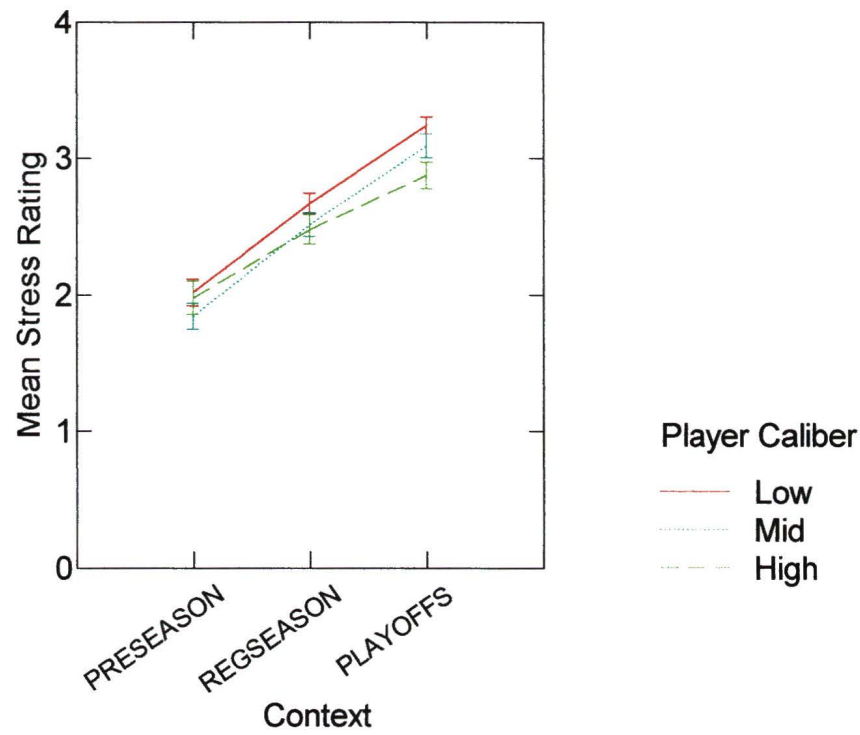


Figure 5. Mean Stress Ratings for Preseason, Regular Season and Playoff game contexts Grouped by Player Caliber (Standard Error of the mean shown)

Interaction of Person Variables with Event Type-Are certain person variables related to stress appraisals of some event types and not others?

A number of interactions between event type and several person variables were found. Players with high scores on selected person variables reported different levels of stress on specific event types than players with lower scores on these person variables. These interactions are described below.

Age and event type interacted, $F(9,945)=2.188$, $p=.021$, such that older players reported lower stress concerning environmental events, $F(1,105)=8.237$, $p=.005$, than younger players. The correlation between age and stress appraisal of environmental events was $-.272$.

Ability to Deal with Adversity and event type interacted $F(9,945)=1.913$, $p=.047$, however, ability to deal with adversity was not related to significant differences in stress levels on any specific event type.

Confidence and event type interacted, $F(9,945)=2.52$, $p=.007$, such that more confident players reported lower stress concerning aggressive acts by the opposition, $F(1,105)=4.420$, $p=.038$. The correlation between confidence and stress appraisals of aggressive acts was $-.201$.

Goalsetting behaviour and event type interacted, $F(9,945)=4.058$, $p<.001$, such that players who scored higher on the goal setting scale reported higher levels of stress concerning refereeing decisions $F(1,105)=6.943$, $p=.01$, physiological symptoms, $F(1,105)=12.48$, $p=.001$, and team behaviour events, $F(1,105)=5.455$, $p=.021$. The correlations between goalsetting behaviour and stress appraisals of refereeing decisions, physiological symptoms and team behaviour events were, $.262$, $.348$ and $.257$, respectively.

Freedom from Worry and event type interacted, $F(9,945)=2.311$, $p=.014$, such that players who scored higher on the freedom from worry scale reported lower levels of stress concerning interpersonal conflicts, $F(1,105)=8.754$, $p=.004$, $corr.=-.270$, skill errors $F(1,105)=7.732$, $p=.006$, $r = -.293$, game outcome events, $F(1,105)=15.296$, $p<.001$, $r = -.358$, physiological events, $F(1,105)=16.642$, $p<.001$, $r = -.366$, and team behaviour events, $F(1,105)=6.391$, $p=.013$, $r = -.237$.

SOQ-Compete and event type interacted, $F(9,945)=2.398$, $p=.011$, such that players who scored higher on the Compete subscale reported lower levels of stress concerning opposition aggression events, $F(1,105)=4.581$, $p=.035$. The correlation between SOQ-Compete and stress appraisals of aggression was $-.205$.

SOQ-Win and event type interacted, $F(9,945)=2.621$, $p=.005$, such that players with higher scores on the Win subscale reported higher levels of stress concerning game outcome events, $F(1,105)=4.381$, $p=.039$. The correlation between SOQ-Win and stress appraisals of game outcome events was .201.

SOQ-Goal and event type interacted, $F(9,945)=2.544$, $p=.007$, such that players who scored higher on the Goal subscale reported higher levels of stress concerning outplayed by opposition events, $F(1,105)=4.092$, $p=.046$, and team behaviour events, $F(1,105)=2.544$, $p=.007$. The correlations between goal orientation and stress appraisals of being outplayed by the opposition events and team behaviour events were .195 and .245, respectively.

Summary of Stress Appraisal Analyses

Event type- Outplayed by the opposition and skill errors were rated as the most stressful event types overall and in the regular season and playoff contexts. In the preseason context, injuries and outplayed by the opposition were rated as the most stressful event types. Opposition aggression and environmental circumstances were rated as the least stressful event types overall and in all three contexts.

Game Context- Playoff events, followed by regular season and preseason events respectively, were rated as the most stressful.

Interaction of Game Context and Event Type- Compared to the other seven event types, three event types (injury, aggression and environment) showed smaller increases in mean stress ratings from preseason to playoff contexts.

Person Variables- Players with higher Freedom from Worry scores had lower overall stress appraisals (mean across contexts) than players with lower scores on this ACSI-28 subscale. Younger players, lower caliber players and players with higher Freedom from Worry scores rated playoff events as more stressful than did

older players, higher caliber layers and players with lower freedom from worry scores.

Interaction of Person Variables with Game Context- Older, higher caliber and more confident players showed smaller increases in stress from less important to more important games. Players who reported more goalsetting behaviour (ACSI-28 Goalset) and those who enjoy competition (SOQ-Compete) also reported smaller increases in stress from less important to more important games.

Interaction of person Variables with Event Type- As mentioned, Freedom from Worry was the only person variable related to mean stress appraisals across event types in all three game contexts. However, many person variables were related to stress appraisals of specific event types. Some of the more notable relationships are summarized below:

Older players rated environmental circumstances as less stressful than younger players.

Players who reported more goal setting behaviour rated poor refereeing decisions, physiological and team behaviour events as more stressful than those who set less personal goals.

Players with higher SOQ-Win scores rated game outcome events as more stressful than players who perceived winning as less important.

Finally, Players with higher SOQ-Goal scores reported higher levels of stress in outplayed by the opposition and team behaviour events than did players who were less motivated to achieve personal standards in sport.

Section II - Challenge Appraisals

Main Effect of Event Type - Do rugby players appraise some event types as more challenging than other events?

A) Pre-Season Game Context

The test of flatness (within subjects) of challenge appraisals for the ten event types in the pre-season game context revealed that not all events were rated as equally challenging $F(9,954)=39.733$, $p<.001$. Follow up hypothesis tests found that outplayed by the opposition events ($M=2.481$) and game outcome events ($M=2.732$) were rated as significantly more challenging than the average of the other eight event types, $F(1,105)=232.91$, $p<.001$. Interpersonal conflicts ($M=.716$) poor refereeing decisions ($M=1.582$) and injuries ($M=1.388$) were rated as significantly less challenging than the average of the other seven event types, $F(1,105)=125.308$ (See Figure 6 for graphical representation and Table 5 for mean values).

B) Regular Season Game Context

The test of flatness (within subjects) of challenge appraisals for the ten event types in the regular season game context revealed that not all events were rated as equally challenging $F(9,954)=52.768$, $p<.001$. Follow up hypothesis tests found that outplayed by the opposition events ($M=2.973$) and game outcome events ($M=3.171$) were rated as significantly more challenging than the average of the other eight event types, $F(1,105)=345.123$, $p<.001$. Interpersonal conflicts ($M=1.944$) poor refereeing decisions ($M=1.957$) and injuries ($M=1.551$) were rated as significantly less challenging than the average of the other seven event types, $F(1,105)=147.819$ (See Figure 6 for graphical representation Table 5 for mean values).

C) Playoff Game Context

The test of flatness (within subjects) of challenge appraisals for the ten event types in the playoff game context revealed that not all events were rated as equally challenging $F(9,954)=49.913$, $p<.001$. Follow up hypothesis tests found that outplayed by the opposition events ($M=3.225$) and game outcome events ($M=3.508$) were rated as significantly more challenging than the average of the other eight event types, $F(1,105)=309.320$, $p<.001$. Interpersonal conflicts ($M=2.192$) poor refereeing decisions ($M=2.293$) and injuries ($M=1.776$) were rated as significantly less challenging than the average of the other seven event types, $F(1,105)=142.029$, $p<.001$ (See Table 6 for mean values and Figure 5 for graphical representation).

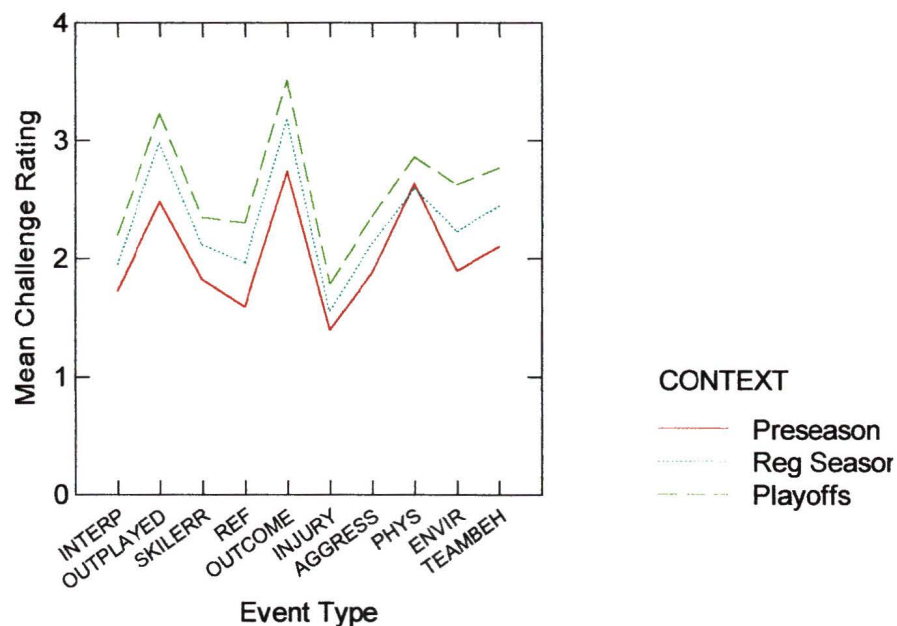


Figure 6. Mean Challenge Ratings of Ten Event Types in Three Different Game Contexts

D) Overall-Across Contexts

The test of flatness (within subjects) of challenge appraisals for the ten event types averaged across all three contexts revealed that not all events were rated as equally challenging $F(9,954)=56.413, p<.001$. Follow up hypothesis tests found that outplayed by the opposition events ($M=2.878$) and game outcome events ($M=3.137$) were rated as significantly more challenging than the average of the other eight event types, $F(1,105)=370.957, p<.001$. Interpersonal conflicts ($M=1.949$) poor refereeing decisions ($M=1.944$) and injuries ($M=1.572$) were rated as significantly less challenging than the average of the other seven event types, $F(1,105)=158.356, p<.001$ (See Figure 7 for graphical representation and Table 5 for mean values) .

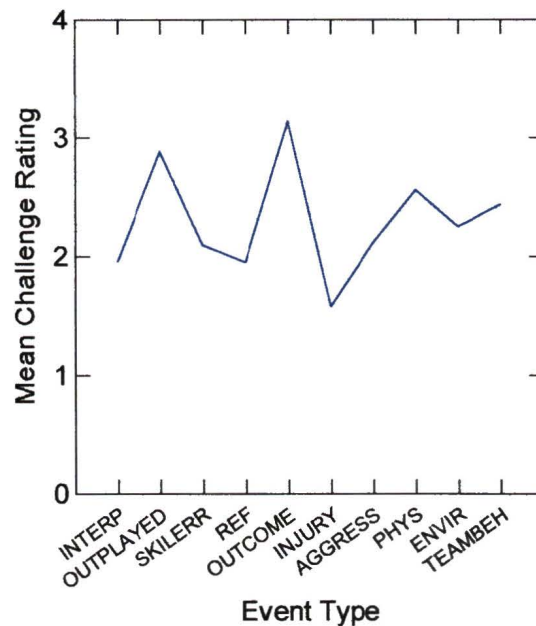


Figure 7 Mean Challenge Ratings of Ten Event Types Overall (Across all three contexts)

Table 5
Mean Challenge Ratings for Ten Event Types in Three Game Contexts

Context	INTERP	OUTPLAYED	SKILERR	REF	OUTCOME
Preseason	1.716	2.481	1.816	1.582	2.732
Reg. Season	1.944	2.927	2.110	1.957	3.171
Playoffs	2.192	3.225	2.346	2.293	3.508
Overall	1.949	2.878	2.091	1.944	3.137
	INJURY	AGGRESS	PHYS	ENVIR	TEAMBEH
Preseason	1.388	1.871	2.636	1.887	2.095
Reg. Season	1.551	2.121	2.592	2.224	2.439
Playoffs	1.776	2.349	2.857	2.622	2.763
Overall	1.572	2.114	2.558	2.244	2.433

Main Effect of Game Context - Do rugby players' challenge appraisals

vary according to the game context in which the event is placed?

The test of flatness of the contexts profile revealed that challenge appraisals in the three contexts were not equal, $F(2,212)=115.768$ ($p<.001$). Mean challenge ratings in the playoff context ($M=2.593$) were significantly higher than those in the regular season game context ($M=2.304$) which were significantly higher than those ratings in the preseason context ($M=1.979$) (See Figure 6).

Interaction of Game Context and Event Type -Are the changes in challenge appraisals across contexts equal for all event types?

Game context and event type interacted, $F(18,1908)=4.279$, $p<.001$, such that players reported smaller increases in challenge concerning physiological symptoms than the other nine event types, from preseason to regular season to playoff games. In fact preseason physiological symptoms were rated as more challenging than regular season physiological symptoms (see Figure 6).

Main Effects of Person Variables - Are there relationships between person variables and challenge appraisals?

The tests of levels (between subjects) found that none of the person variables were related to challenge appraisals across the ten types of events, overall or in the playoff context.

Interaction of Person Variables and Game Context - Are differences in challenge appraisals across contexts related to person variables?

None of the Person variables were related to increases in challenge appraisals from “less important” to “more important game” contexts.

Interaction of Person Variables with Event Type - Are certain person variables related to challenge appraisals of some event types and not others?

Age and event type interacted, $F(9,945)=2.142$, $p=.024$, such that older players reported lower challenge concerning environmental events, $F(1,105)=4.498$, $p=.036$, than younger players. The correlation between age and challenge ratings of environmental events was $-.203$.

Summary of Challenge Appraisal Analyses

Event type- Outplayed by the opposition and game outcome were rated as the most challenging event types in all three game contexts. Interpersonal conflict, poor refereeing decisions and injuries were rated as the least challenging event types in all three contexts.

Game Context- Playoff events, followed by regular season and preseason events respectively, were rated as the most challenging.

Interaction of Game Context and Event Type- Player challenge ratings of physiological symptoms showed noticeably smaller increases from less important

to more important games. In fact preseason physiological symptoms were rated as more challenging than regular season symptoms.

Person Variables- None of the person variables were related to challenge appraisals across the ten event types.

Interaction of Person Variables with Game Context- None of the person variables were related to changes in challenge appraisals from less important to more important game contexts.

Interaction of Person Variables with Event Type -Older players reported lower challenge concerning environmental events.

Section III Difference Scores - Overall Appraisal of Event

An overall appraisal, or difference, score was calculated by subtracting the stress score from the challenge score. As these difference scores were a combination of other data they are not unique. However, these resultant scores give an indication of whether the athlete perceived the event as more challenging than stressful or vice-versa. All of the analyses used in the stress and challenge sections of this study were performed on the difference scores. The results of these analyses follow:

Main Effect of Event Type –Do rugby players appraise some game events differently than others?

The test of flatness of the difference scores revealed that not all events had the same mean difference score, $F(9,945)=48.766$, $p<.001$, (see Figure 8 for graphical representation and Table 6 for mean values overall and in all three contexts). Injury($M=-1.117$), skill error($M=-.696$) and poor refereeing decisions($M=-.669$) events were rated lowest. Difference scores for these three events were found to be significantly lower than the mean of the other seven

events, $(1,105)=205.991$ ($p<.001$). Outcome ($M=.381$) and environmental events ($M=.519$) were rated highest. Difference scores for these two events were found to be significantly higher than the average of the other eight events, $(1,105)=155.031$, $p<.001$.

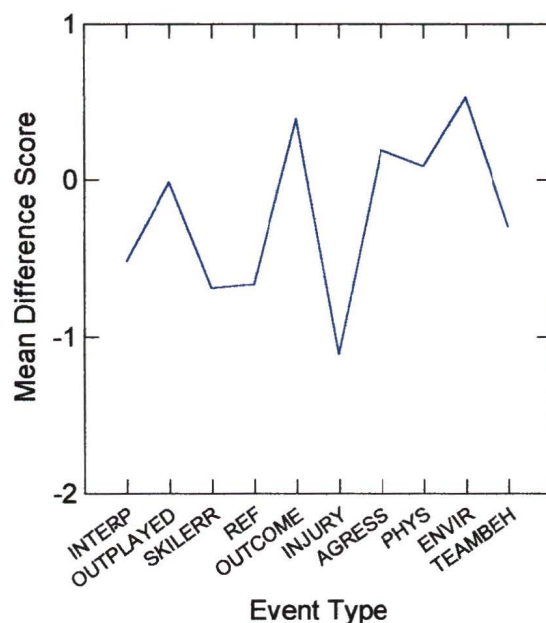


Figure 8 . Mean Difference Scores (Challenge-Stress Rating) for Ten Event Types Overall (across contexts)

Table 6

Mean Difference Scores (Challenge Ratings-Stress Ratings) for Ten Event Types Overall and in the Three Game Contexts

Context	INTERP	OUTPLAY	SKILERR	REF	OUTCOME
Preseason	-.203	.226	-.243	-.0271	.694
Regular	-.559	-.008	-.706	-.675	.374
Playoff	-.812	-.280	-1.140	-1.062	.075
Overall	-.525	-.018	-.696	-.669	.381
	INJURY	AGRESS	PHYS	ENVIR	TEAMBEH
Preseason	-.942	.144	.129	.531	.069
Regular	-1.158	.186	-.048	.507	-.324
Playoff	-1.248	.228	-.160	.519	-.629
Overall	-1.117	.184	-.079	.519	-.305

All types of events were rated as both challenging and stressful. However, from the one sample t-tests (see table 7) Game Outcome and Environmental events had difference scores that were significantly greater than zero, meaning that these events were, on average, rated as more challenging than stressful. Interpersonal conflict, skill error, poor referee decisions, injury, and team behaviour events had difference scores that were significantly less than zero, meaning that these events were, on average, rated as more stressful than challenging. The difference scores of the outplayed by the opposition, opposition aggression and physiological events were not significantly different from zero, meaning that, on average, there was no significant difference between challenge and stress ratings for these events.

Table 7
One sample T-tests of Difference Scores for Ten Event Types (Null Hypothesis $M_{diff}=0$)

Event Type	Mean	t-value	p-value
Stressful Events			
Injury	-1.117	-9.550	<.001
Skill Errors	-.696	-6.376	<.001
Referee	-.669	-6.491	<.001
Interpersonal Conflict	-.525	-5.781	<.001
Team Behaviours	-.305	-3.291	.001
Non-Aligned Events			
Opposition Aggression	.184	1.515	.133
Physiological	-.079	-.817	.416
Outplayed by Opposition	-.018	-.194	.846
Challenging Events			
Environmental	.519	5.212	<.001
Outcome	.381	4.503	<.001

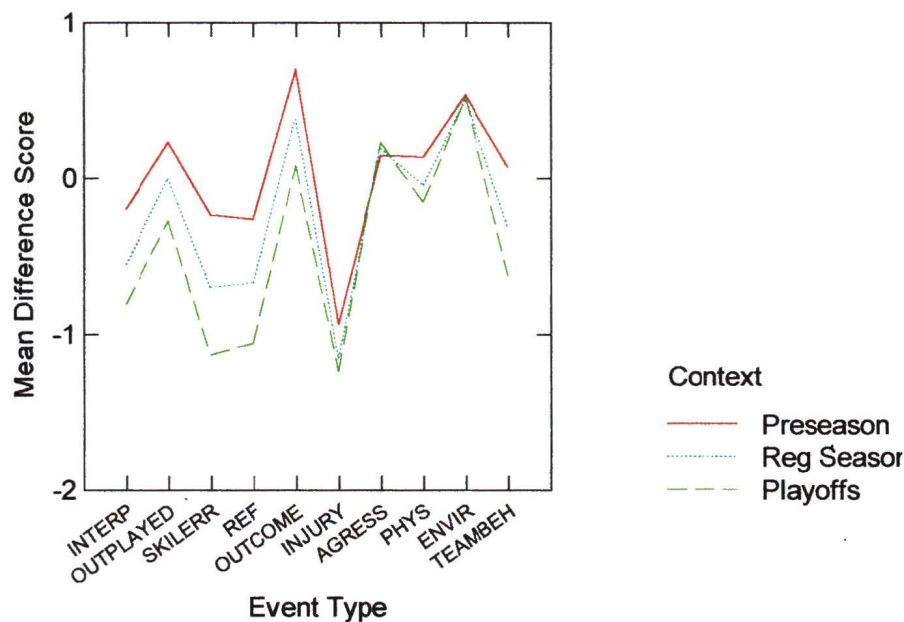


Figure 9. Mean Difference Scores (Challenge-Stress Rating) for Ten Event Types in the Three Game Contexts

Effect of Context –Do rugby players appraise events differently in preseason, regular season, and playoff game contexts.

A significant difference existed between player ratings of events between preseason, regular season and playoff contexts, $F(9,945)=69.07, p<.001$. Players rated events as equally challenging and stressful in the preseason context ($M=+.129$, not significantly different from $M=0, p>.05$), while in the regular season ($M=-.833, p=.001$) and playoff ($M=-1.610, p<.001$) contexts events appraised as more stressful than challenging (See Figure 9).

Interaction of Context and Event Type –Are changes in appraisals across contexts equal for all event types?

As is suggested by Figure 9, the effects of game context and event type interacted, $F(18,1908)=16.713, p<.001$, such that the pattern of change in

difference scores from “less important” to “more important” varied according to event type. Most of the event types showed decreases in difference scores from “less important to more important” game contexts. However, difference scores concerning opposition aggression (Δ preseason-playoff=+.084) actually increased from preseason to playoff games. In addition injury (Δ preseason-playoff=-.306), physiological symptoms (Δ preseason-playoff=-.289) and environmental events (Δ preseason-playoff=-.012) showed smaller decreases in difference scores than the other six event types.

Main Effect of Person Variables –Are there relationships between person variables and event appraisals?

Overall- across contexts

The test of levels of profiles (between subjects) with the ten event types as the repeated measures revealed that higher caliber players had higher difference scores across all event types, $F(1,105)=7.096$, $p=.009$, The correlation between player caliber and difference scores was .252. Caliber was the only person variable significantly related to difference scores across contexts (See appendix for complete report of relationships between person variables and difference scores across contexts, see Table 8 and Figure 10 for mean difference scores of each player caliber groups).

Table 8

Mean Difference Scores for Players of Low, Mid and High Caliber

Player Caliber	Mean Difference Score (SD)	One Sample T-test
Low	-.436 (.631)	$t=-4.265$, $p<.001$
Mid	-.245 (.818)	$t=-1.823$, $p=.077$
High	.0273 (.718)	$t= .215$, $p=.831$

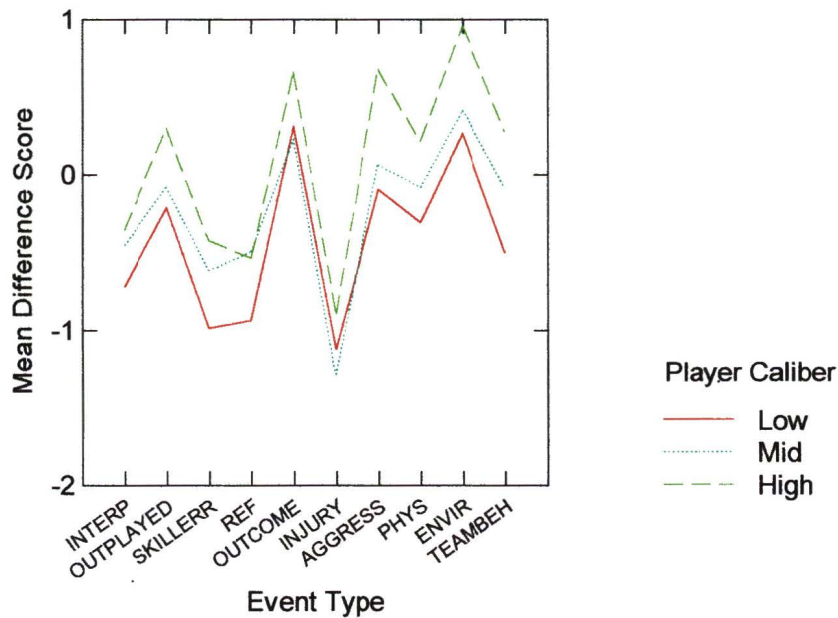


Figure 10. Mean Difference Scores (across contexts) of Each Player Caliber Group for each Event Type

Playoff Context

Both player caliber, $F(1,105)=4.730$, $p=.011$ and SOQ-Compete, $F(1,105)=4.375$, $p=.039$, were related to difference scores in the playoff context. Higher caliber players ($\text{corr}=.271$) and players who reported higher competition motivations ($\text{corr}=.201$) reported higher difference scores in the playoff context than players who were low in these person variables. None of the other person variables were significantly related to difference scores in the playoff context (see Appendix B for full report of relationships between playoff difference scores and person variables).

Interaction of Game Context with Person Variables – Are differences in appraisals between game contexts (preseason, regular season and playoffs) related to person variables?

Caliber of player, SOQ-compete, SOQ-Win variables were all related to changes in difference appraisals from “less important” to “more important game “contexts. (see table 9 for details). Players with high scores on these variables showed smaller decreases in difference scores from less important to more important game contexts.

Table 9
Relationship between the Change in Difference Score Between Contexts and Person Variables

Variable XContext	Follow Up Hypothesis Test	df	F-value	p-value	Correlation with change in Diff. Score.
Caliber		2,210	3.347	.037	
	CalXpre-playoff	1,105	3.585	.061	.182
	CalXreg-playoff	1,105	3.774	.055	.186
	CalXpre-reg	1,105	2.018	.158	.137
Compete		2,210	6.716	.001	
	CompXpre-playoff	1,105	7.372	.008	.257
	CompXreg-playoff	1,105	5.301	.023	.220
	CompXpre-reg	1,105	6.477	.012	.242
Win		2,210	3.499	.032	
	CompXpre-playoff	1,105	NS		.183
	CompXreg-playoff	1,105	NS		.093
	CompXpre-reg	1,105	6.434	.013	.241

Interaction of Person Variables with Event Type –Are certain person variables related to difference scores of some event types and not others?

A number of interactions between event type and certain Person variables were found. These interactions are described below.

Ability to deal with Adversity and event interacted, $F(9,945)=1.936$, $p=.044$, however, ability to deal with adversity was not related to significant differences in differences scores on any specific event type.

Goalsetting behaviour and event interacted, $F(9,945)=2.211$, $p=.019$ however, goalsetting was not related to significant differences in differences scores on any specific event type.

SOQ-Win and event type interacted, $F(9,945)=1.978$, $p=.050$, such that players who scored higher on the Win subscale reported higher difference scores concerning aggression events, $F(1,105)=5.391$, $p=.022$, than players who reported less motivation to win. The correlation between motivation to win and playoff difference scores was .149.

Summary of Difference Score –Overall Appraisal Analyses

Event type- Injury, skill errors, refereeing decisions, interpersonal conflict and team behaviours were rated as more stressful than challenging across game contexts. Opposition aggression, physiological and outplayed by the opposition events had difference scores that were not significantly different from zero meaning that these events were rated as equally stressful and challenging. Outcome and environmental events were rated as more challenging than stressful across the three game contexts.

Game Context- Preseason events were rated as equally stressful and challenging. Events in the regular season and playoff contexts were rated as more stressful than challenging. Playoff events had lower (more negative) scores than regular season events.

Interaction of Game Context and Event Type- Most event types showed decreases in difference scores from less important to more important game contexts. However, the change in difference scores was significantly smaller for injury, physiological and environmental events. Difference scores concerning opposition aggression events increased from preseason to playoff games.

Person Variables - Higher caliber players had higher difference scores than lower caliber players across contexts. Higher caliber players and players with higher competition motivations (SOQ-Compete) reported higher difference scores in the playoff context than did those players with lower scores on these person variables.

Interaction of Person Variables with Game Context -Higher caliber players, players who enjoy competition and players who believe winning is important showed smaller decreases in differences scores from preseason to playoff contexts than players with lower scores on these Person variables.

Interaction of Person Variables with Event Type -Players who are more motivated to win reported higher difference scores concerning opposition aggression events than those less motivated to win.

Discussion

The discussion is divided into two sections. In the first section, results pertaining to situation variables are discussed. In the second section, the relationships between person variables and appraisals are explored. This latter section also includes a discussion of the interactions between person and situation variables.

Situation Variables

The influence of two situation variables, event type and game context, and their interaction were investigated. The relationships between these variables and stress, challenge and difference score appraisals were examined using three research questions.

- 1) Do rugby players appraise some events differently than others?

Stress Appraisals

Stress appraisals did vary according to event type. “Being Outplayed by the Opposition” and “Skill Errors” were rated as the most stressful events overall and in the regular season and playoff contexts.

When other studies are considered, a direct comparison of the effect of event type on stress ratings is difficult because the categories of stressors vary between studies. Comparisons are further limited as, other than an investigation into sources of stress for basketball players (Madden et al., 1995), all authors have failed to ask participants to rate the stressfulness of each event. Rather, most investigators have ranked stressors according to the percentage of players identifying an event as a stressor (e.g. James & Collins, 1997) or according to the frequency of a stressor (e.g. Gould et al, 1983). For a more complete review of the manner in which stressors are normally ranked see Appendix A.

Despite these limitations, results from this study seem to support previous findings. “Being Outplayed by the Opposition” and “Skill Errors” are similar to events in the subcategory “Competitive Failure” which was the subcategory second most often identified as an acute source of stress in the Scanlan et al. (1991) study of figure skaters. “Skill Errors” may also be related to the Cohn (1990) category of “Playing Difficult Shots”, identified by 100% of junior golfers as a source of stress. In addition, “Being Outplayed” events were rated as the most stressful in basketball (Madden et al, 1995). In contrast, basketball players in the Madden study rated “Skill Errors” among the least stressful events.

This disagreement may be due to differences between basketball players and rugby players or between the sports themselves. As age was the only person variable for which mean values were reported in both studies ($M_{\text{rugby}}=22.6$ years, $M_{\text{basketball}}=23$ years), conclusions about potential differences between the two samples of athletes are not possible. However, an examination of the sports themselves does reveal a plausible explanation as to why skill errors in rugby may be more stressful than in basketball: A basketball error or turnover is far less costly than a rugby mistake.

Basketball teams average more scoring plays per game than do rugby teams. For example, in the gold and bronze medal matches at the 2000 Olympics, basketball teams averaged 26.75 scoring plays, not including free throws (International Olympic Committee, 2000). In the corresponding games at the 1999 Rugby World Cup, teams averaged only seven scoring plays, including all converts and penalty kicks (Rugby World Cup, 1999). The basketball player who makes a mistake knows there will be many more opportunities to score. The rugby player who makes an error may view his or her error as having greater consequences for the

team. As such, a “Skill Error” could be perceived, on average, as more significant and thus more stressful by rugby players than basketball players.

“Opposition Aggression” and “Environmental Circumstances” were rated as the least stressful event types overall and in all three contexts. “Environmental Circumstances” were also rated as among the least stressful events by wrestlers (Gould et al., 1993), and other athletes (James & Collins, 1997). Furthermore, crowd and poor weather (environmental circumstances) were among the least often cited sources of stress among youth golfers who participated in guided probe interviews (Cohn, 1990). “Opposition Aggression” has not been examined previously. However, the results from this study may not generalize to all other sports. As rugby is a contact sport in which opposition aggression occurs frequently, rugby players and other contact sport athletes, may be desensitized to acts of aggression that might produce appraisals of extreme stress in other athletes.

Challenge Appraisals

Challenge appraisals also varied according to event type. “Outplayed by the Opposition” and “Game Outcome” were rated as the most challenging events overall and in all three game contexts. As such participants perceived that these types of events provided opportunity and were potentially positive, stimulating and exciting (see operational definition of challenge in the methods section of this thesis). Conversely, “Interpersonal Conflict”, “Referee Decisions” and “Injury” were rated as the least challenging event types.

Research concerning challenge appraisals is extremely limited. In fact only one study that was found has explored this idea in a sporting context (Keller & Schilling, 1997). In this study of student applicants to a physical education

department, participants were asked to rate the extent to which they felt threatened and challenged by an upcoming athletic examination. However, the authors of this study obtained only one stress and one challenge appraisal prior to the exam. As such a comparison of challenge ratings across different event types was not possible. Further studies, of different populations and sports, using challenge ratings of multiple events will be needed in order to make comparisons with the findings of the current study.

Difference Scores

Difference scores also varied according to event type. “Injury”, “Referee Decisions”, “Interpersonal Conflict” and “Team Behaviours” were all rated as significantly more stressful than challenging. “Environmental Circumstances” and “Game Outcome” events were perceived as more challenging than stressful. Difference scores for “Opposition Aggression”, “Physiological Symptoms” and “Outplayed by the Opposition” events were not significantly different from zero, meaning that neither stress nor challenge ratings were significantly higher than each other on these type events.

While these difference scores are combinations of stress and challenge appraisals (challenge rating – stress rating) and do not represent any new data, they do provide some comparisons that would not be immediately apparent by viewing the stress or challenge appraisals by themselves. For example, “Outplayed by the Opposition” events were rated as the most stressful event type. An analysis that did not incorporate challenge and difference ratings might have lead to the conclusion that “Outplayed” events are inherently negative. However, the resultant difference score ($M = -.018$) was not significantly different from zero and revealed that “Outplayed” events can be both stressful and challenging.

2) Do rugby players appraise events in preseason, regular season and playoff games differently?

Player perceptions of game events varied according to the game context. Playoff games were rated as the most stressful, followed by regular season games and preseason games respectively. These results agree with previous investigations (e.g. Scanlan et al., 1991; James & Collins, 1997) that reported that the importance of the competition is a significant source of stress for many types of athletes. Challenge appraisals followed a similar pattern, as playoff events, followed by regular season and preseason events, were rated as most challenging.

Appraisals of events in “more important” games produced lower difference scores than events in “less important” games. Overall, events in the preseason context were viewed as similarly challenging and stressful ($M=+.129$, not significantly different from zero, $p>.05$). In the regular season ($M=-.833$, $p=.001$) and playoffs ($M=-1.610$, $p<.001$) events were perceived as more stressful than challenging.

3) Are changes in appraisal across contexts equal for all event types?

Stress

While there was a main effect of context, such that events in “more important” games were generally perceived as more stressful than events in “less important” games, this effect was not equal across all event types. Game context and event type interacted such that stress appraisals of some events were less susceptible to the effects of context than others. In particular, “Injury”, “Opposition Aggression” and “Environmental Circumstances” showed smaller increases in stress ratings from preseason to playoff contexts. The specific aspects of the situation variables that accounted for this interaction cannot be determined. However, all three event

types have less bearing on winning than many of the other event types. For example, items such as “You miss a tackle...” (Outplayed by the Opposition), “Your pass is intercepted...” (Skill Error) and “The other team scores two tries” (Outcome) clearly influence a team’s chances of winning. Conversely, while “Injury”, “Aggression”, and “Environment” items could have an effect, the relationship between these items and winning is less clear. As the main difference between the three game contexts in this study was the importance of winning, it seems possible that those events that influence winning would be more susceptible effects of game context. However, other game contexts, not used in this study, may produce different results. For example, players may perceive “Game Outcome” events in a trial game, in which players are selected for a representative team, as less stressful than any of the three contexts examined in this study.

Challenge

Game context and event type also interacted such that game context did not influence challenge appraisals in a uniform manner. While the other nine event types showed increases in challenge ratings from preseason to regular season to playoff games, preseason “Physiological Symptoms” were rated as more challenging than those in the regular season. While participants were not probed concerning the reasons behind their responses, it may be that players view lack of fitness as a natural and challenging part of preseason games. Their previous experiences might tell them that with hard work these physiological symptoms will be lessened and thus should be viewed as a challenge

Difference Scores

As discussed earlier, difference scores allow one to compare challenge and stress ratings. While most events were appraised as increasingly negative in more

important game contexts, this effect was not consistent across all event types. Some situations, such as opposition aggression, injuries, physiological symptoms and environmental events, showed smaller decreases in differences scores than other events. In fact, Opposition Aggression was similarly ($\Delta_{\text{pre-pla}} = +.084$, $p > .05$) in preseason and playoff games, suggesting that aggression seem to inspire feelings of excitement and challenge as much as feelings of frustration and anxiety regardless of game context.

Person Variables

The following is a discussion based on the three main research questions concerning Person variables and the interactions between Person and Situation variables.

- 1) Are there relationships between Person variables (coping resources, athletic identity, motivations and demographic variables) and event appraisals?
- 2) Interaction of Game Context and Person Variables -Are differences in appraisals between game contexts related to Person variables?
- 3) Interaction of Event and Person Variables -Are certain Person variables related to appraisals of some game events but not others?

The discussion is divided into three sections. In the first section the results pertaining to the demographic variables of age, experience, caliber and position are discussed. The second section examines the motivation variables of SOQ-Win, SOQ-Compete, SOQ-Goal and Athletic Identity. In the final section, relationships between appraisals and personal resources, as measured by the ACSI-28, are analyzed. The correlations between person variables and appraisals in this study ranged from $r = .149$ to $r = .348$ and according to Cohen's (1977) guidelines

represent small to medium strength associations (small $r=.1$, medium $r=.3$, large $r=.5$).

Demographic Variables

Of the four demographic variables (age, experience, player caliber and position), only age and caliber were related to athlete event appraisals. Caliber was related to playoff stress appraisals across the ten event types. Higher caliber athletes perceived playoff events as less stressful than did lower caliber athletes ($r=-.295$). In addition, higher caliber athletes showed smaller increases in stress from preseason to playoff games ($r=-.211$) and from regular season to playoff games ($r=-.233$). Player caliber was not related to challenge appraisals, however significant correlations existed between athlete skill level and difference scores. Higher caliber rugby players had higher overall and playoff difference scores than lower caliber athletes; better players tended to take a more positive outlook on taxing events. The current results appear to disagree with Scanlan and her colleagues' (1991) findings that youth and elite level figure skaters reported similar sources of stress. However, as actual ratings of stress or challenge were not obtained, a proper comparison between figure skaters' and rugby players' perceptions is not possible. As such the possibility remains that while similar sources were reported, the intensity of stress may have varied between youth and elite figure skaters much as it did for the different levels of rugby players in this study.

Age was also related to event appraisals. Older athletes viewed playoff events as less stressful than did younger players ($r=-.199$). Older athletes also reported smaller increases in stress from preseason to playoff games ($r=-.211$). Finally, older athletes reported lower stress appraisals ($r = -.272$) and challenge

appraisals (-.203) concerning environmental events. While age was related to event appraisals, no significant correlations between experience and athlete perceptions were found. This result is somewhat surprising as age and experience were highly correlated ($r = .668$). The fact that older athletes reported lower stress levels in more important games might be more a factor of their overall maturity levels than of their extra experience. While plausible, this kind of speculation does not help to resolve the conflict concerning the relationship between experience and event appraisals; Madden and his colleagues (1995) reported a positive correlation between experience and stress appraisals, while Gould and his colleagues (1983) reported a negative relationship.

Motivations

Significant relationships were found between event appraisals and player motivations to win, compete and achieve personal standards, as measured by the Sport Orientation Questionnaire (Gill & Deeter, 1988). Motivation to win was related to stress appraisals of game outcome events. Players who reported higher SOQ-Win scores appraised game outcome events as more stressful than players with less motivation to win ($r = +.201$).

That motivation to win was related to stress appraisals of game outcome events supports Lazarus' position in two ways. First, Lazarus suggests that person and situation variables interact such that a person variable will only influence appraisal in situations in which the person variable is relevant. Clearly, motivation to win would be more relevant in a game outcome situation than in an event that is not related to winning. Second, as Lazarus suggests one's commitment to a situation can be a double-edged sword. While few would argue that a motivation to win can be an advantage in competitive sports, the results of this study suggest

that this commitment may also be related to increased stress which could be detrimental to performance (Burton, 1988).

Motivation to achieve personal standards (SOQ-Goal) compete was also related to event appraisals. Players who scored higher on items such as “perform to the best of my ability” and “reach personal performance goals” (see Appendix C for complete list of SOQ items) reported higher stress concerning “outplayed by the opposition” and “team behaviour” events. These results provide further support for Lazarus’ contention that personal variables interact with situation variables to determine how the event will be appraised.

Event appraisals, especially concerning more important matches, were significantly related to one’s motivation to compete. Players who scored highly on the SOQ-Compete not only reported smaller increases in stress from preseason to playoffs ($r=-.224$) and from regular season to playoffs ($r=-.223$) but also had higher playoff difference scores ($r=+.201$) than did players who indicated lower motivations to compete. These players also indicated smaller decreases in difference scores from less important to more important game contexts and reported lower overall stress concerning “opposition aggression” events. Overall, players who were highly motivated to compete tended to take a more positive outlook upon increases in game importance.

This study’s final measure of motivation, Athletic Identity has been proposed as a measure of commitment, or psychological importance of sport. Much like the motivations that Lazarus’ speaks of, Brewer and his colleagues (1993) have suggested that athletic identity can act as a “Hercules’ muscle or an Achilles’ heel”. Madden and his colleagues (1995) provided support for the Achilles’ heel position when they found that basketball players with higher levels

of behavioural commitment (as measured by the number of training session per week) reported higher levels of stress concerning team performance situations. The Athletic Identity Measurement Scale (AIMS, Brewer et al., 1993) was employed as a cognitive measure of commitment in this study. However, the results failed to support the findings of Madden and his colleagues. No significant correlations were found between AIMS and player perceptions of the game events in the Rugby Game Events Questionnaire.

One reason behind this contradiction may be that the behavioural definition of commitment used by Madden, training sessions per week, does not necessarily reflect the psychological, or cognitive, commitment that the AIMS purports to measure. For example, training sessions per week may reflect a commitment to winning or achieving personal standards, while the AIMS may measure a commitment to the role of athlete. Perhaps the inclusion of events that threaten a player's long-term ability to participate in rugby, such as debilitating injury or de-selection, would have produced significant correlation between event appraisals and AIMS scores.

Resources

Three of the seven resources measured by the ACSI-28 (Smith et al., 1995) were related to stress appraisals. However, only two of these “resources”, Freedom from Worry” and “Confidence” were negatively correlated with stress appraisals. High Freedom from Worry scores were related to lower overall stress appraisals ($r=-.317$) and playoff game stress appraisals ($r=-.280$). Players high in Freedom from Worry also reported lower stress appraisals concerning “interpersonal conflict”, “skill error”, “game outcome”, “physiological symptoms” and “teammate behaviours”. Confidence was also a resource for the players, as

those high in confidence reported lower stress concerning opposition aggression events.

Players with high scores on the third correlated resource, Goalsetting Behaviour which includes such items as “I tend to do lots of planning about how to reach my goals”, actually reported higher levels of stress concerning referee decisions ($r=+.262$), physiological symptoms ($r=+.348$) and team behaviours ($r=+.257$). As such, Goal Setting Behaviour did not appear to act as a resource for the players in this study. Rather, Goal Setting seems to reflect a motivation or commitment that is related to increased stress concerning certain types of events. Indeed, goal setting behaviour was highly correlated ($r=+.586$) with motivation to achieve personal standards, as measure by the SOQ-Goal.

Conclusions

The results contribute to our understanding of athletic stress in a number of ways. First, the study provides information concerning situation variables in the appraisal process. The most and least stressful and challenging events in rugby were identified. Comparisons can now be made both between rugby and other sports and rugby players and other athletes. This study also revealed the influence of game context. Specifically, events in more important games (playoff) were perceived as more stressful and challenging than those in less important contests (preseason and regular season). While this relationship seems logical, this situation variable had not been examined in previous studies. Future work could incorporate other contexts such as practices and trial games.

The second area in which this research contributes concerns the relationships between person variables and event appraisals. For the first time, the ACSI-28 was used to investigate the relationship between an athlete's resources and his appraisal of a number of taxing events. The results generally support the contention that those individuals with greater coping resources will appraise events as less stressful than those with less coping resources (Lazarus & Folkman, 1984; Smith, 1986). Specifically, the resources "Freedom from Worry" and "Confidence" were related to lower stress appraisals. However, the results also suggest that the inclusion of "Goal Setting Behaviour" as a coping skill in the ACSI-28 may be flawed. "Goal Setting Behaviour" was highly correlated (corr=+.586) with motivation to achieve personal standards (SOQ-Goal, Gill and Deeter, 1988) and both variables were related to higher stress appraisals.

Motivations to win (SOQ-Win) was also related to increased stress appraisals. However, while both were correlated with higher stress appraisals,

neither were related across all types of events. Rather, as predicted by Lazarus (1966, 1984, 1999) and Smith (1986) motivational variables interacted with the nature of the situation, such that motivations were only related to stress appraisal in relevant situations. For example, motivation to win was only related with higher stress in situations that involved game outcome.

Finally, two demographic variables, player caliber and age were also related to stress appraisals. Specifically, higher caliber and older players reported lower stress concerning league playoff games and smaller increases in stress from preseason and regular season to playoff games. These results suggest, not surprisingly, that older and higher caliber players may be better able to handle the pressures of playoff games.

Future Research

This study successfully described many of the relationships between person/situation variables and event appraisals. However, the underlying cognitions and causes of many of these relations can not be deduced from these results. For example, while the fact that higher caliber players report lower level of stress concerning club playoff games seems clear, the question remains: Are these players better because of their ability to perceive big game pressure as less stressful or does the experience they have gained at representative levels makes league playoff games seem less threatening? While this study did expand on previous sport stress research and describe a number of previously unidentified relationships, many questions about the causes underlying these relationships still need further exploration. Future researchers should attempt to discover, possibly using qualitative techniques, not only the nature of the relationships between

person and situation variables and appraisals, but also the reasons why each athlete perceives a situation to be stressful and/or challenging.

Potential Applications

Coaches and sport psychologists should attempt to evaluate and understand both their player's coping resources and their motivations. Coaches should be especially aware of players who lack confidence or tend to worry. These players may be more likely to perceive taxing events as more stressful and may react with poor performance or inappropriate behaviour that may detract from the team's goals. All players, but especially those with poor coping resources, may benefit from coping skills training (e.g. Smith & Bovbjerg, 1989).

Coaches and players must also recognize the potential double edge sword of some motivators. Clearly the will to win (SOQ-Win) and the will to achieve personal standards (SOQ-Goal) can aid both athlete preparations and performance. However, these motivators may also make players more susceptible to stress. Coping skills training may be especially important for those players with high win and goal orientations.

Conversely, the motivation to compete may actually help players to view taxing events as less stressful. In the present study, players who enjoyed competition reported lower levels of stress during club playoff games and indicated smaller increases in stress from less important to more important games. Perhaps it is this desire to compete that coaches should be encouraging in all athletes, but especially in young players who are developing their stress appraisal and coping styles.

Finally, players must be encouraged to actively choose how they perceive an event. While some situations tended to be viewed more one way than

another, all events in this study were appraised as both challenging and stressful. Each situation has the potential to be positive and/or negative for each individual and stress can be seen to be truly in the eye of the beholder. Coaches must encourage athletes encouraged to view taxing events as less an anxiety producing stressor and more an inspiring challenge.

Appendix A: Review of Literature and Reference List

Definitions of Stress and the Stress Appraisal Process

Three types of definitions of stress are most common (Lazarus & Folkman, 1984). First, stress has been defined in terms of objective stimuli (e.g. Spielberger, 1972). This type of definition assumes that certain objective characteristics of an event or circumstance necessarily make it stressful for an individual. This definition ignores individual variations in vulnerability to the stressor.

The second way of conceptualizing stress is through reactions. For example, Selye (1980,1991) has defined stress as “the nonspecific response of the body to a demand”. Selye suggests that every stressor produces a physiological process known as the General Adaptation Syndrome (GAS) in which bodily and chemical changes are made in order to deal with the stressor. Selye’s theory is primarily a biological one and its application to psychological stress may be limited for two reasons (Lazarus & Folkman, 1984). First, a response definition of stress does not allow one to predict which events will be stressful, as a stressor is defined as such only if it produces the GAS nonspecific response. This reasoning is circular and does not indicate why a specific set of stimuli produces a stress response and what it is about the response that makes it a stress response. Second, many physiological indicators of stress, such as increased heart rate, do not necessarily indicate psychological stress. For example, despite the fact no increase in psychological stress has occurred, a runner’s heart rate will increase if he or she runs faster. A response definition of stress is clearly limited by these factors.

Finally, more recent researchers have suggested a relational or interactional definition of stress. For example, Lazarus and his colleagues (1966, 1984, 1999) suggest that “psychological stress is a particular relationship between

the person and the environment that is appraised by the person as taxing or exceeding his or her resources.”

According to Lazarus (1966) initial appraisal of any event or circumstance can be divided into two separate but related processes: primary and secondary appraisals. Primary appraisal, examines the nature of the stimuli and determines if the event is to be perceived as irrelevant, positive or stressful. Stressful appraisals can take three forms: harm, threat or challenge. Harm refers to psychological or physiological damage that has already occurred, threat pertains to potential future harm and challenge refers to taxing situations in which there is potential for gain or benefit. Threat and challenge appraisals “are not poles of a single continuum; they can occur simultaneously, and must be considered as separate although often related constructs” (Lazarus and Folkman, 1984, p.53).

Secondary appraisal compares the demands of the situation with the resources of the individual to determine his or her coping potential specific to the situation or event. Secondary appraisals are similar to Bandura’s concept of outcome expectations, in which an individual estimates the likelihood of his or her ability to produce a desired outcome in a specific situation (Bandura, 1977, 1986, 1997). Whereas primary appraisal would determine the nature of the stressor, secondary appraisal would help determine how harmful, threatening and/or challenging the event is.

Research using the Lazarus model of appraisal is widespread (Lazarus, 1999) and its terminology is equally pervasive (e.g. Anshel, 1990). However the title of primary and secondary appraisals “are unfortunate as they seem to indicate that one precedes another in time” (Lazarus & Folkman, 1984, p.31). This interpretation was not intended, as primary and secondary appraisals occur

simultaneously and interact to determine the degree of stress and the strength and quality of the emotional reaction (Lazarus and Folkman, 1984, p.35).

The idea that the nature of the situation and the individual characteristics of the athlete interact and influence subsequent cognitive appraisals is vital in Lazarus' conceptualization of the stress appraisal process.

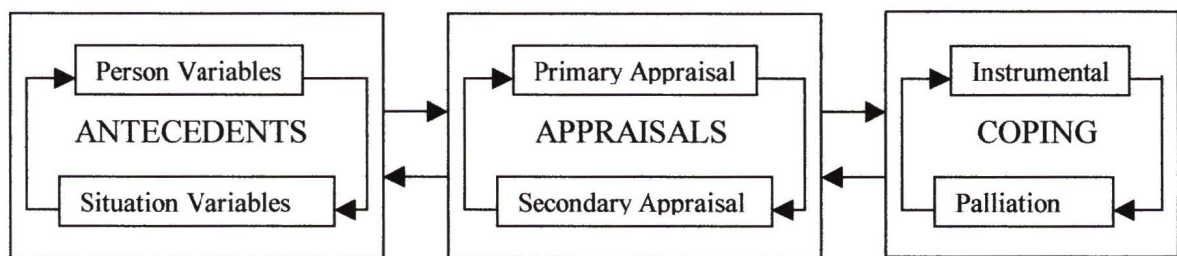


Figure 11. Lazarus' Model of the Stress Process

Smith (1986) has adapted this interactional model to a sporting context by proposing that athletes are subjected to both physical and psychological demands. When these demands tax the physiological, behavioural and psychological resources of the competitor, athletic stress is said to exist. Smith's model of athletic stress is presented below (Figure 2).

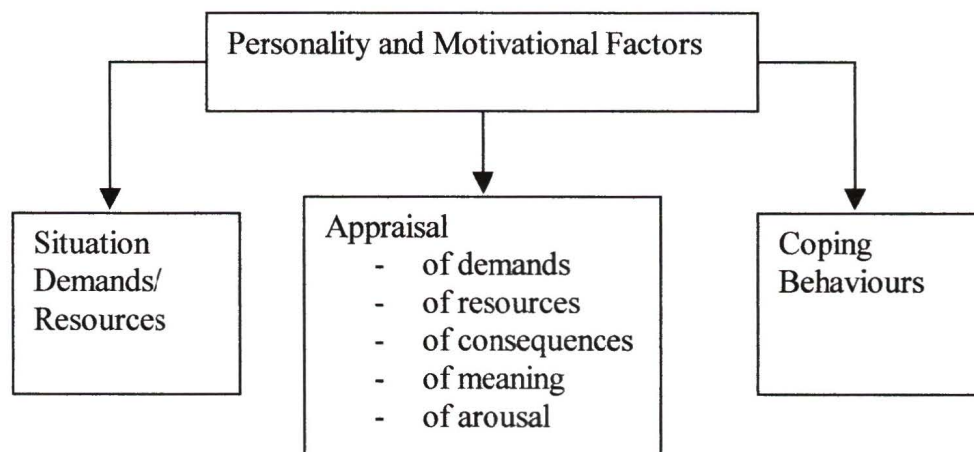


Figure 12. Smith's Model of the Stress Process

As in Lazarus' model, cognitive appraisal of demands and resources plays a key role in Smith's model of athletic stress. Smith suggests that "people create their own psychological reality to which they respond"(Smith 1986, p.109). He also suggests that individual differences play a vital role in the perception of balance (or imbalance) of demands and resources. While both models emphasize the interaction between the person and the environment, an important difference in the way the two theorists view appraisals of taxing situations exists. Lazarus suggests that appraisals of threat and challenge can occur simultaneously. That 94% of students report both challenge and threat emotions prior to an exam (Lazarus and Folkman, 1984), seems to support this idea. However, Smith (who uses the term stress rather than threat) suggests that when demands slightly exceed resources, the situation is likely to be viewed as challenging. But when a significant imbalance occurs...then the situation is likely to be regarded as stressful" (Smith, 1986, p.110). This statement seems to imply that Smith views stress(threat) and challenge as different points on the same continuum, however he does not present empirical evidence to support this claim.

The purpose of this research project was to uncover the variables that influence athlete appraisals of taxing events. As such, the influence of situational and person variables and their interactions on appraisal of taxing events will be the focus of the remainder of this review.

Influence of Person Variables on Appraisals

Lazarus (1984) has suggested that person factors can influence event appraisals. While he does not discount the possibility that more factors exist, much of his work has focused on one's commitments, beliefs and resources and the influence these factors have on appraisals. Smith (1986) has outlined similar person factors

in a sporting context. While Smith uses the terms motivations, individual difference variables and resources, the meanings behind Smith's and Lazarus' titles are similar.

Commitments

Commitments determine what is important, what has meaning and what is at stake (Lazarus & Folkman, 1984). Furthermore, commitments, or motivations, influence appraisal by way of three mechanisms. First, our motivations guide us towards, or away from certain activities that are perceived as harmful, threatening or challenging. For example, the athlete who is committed to winning, and believes lifting weights will facilitate this goal, will likely devote a portion of his or her time to strength training even if he or she doesn't necessarily enjoy the activity.

Second, commitments may influence the cues one attends to in the environment. For example, players more motivated to win may be more sensitive to an uneven number of penalties being awarded by a referee. A player less motivated to win may not even notice this disparity. As Smith (1986) notes "needs for competence, mastery, affiliation and power each can cause the athlete to respond to particular aspects of the athletic environment. (p.106). Finally, commitments influence appraisal through tier relationships with psychological vulnerability. The extent to which an athlete is motivated, or committed, to a person-environment transaction is related to the potential for that encounter to be stressful and/or challenging. As such, athletes who are motivated to achieve high personal standards will likely find personal skill errors more stressful than those who are not committed to these goals.

However, the strength of one's motivations may also lead to increased coping efforts to battle adversity and achieve goals one views as important. In this sense, motivations can serve as a double edge sword -making one vulnerable to stress, but also providing resilience to view the situation as a challenge and cope effectively.

Beliefs

Lazarus also suggests that our beliefs shape our understanding of a situation acting like a perceptual lens. For example, beliefs about locus of control may influence event appraisal. Both Bandura (1977) and Lazarus and Folkman (1984) have suggested that events that are controllable are less threatening. It follows that those people with a general internal locus of control will appraise many events as less stressful than those with a general external locus of control.

Smith (1986) also suggests that individuals "create their own psychological reality to which they respond" (1986). He states that individual differences in personality can influence one's perception of events. For example, an athlete "low in self confidence may perceive a greater discrepancy between demands and resource than is actually the case. Conversely, a self-assured athlete may perceive a smaller discrepancy than actually exists. It follows, that it is the perception of balance and imbalance rather than the actual state of affairs that in the end determines how stressed an athlete will become."(p.109)

Resources

Both Smith and Lazarus view event appraisal, at least in part, as a comparison of demands and resources. As such both authors suggest that coping resources are among the person variables that influence appraisal. Smith proposes that physical skills, social skills, social support and self worth are among the coping resources

that can help an athlete view the balance between demands and resources favourably. For example, Smith (1986) suggests that “it is clear that an athlete who believes that his or her basic self worth is defined by his or her athletic success will attribute different meaning to athletic outcomes than will an athlete whose self-worth is more securely and realistically anchored. For the former, winning can become literally a life or-or-death situation, whereas the athlete who can divorce self-worth from success will attribute a less urgent personal meaning to success or failure”(p.110)

Smith et al.(1995) have developed a measure of athletic coping skills; The Athletic Coping Skills Inventory-28 (ACSI-28). While the scale has been shown to predict performance and survival in competitive sport (Smith & Christensen, 1995), the relationship between the seven subscales of the ACSI-28 and athlete appraisals of events has not been investigated.

Research concerning other person factors that may be associated with sport event appraisals is also limited. The few studies in this area have focused on the person variables of experience (Gould et al, 1983; Madden et al., 1995), trait anxiety (Gould et al.,1983), commitment (Madden et al., 1995) and gender (Madden & Kirby,1995). All three studies found that person factors were related to stress appraisals. However, person and situation variables interacted such that the person variables were related to stress appraisals in some types of events and not others. Specifically, Gould et al. (1983) found that experience was negatively related to worry, but only concerning fear of failure types of stressors. Trait anxiety was also related to worry, however only in fear of failure and social evaluation types of situations. Madden et al. (1995) reported that experience was also negatively correlated with stress appraisal but only in being outplayed by the

opposition types of situations. Commitment was also correlated with stress appraisals, but only for team performance types of stressors. Finally, Madden and Kirby (1995) reported that gender was related to stress appraisals however, only in team performance situations, in which men reported greater stress appraisals than women. These interactions of person and situation variables seem to provide support for Lazarus' and Smith's models of stress appraisal. However, more work must be done to identify the beliefs, commitments and resources (or motivations, individual difference variables and resources as Smith names them) that influence event appraisals in sport.

Influence of Situation Variables on Appraisals

As Lazarus and Folkman (1984) suggest situation and person factors are always interdependent, however, a number of situation variables that influence appraisals have been identified. Novelty, uncertainty and temporal factors can influence stress appraisals. Briefly stated, events that are completely novel will not be appraised as stressful. However, appraisal of a somewhat novel situation will be influenced by experiences with similar situations and general knowledge. Important and taxing events that have an outcome that is uncertain or are imminent, longer in duration, or unpredictable in terms of when they will occur are also appraised as more stressful.

While these factors have been studied in the parent discipline, sport psychology researchers have chosen a more applied line of inquiry. Indeed sport researchers have focused on the types of events athletes find stressful. These authors have examined stressful situations in a variety of sports using both qualitative and quantitative techniques.

Qualitative Research

Open-ended interviews are a popular of investigating sources of stress in athletes (e.g. James & Collins, 1997; Cohn,1990; Scanlan et al., 1991). All three of these studies used the Scanlan et al. (1991) definition of stress:

“Negative emotions, feelings and thoughts that you might have had with respect to your skating experience. These would include feelings of apprehension, anxiety, muscle tension, nervousness, physical reactions(such as butterflies in the stomach, shaking or nervous sweating), thoughts centered on worry and self doubt, and negative statements to yourself.”(p.105)

The authors of these studies employed inductive content analyses to classify stressors associated with sport. A summary of their findings follows:

Scanlan and her colleagues(1991) identified five main stress sources for elite figure skaters.

- 1) Negative Aspects of Competition (identified by 81% of the 22 participants), including importance of competition (12%) and competitive failure(35%).
- 2) Negative Significant Other Relations (77%), including interpersonal conflict (46%) and psychological warfare(15%).
- 3) Demands and Costs of Skating (27%).
- 4) Personal Struggles (65%), including physical or mental difficulties such as injury (23%).
- 5) Traumatic Experiences (19%).

James and Collins (1997) identified eight sources of stress for 20 athletes from a variety of sports and competitive levels.

- 1) Significant Other Stressors (22.9%).

- 2) Social Evaluation (20.8).
- 3) Competition Anxiety (16.7%).
- 4) Perceived Readiness Issues (14.6%).
- 5) Nature of Competition (8.3%).
- 6) Environment (8.3%).
- 7) Not Performing to Required Standard (4.2%).
- 8) Miscellaneous (4.2%) including fatigue and injury.

Finally, using open-ended interviews followed by probes based on the findings of Scanlan's (1988,1991) work with figure skaters, Cohn (1990) identified six categories of stressors that were relevant for youth golfers:

- 1) Trying to perform up to personal standards (100%).
- 2) Playing difficult shots (100%)
- 3) Crowd (90%).
- 4) Practicing less than desired (90%).
- 5) Poor weather (90%).
- 6) Meeting Parents Expectations (90%).

Quantitative Research

Both Gould et al. (1983) and Madden et al. (1995) used likert scale based measures to identify sources of stress in competitive wrestlers and basketball players, respectively. The questionnaire used by Gould et al.(1983) asked 458 wrestlers to rate how frequently they experienced each of thirty-three sources of stress. Each potential source of stress was adapted for wrestling from Knoll's(1980) exploratory study of stress in athletes. The 84 basketball players in the Madden et al. (1995) study were asked to rate each of twenty potential

stressors on a likert scale ranging from not at all stressful to very stressful. A summary of their findings follows:

Gould et al.(1983) reported that wrestlers became nervous or worried before or during 66% of matches. Performing to ones ability (53.2% rated this item as occurring a lot, almost always or always), improving on the last performance (48.6%), participating in championship meets (44.4%) not wrestling well (42.4%) and losing (44.4%) were the most frequently reported stressors. Making my opponent look foolish (4.8) and spectators getting on me(3.8%) were the least frequently reported stressors A factor analysis with a varimax rotation revealed three main sources of stress from the 33 items. These factors were named:

- 1) Fear of Failure/Inadequacy
- 2) External Control Guilt
- 3) Social Evaluation

Madden et al. (1995) identified six categories of acute stressors in basketball:

- 1) Being Outplayed
- 2) Errors in Personal Skill
- 3) Errors in General Play
- 4) Game Tension
- 5) Team Performance
- 6) Other Performance

Participants rated items from Being Outplayed and Errors in General Play as the most stressful. Team Performance and Errors in Personal Skills were rated as least stressful. Madden et al. (1995) also reported that their sources of stress categories agreed with a study of acute sources of stress in basketball conducted

by Wells and Anshel (1994). The latter study, in which the authors used content-analytic techniques, identified Interpersonal Conflicts, Refereeing Decisions, Personal Performance Problems, Opposition Influences and Team Behaviours as sources of stress for basketball players.

Methodological Issues

Studies examining sources of stress in sports have identified both acute stressors (those that actually occur during competition) and stressors that surround competition (e.g. James & Collins, 1997; Madden et al., 1995; Scanlan et al, 1991; Cohn, 1990; Gould et al., 1983). Stressors surrounding competition have included demands and costs of competing -balancing school and golf (Cohn, 1990) and dealing with sport politics (Scanlan et al. 1991). As Madden et al. (1995) noted only three studies (Madden et al., 1990; Wells & Anshel, 1994; Madden et al. 1995) have investigated the stressors that occur during competition. All the participants in these studies were basketball players.

Sources of stress have not only been identified but also ranked according to their stressfulness. However, the method by which one stressor is determined to be more stressful than another has varied between studies. Some qualitative studies (e.g. James & Collins, 1997; Scanlan et al, 1991; Cohn, 1990) have equated stressfulness with percentage of participants who identify the event or circumstance as a source of stress. Gould et al. rated those events that occurred more frequently (a lot, almost always, or always) as more stressful than those that occurred less frequently. Lastly, Madden et al.(1995) asked participants to rate each event on a likert scale with end points of “not at all stressful” and “very stressful”.

Finally, while both Lazarus (1966, 1984) and Smith (1986) suggest that appraisals of stress (or threat) and challenge of taxing events are possible, researchers have chosen to focus on stress appraisals. Only one study (Keller & Schilling, 1997) has measured both threat and challenge appraisals of an event in a sporting context. Challenge appraisals have not only been largely ignored, but anxiety researchers have also “mistakenly mislabeled ...challenge and self-confidence as facilitative anxiety” (Burton & Naylor, 1997, p.297). According to Lazarus (1991) anxiety is an emotion that results from a primary appraisal of threat/stress. Emotions such as confidence or excitement are associated with challenge appraisal and should be distinguished from anxiety. Indeed, as Burton and Naylor(1997) suggest “the challenge confronting anxiety researchers is to develop a conceptually more explicit definition of anxiety that separates negative affective states (e.g. anxiety) that have debilitating effects on performance from positive affective states (e.g., challenge, excitement or self confidence) that facilitate performance”(p.299).

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Appendix B: Additional Results

Relationships between Personal Variables and Mean Stress Appraisals (Sig.)

Variable	Df	F-value	p-value	Correlation with Total Stress Score
Age	1,105	.870	.353	-.090
Experience	1,105	.034	.855	.029
Caliber	1,105	3.046	.084	-.167
Position	1,105	.190	.664	-.058
Ability to Deal with Adversity	1,105	.05	.824	.008
Coachability	1,105	.074	.787	.052
Concentration	1,105	.116	.734	.066
Confidence	1,105	.069	.793	-.023
Goalsetting Behaviour	1,105	2.380	.126	.181
Peak Under Pressure	1,105	.026	.873	.020
Freedom from Worry	1,105	11.727	.001	-.317
SOQ-Compete	1,105	.002	.967	-.010
SOQ-Win	1,105	.874	.352	.092
SOQ-Goal	1,105	.916	.341	.098
AIMS	1,105	1.553	.216	.123

Note: Total Stress Score is mean of stress appraisals of all thirty events in all three contexts.

Relationships Between Personal Variables and Playoff Stress Appraisals

Variable	Df	F-value	p-value	Correlation with Playoff Stress Score
Age	1,105	4.302	.041	-.199
Experience	1,105	.088	.767	-.024
Caliber	1,105	4.963	.009	-.295
Position	1,105	.195	.660	-.051
Ability to Deal with Adversity	1,105	.057	.812	.036
Coachability	1,105	.002	.966	.011
Concentration	1,105	.155	.695	.058
Confidence	1,105	1.510	.222	-.122
Goalsetting Behaviour	1,105	.013	.909	.002
Peak Under Pressure	1,105	.439	.509	-.064
Freedom from Worry	1,105	9.227	.003	-.280
SOQ-Compete	1,105	1.757	.188	-.134
SOQ-Win	1,105	.01	.919	.007
SOQ-Goal	1,105	.022	.833	.014
AIMS	1,105	.642	.425	.076

Note: Playoff Stress Score is the mean of stress appraisals of all thirty events in the playoff context.

Relationships between the Increase in Stress Appraisals Between Contexts and Personal Variables(Statistically Significant Interactions in Bold)

Variable	Follow Up Hypothesis Test	df	F-value	p-value	Correlation with increase in stress between contexts
Age		2,210	4.469	.013	
	Age*pre-playoff	1,105	4.932	.029	-.211
	Age*reg-playoff	1,105		>.05	N.S.
Experience		2,210	.715	.491	
Caliber		2,210	5.442	.005	
	Caliber*pre-playoff	1,105	5.587	.020	-.225
	Caliber*reg-playoff	1,105	6.022	.016	-.233
Position		2,210	.148	.862	
Ability to Deal with Adversity		2,210	.452	.637	
Coach		2,210	.377	.686	
Concentration		2,210	.056	.945	
Confidence		2,210	3.078	.048	
	Confid*pre-playoff	1,105		>.05	N.S.
	Confid*reg-playoff	1,105		>.05	N.S.
Goalset		2,210	9.749	<.001	
	Goalset*pre-playoff	1,105	10.671	.001	-.305
	Goalset*reg-playoff	1,105	10.813	.001	-.306
Peak Under Pressure		2,210	2.146	.120	
Freedom from Worry		2,210	.244	.784	
SOQ-Compete		2,210	4.918	.008	
	Comp*pre-playoff	1,105	5.488	.021	-.224
	Comp*reg-playoff	1,105	5.425	.022	-.223
SOQ-Win		2,210	2.772	.065	
SOQ-Goal		2,210	2.177	.116	
AIMS		2,210	.723	.486	

Relationships between Personal Variables and Overall Appraisals (Sig.)

Variable	Df	F-value	p-value	Correlation with Overall Difference Score
Age	1,105	.259	.612	
Experience	1,105	.638	.426	
Caliber	1,105	7.096	.009	.252
Position	1,105	.563	.455	
Ability to Deal with Adversity	1,105	.000	.990	
Coachability	1,105	.218	.641	
Concentration	1,105	1.135	.289	

Confidence	1,105	1.628	.205
Goalsetting Behaviour	1,105	.014	.905
Peak Under Pressure	1,105	1.96	.165
Freedom from Worry	1,105	1.588	.210
SOQ-Compete	1,105	2.035	.157
SOQ-Win	1,105	.301	.584
SOQ-Goal	1,105	.687	.409
AIMS	1,105	.008	.927

Note: Overall Difference Score is average of difference appraisals of all thirty events in all three contexts.

Relationships between Personal Variables and Playoff Difference Appraisals (Sig.)

Variable	Df	F-value	p-value	Correlation with Playoff Difference Score
Age	1,105	.501	.480	
Experience	1,105	.892	.347	
Caliber	1,105	4.730	.011	.271
Position	1,105	.474	.493	
Ability to Deal with Adversity	1,105	.074	.786	
Coachability	1,105	.392	.533	
Concentration	1,105	.416	.520	
Confidence	1,105	1.802	.182	
Goalsetting Behaviour	1,105	.474	.493	
Peak Under Pressure	1,105	3.225	.075	
Freedom from Worry	1,105	1.331	.251	
SOQ-Compete	1,105	4.375	.039	.201
SOQ-Win	1,105	1.006	.318	
SOQ-Goal	1,105	.666	.416	
AIMS	1,105	.044	.834	

Note: Playoff Difference Score is average of difference appraisals of all thirty events in the playoff context.

Appendix C: Questionnaires

Athlete Information Form

Name: _____

Current Club: _____

Age: _____

Years Playing Rugby (Total): _____

Levels you have played at (check all that apply):

1. Provincial Junior Rep. _____
2. Canada Junior Rep _____
3. First Division Club _____
4. Premier Division Club _____
5. Rugby Canada Super League _____
6. Provincial Senior Men _____
7. National Senior Men's (XVs or 7s) _____
8. Other (specify) _____

Division I play the majority

of my club games in (circle one): Premier / First Division

Position I play the most: _____

Phone #: _____

Rugby Game Events Questionnaire

You will be asked to rate a number of rugby events. For each event you will be asked to rate it as though it happened during a pre-season game, a regular season game and a play-off game. You will be asked how challenging the event is in each of the three contexts: pre-season, regular season, and play-offs. You will also be asked how stressful a situation is in each of the three contexts.

Definition of Challenging: An event or situation that is difficult but potentially positive and stimulating. These events are often exciting and provide opportunities.

Definition of Stressful: An event or situation that is difficult and negative. These events are often tension filled and/or frustrating.

Remember, your answers are completely confidential and once your form is completed your name will be replaced with a code.

Please:

- 1) Take your time, but don't get stuck on one question.
- 2) Try to imagine yourself in each situation. How would you actually feel in each situation?
- 3) Answer each question as honestly as you can.
- 4) Remember rate each situation in terms of how stressful AND how challenging it is. If a situation is NOT challenging at all circle "0" beside the challenge rating. If a situation is NOT stressful at all circle "0" beside the stressful rating.

1. Your pass is intercepted by the opposition.

	Not at All				Very
During a preseason game having your pass intercepted is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game having your pass intercepted is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game having your pass intercepted is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

2. You are cut badly and are bleeding heavily

	Not at All				Very
During a preseason game being cut badly is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game being cut badly is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game being cut badly is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

3. The field is in poor condition

		Not at All				Very
During a preseason game poor field conditions are:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a regular season game poor field conditions are:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a playoff game poor field conditions are:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4

4. Argument with teammate

		Not at All				Very
During a preseason game an argument with a teammate is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a regular season game an argument with a teammate is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a playoff game an argument with a teammate is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4

5. A poor refereeing decision against a teammate (e.g. forward pass)

	Not at All				Very
During a preseason game a poor refereeing decision against a teammate is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game a poor refereeing decision against a teammate is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game a poor refereeing decision against a teammate is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

6. Trash talking or baiting by the opposition

	Not at All				Very
During a preseason game trash talking or baiting by the opposition is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game trash talking or baiting by the opposition is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game trash talking or baiting by the opposition is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

7. Your teammates keep knocking the ball on resulting in turnovers

		Not at All				Very
During a preseason game teammate knock on/turnovers are:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a regular season game teammate knock on/turnovers are:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a playoff game teammate knock-on/turnovers are:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4

8. The other team scores two quick tries at the very beginning of the game

		Not at All				Very
During a preseason game two quick opposition tries at the beginning of the game are:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a regular season game two quick opposition tries at the beginning of the game are:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a playoff game two quick opposition tries at the beginning of the game are:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4

9. Your fitness is poor and you feel out of breath during the game

	Not at All				Very
During a preseason game having poor fitness and feeling out of breath is					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game having poor fitness and feeling out of breath is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game having poor fitness and feeling out of breath is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

10. You knock the ball on resulting in a turnover.

	Not at All				Very
During a preseason game knocking the ball on is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game knocking the ball on is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game knocking the ball on is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

11. You are lazy in support and the other team got the ball.

Not
at
All

Very

During a **preseason** game being lazy in support and the other team getting the ball is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **regular season** game being lazy in support and the other team getting the ball is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **playoff** game being lazy in support and the other team getting the ball is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

12. Extreme violence such as biting or gouging.

Not
at
All

Very

During a **preseason** game extreme violence such as biting or gouging is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **regular season** game extreme violence such as biting or gouging is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **playoff** game extreme violence such as biting or gouging is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

13. A poor refereeing decision against you (e.g. offside).

	Not at All					Very
During a preseason game a poor refereeing decision is:						
Stressful	0	1	2	3	4	
Challenging	0	1	2	3	4	
During a regular season game a poor refereeing decision is:						
Stressful	0	1	2	3	4	
Challenging	0	1	2	3	4	
During a playoff game a poor refereeing decision is:						
Stressful	0	1	2	3	4	
Challenging	0	1	2	3	4	

14. Your team is winning but the other team is mounting a comeback and the momentum is in their favour.

	Not at All					Very
During a preseason game a comeback by the other team is:						
Stressful	0	1	2	3	4	
Challenging	0	1	2	3	4	
During a regular season game a comeback by the other team is:						
Stressful	0	1	2	3	4	
Challenging	0	1	2	3	4	
During a playoff game a comeback by the other team is:						
Stressful	0	1	2	3	4	
Challenging	0	1	2	3	4	

15. Your team's tactics are limiting your offensive opportunities.

		Not at All				Very
During a preseason game team tactics that limit your offensive opportunities:	Stressful	0	1	2	3	4

	Challenging	0	1	2	3	4
--	--------------------	----------	----------	----------	----------	----------

During a **regular season** game team tactics that limit your offensive opportunities:

	Stressful	0	1	2	3	4
--	------------------	----------	----------	----------	----------	----------

	Challenging	0	1	2	3	4
--	--------------------	----------	----------	----------	----------	----------

During a **playoff** game poor team tactics that limit your offensive opportunities:

	Stressful	0	1	2	3	4
--	------------------	----------	----------	----------	----------	----------

	Challenging	0	1	2	3	4
--	--------------------	----------	----------	----------	----------	----------

16. Argument with your coach

		Not at All				Very
During a preseason game an argument with your coach is:	Stressful	0	1	2	3	4

	Challenging	0	1	2	3	4
--	--------------------	----------	----------	----------	----------	----------

During a **regular season** game an argument with your coach is:

	Stressful	0	1	2	3	4
--	------------------	----------	----------	----------	----------	----------

	Challenging	0	1	2	3	4
--	--------------------	----------	----------	----------	----------	----------

During a **playoff** game an argument with your coach:

	Stressful	0	1	2	3	4
--	------------------	----------	----------	----------	----------	----------

	Challenging	0	1	2	3	4
--	--------------------	----------	----------	----------	----------	----------

17. You are responsible for a mistiming in a back maneuver or a line-out which results in a turnover

		Not at All				Very
During a preseason game a mistiming, caused by you, that results in a turnover is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4

During a **regular season** game a mistiming, caused by you, that results in a turnover is:

Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

During a **playoff** game a mistiming, caused by you, that results in a turnover is:

Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

18. You miss a tackle on your opposite number.

			Not at All			Very
During a preseason game missing a tackle on your opposite number is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a regular season missing a tackle on your opposite number is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a playoff game missing a tackle on your opposite number is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4

15. Your team's tactics are limiting your offensive opportunities.

Not
at
All

Very

During a **preseason** game team tactics that limit your offensive opportunities:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **regular season** game team tactics that limit your offensive opportunities:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **playoff** game poor team tactics that limit your offensive opportunities:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

16. Argument with your coach

Not
at
All

Very

During a **preseason** game an argument with your coach is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **regular season** game an argument with your coach is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **playoff** game an argument with your coach:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

17. You are responsible for a mistiming in a back maneuver or a line-out which results in a turnover

Not
at
All

Very

During a **preseason** game a mistiming, caused by you, that results in a turnover is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **regular season** game a mistiming, caused by you, that results in a turnover is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **playoff** game a mistiming, caused by you, that results in a turnover is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

18. You miss a tackle on your opposite number.

Not
at
All

Very

During a **preseason** game missing a tackle on your opposite number is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **regular season** missing a tackle on your opposite number is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **playoff** game missing a tackle on your opposite number is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

19. You must leave the game due to an injury

	Not at All				Very
During a preseason game leaving the game due to injury is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game leaving the game due to injury is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game leaving the game due to injury is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

20. You are rucked or punched by the opposition.

	Not at All				Very
During a preseason game being rucked or punched is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game rucked or punched is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game rucked or punched is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

21. You have little energy prior to the game.

	Not at All				Very
For a preseason game having little energy prior to the game is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
For a regular season game having little energy prior to the game is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
For a playoff game having little energy prior to the game is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

22. The opposition crowd is harassing you.

	Not at All				Very
During a preseason game being harassed by the opposition's crowd is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game being harassed by the opposition's crowd is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game being harassed by the opposition's crowd is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

23. An argument with a referee.

		Not at All				Very
During a preseason game an argument with a referee is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a regular season game an argument with a referee is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a playoff game an argument with a referee is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4

24. Your team is losing by two points in the final minute of the game.

		Not at All				Very
During a preseason game being down by two points in the final minute is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a regular season game being down by two points in the final minute is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4
During a playoff game being down by two points in the final minute is:	Stressful	0	1	2	3	4
	Challenging	0	1	2	3	4

25. A teammate is injured badly e.g. neck injury or broken leg.

	Not at All				Very
During a preseason game a serious injury to a teammate is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game a serious injury to a teammate is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game a serious injury to a teammate is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

26. You feel slow and sluggish during the game.

	Not at All				Very
During a preseason game feeling slow and sluggish during the game:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game feeling slow and sluggish:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game feeling slow and sluggish is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

27. It is windy and raining.

	Not at All				Very
During a preseason game wind and rain is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game wind and rain is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game wind and rain is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

28. The opposition wrestles the ball away from you in contact.

	Not at All				Very
During a preseason game losing the ball in contact is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a regular season game losing the ball in contact is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4
During a playoff game losing the ball in contact is:					
Stressful	0	1	2	3	4
Challenging	0	1	2	3	4

29. Your teammates seem to have no energy and are being lazy.

Not
at
All

Very

During a **preseason** game having your teammates lack energy and seem lazy is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **regular season** game having your teammates lack energy and seem lazy is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **playoff** game having your teammates lack energy and seem lazy is:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

30. Having continuous penalties called against your team i.e. the referee marches you back 30 meters.

Not
at
All

Very

During a **preseason** game continuous penalties against you are:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **regular season** game continuous penalties against you are:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

During a **playoff** game continuous penalties against you are:

Stressful 0 1 2 3 4

Challenging 0 1 2 3 4

SURVEY OF ATHLETIC EXPERIENCES

DIRECTIONS A number of statements that athletes have used to describe their experiences are given below. Please read each statement carefully and then recall as accurately as possible how often you experience the same thing. There are no right or wrong answers. Do not spend too much time on any one statement. Please put an X in the circle that indicates how often you have these experiences when playing sports.

	Almost Never	Sometimes	Often	Almost Always
1. On a daily or weekly basis, I set very specific goals for myself that guide what I do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I get the most out of my talent and skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. When a coach tells me how to correct a mistake I've made, I tend to take it personally and get upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. When I'm playing sports, I can focus my attention and block out distractions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I remain positive and enthusiastic during competition, no matter how badly things are going.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I tend to play better under pressure because I think more clearly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I worry quite a bit about what others think of my performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I tend to do lots of planning about how to reach my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I feel confident that I will play well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. When a coach or manager criticizes me, I become upset rather than helped.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. It is easy for me to keep distracting thoughts from interfering with something I am watching or listening to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I put a lot of pressure on myself by worrying about how I will perform.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I set my own performance goals for each practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I don't have to be pushed to practice or play hard; I give 100%.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. If a coach criticizes or yells at me, I correct the mistake without getting upset about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I handle unexpected situations in my sport very well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. When things are going badly, I tell myself to keep calm, and this works for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. The more pressure there is during a game, the more I enjoy it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. While competing, I worry about making mistakes or failing to come through.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I have my game plan worked out in my head long before the game begins.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. When I feel myself getting too tense, I can quickly relax my body and calm myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. To me, pressure situations are challenges that I welcome.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. I think about and imagine what will happen if I fail or screw up.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. I maintain emotional control regardless of how things are going for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. It is easy for me to direct my attention and focus on a single object or person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. When I fail to reach my goals, it makes me try even harder.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. I improve my skills by listening carefully to advice and instruction from coaches.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I make fewer mistakes when the pressure is on because I concentrate better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Athletic Coping Skills Inventory-28**Scoring Key****Coping with Adversity**

5, 17, 21, 24

Coachability

3*, 10*, 15, 27

Concentration

4, 11, 16, 25

Confidence and Achievement Motivation

2, 9, 14, 26

Goal Setting and Mental Preparation

1, 8, 13, 20

Peaking Under Pressure

6, 18, 22, 28

Freedom from Worry

7*, 12*, 19*, 23*

Personal Coping Resources

Total score or sum of subscale scores

* Reverse scored items; all other items scored from 0 (almost never) to 3 (almost always).

Reference

Smith, R. E., Schutz, R. W., Smoll, F. L., & Ptacek, J. T. (1995). Development and validation of a multidimensional measure of sport-specific psychological skills: The Athletic Coping Skills Inventory-28. *Journal of Sport and Exercise Psychology, 17*, 379-398.

Sport Orientation Questionnaire

The following statements describe reactions to sport situations. We want to know how you *usually* feel about sports and competition. Read each statement and circle the letter that indicates how much you agree or disagree with each statement on the scale: A,B,C,D,E. There are no right or wrong answers; simply answer as you honestly feel. Do not spend too much time on any one statement. Remember, choose the letter which describes how you *usually* feel about sports and competition.

	Strongly Agree	Slightly Agree	Neither Agree nor Disagree	Slightly Disagree	Strongly Disagree
1. I am a determined competitor.	A	B	C	D	E
2. Winning is important.	A	B	C	D	E
3. I am a competitive person.	A	B	C	D	E
4. I set goals for myself when I compete.	A	B	C	D	E
5. I try my hardest to win.	A	B	C	D	E
6. Scoring more points than my opponent is very important to me.	A	B	C	D	E
7. I look forward to competing.	A	B	C	D	E
8. I am most competitive when I try to achieve personal goals.	A	B	C	D	E
9. I enjoy competing against others.	A	B	C	D	E
10. I hate to lose.	A	B	C	D	E
11. I thrive on competition.	A	B	C	D	E
12. I try hardest when I have a specific goal.	A	B	C	D	E
13. My goal is to be the best athlete possible.	A	B	C	D	E
14. The only time I am satisfied is when I win.	A	B	C	D	E

	Strongly Agree	Slightly Agree	Neither Agree nor Disagree	Slightly Disagree	Strongly Disagree
15. I want to be successful in sports.	A	B	C	D	E
16. Performing to the best of my ability is important to me.	A	B	C	D	E
17. I work hard to be successful in sports.	A	B	C	D	E
18. Losing upsets me.	A	B	C	D	E
19. The best test of my ability is competing against others.	A	B	C	D	E
20. Reaching personal performance goals is very important to me.	A	B	C	D	E
21. I look forward to the opportunity to test my skills in competition.	A	B	C	D	E
22. I have the most fun when I win.	A	B	C	D	E
23. I perform my best when I am competing against an opponent.	A	B	C	D	E
24. The best way to determine my ability is to set a goal and try to reach it.	A	B	C	D	E
25. I want to be the best every time I compete.	A	B	C	D	E

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Title of Thesis:

Person and Situation Variables Related to
Stress and Challenge Appraisals in Rugby Players

Author


Christopher Sean Lonsdale
November 21, 2000