A Comparison of Multidimensional State Anxiety through Time-to-Event Paradigm of Malaysian Sailors in Sailing Competition

Lim Boon Hooi*

Abstract

The purpose of the present study was to compare the multidimensional state anxiety prior to two different levels of sailing competition. Eight Malaysian sailors (n=8) completed the Competitive State Anxiety Inventory-2 Revised (CSAI-2R) on four time-to-event paradigms (1 = two weeks; 2 = one week; 3 = one day and 4 = one hour) prior to two different levels of competition (ASEAN Optimist Sailing Championship 2005 & Navy Day Open Regatta 2005). It was found that the anxiety state increased and self-confidence level decreased prior to these two different levels of competition. Results of this study revealed that cognitive state anxiety was higher prior to the Navy Day Open Regatta 2005 compared to the ASEAN Optimist Sailing Championship 2005. A possible explanation for this result could be the venue of the competition. The ASEAN Optimist Sailing Championship 2005 was held at the National Sailing Training Centre, Port Dickson, which is the training venue and home ground for all the subjects in this study. Also, the Navy Open Regatta 2005 was the selection competition for Malaysian optimist sailing team to the ASEAN Optimist Sailing Championship. Results of this study revealed that the somatic state anxiety increased from time-to-event 1 (M=14.1 ± 4.0) to time-to-event 4 (M=28.6 ± 5.2) prior to the ASEAN Optimist Sailing Championship 2005. The present findings support previous research that somatic state anxiety increases as competition approaches and peak immediately prior to competition. The state of self-confidence of these sailors in both competitions decreased slightly from time-to-event 1 to time-to-event 4 before competition. Paired t-test revealed that no significant differences were found on the subscales of multidimensional state anxiety between the two competitions.

Key words: multidimensional state anxiety, time-to-event paradigm

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Anxiety is defined as the uncertainty in how to cope with stress. That is, when one feels that she or he does not have the capacity to deal with stress or that the stress is overwhelming [1]. Components of anxiety include fear, anger, increase heart and perspiration rate, trembling, and being mentally off balance, which is directly involved with the autonomic nervous system creating arousal [1]. Therefore, anxiety is experience when approaching or perceiving stress which is rooted in an increased state of arousal. This anxiety (arousal) may produce a positive or a negative affect, including drive, fear, motivation, pressure, excitement, and exhilaration. This form of anxiety, also known as cognitive anxiety, is defined as the mental component of anxiety. It is caused by negative expectations about success or by negative self evaluation [2]. In other words, cognitive anxiety is the fear from anticipated consequences of failure [3].

Another type of anxiety, known as somatic anxiety, is the physiological component of anxiety. It is caused directly by stimulation or arousal of the autonomic systems. In other words, somatic anxiety is the component that reflects the perceptions of the psychological stress to the physiological response [2].

Self-confidence has been found to account for a greater proportion of variance in performance than cognitive or somatic anxiety [3]. This suggests that the most powerful quality that elite performers posses is a high level of self-confidence which may act as a protection factor from a cognitive anxiety.

Competitive anxiety is one of the most thoroughly examined topics in sport psychology literature. This is mainly due to the perceived detrimental effects anxiety has on performance, creating the negative view most individuals hold of this concept. These demands are usually stressful, indicating to the athletes a perception of imbalance between the demand given and their abilities to fulfill the demand [4].

Participants in individual non-contact sports have been found to report lower levels of state anxiety than participants in individual contact sports [5]. Also, cognitive anxiety exerts a powerful influence on performance. This statement holds true regardless of the individual’s skill level. Participants in a collegiate softball tournament were put into one of two conditions: high or low situation criticality, while somatic anxiety did not differ in the two conditions, those athletes in the high criticality condition had significantly higher levels of cognitive anxiety [6].

The amount of self-confidence that an individual possesses has been found to differ between elite and novice athletes. Research with a group of tennis players indicated that the advanced players had significantly higher levels of self-confidence [7]. This has been found to be true of gymnasts as well as swimmers [8].

Previous studies have typically found that better athlete performance was associated with either lower levels of cognitive and somatic anxiety or higher levels of confidence [9, 10]. Research comparing athletes competing in team sports (basketball) with those competing in individual sports (track and field) has found that subjects competing in individual sports report significantly lower self-confidence and higher somatic anxiety than team sport athletes [11]. Skaters experienced greater cognitive and somatic anxiety prior to an individual competition event than prior to team competition [12].

Most sailors and coaches of sailing agree that to perform their best they need to be in the “right frame of mind and physically feel good”. Arousal control and anxiety management have a central role to play in reaching this optimal performance state [13]. Although some sailors have reported issues of under-arousal (usually in training or low pressure regattas) the vast majority of interventions performed in sailing are due to problems of over-arousal. When over-arousal is labeled as “unpleasant” or “dysfunctional” the emotion tends to be identified as anxiety.

The purpose of this study was to compare the multidimensional state anxiety of Malaysian sailors prior to two different levels of sailing competition through time-to-event paradigm. Eight Malaysian optimist sailors completed the CSAI-2R on four occasions prior to the
competition at each competitive level. These were: 2 weeks, 1 week, 1 day and approximately 1 hour before the first day of competition. In general, the more important the event, the more stress-provoking it is [5]. The ASEAN Optimist Sailing Championship 2005 is more important than the Navy Day Open Regatta 2005. The results of this initial study provided essential information to the team sport psychologist to plan a better and effective stress management strategies to help the sailors perform at their optimal arousal level.

Method

Participants

The participants in this study were eight Malaysian sailors, comprised of seven males and one female (n = 8; M age = 13.88 ± .835), their competitive experience ranged from 3 to 7 years with an average of 4.5 years (S.D. = 1.20). They competed in the ASEAN Optimist Sailing Championship 2005 and Navy Day Open Regatta 2005. All the participants were in the Project Gemilang 2006 under the National Sports Council of Malaysia. All the sailors were selected to undergo a full-time Sailing training programme in Port Dickson, Negeri Sembilan to prepare for local (Malaysian) sailing competitions, SEA Games 2005, Asian Games 2006 and IODA World Optimist Sailing Championship 2005 and 2006. All the participants were exposed to a general psychological training programme with the psychologist attached to the sailing team.

Instrument

The CSAI-2R is a subset of the 27-item CSAI-2 [5]. The 17-item CSAI-2R scale measures cognitive state anxiety (5 items), somatic state anxiety (7 items) and self-confidence (5 items) in a competitive setting. Respondents rate their feelings before competition (e.g., I feel jittery, I am concerned about losing) on a scale anchored by 1 = not at all and 4 = very much so. Subscales scores are calculated by summing items in each subscale, divided by the number of items, and multiplying by 10. Scores range from 10 to 40 for each subscale. The factorial validity of the CSAI-2R was previously established using confirmatory factor analysis (CFA) on data from 331 athletes, which showed a good fit of the hypothesised measurement model to the data [14].

Procedure

The coach and the team manager of the Malaysian sailing team were informed that a study will be conducted on feelings before these competitions. They were given the opportunity to ask questions the researcher and were thanked for their co-operation.

CSAI-2R was administered to participants in four time frames prior to each sailing competition, i.e. 2 weeks, 1 week, 1 day and approximately 1 hour before the commencement of the first day of competition. At all stages, the questionnaire was administered by the psychologist attached to the team. This is consistent using standardized instructions for administering the questionnaire [9]. The participants respond to the questionnaire according to how they felt at that moment about the up-coming competition. It was emphasized that there were no right or wrong answer and that they should answer honestly. The participants were assured of the strict confidentiality of individual responses.

ASEAN Optimist Sailing Championship 2005 was ranked as a three-star competition in The Malaysian Yachting Association’s yearly calendar and participated by sailors from South East Asian countries, namely Singapore, Thailand, Indonesia, Nyammar, Philippines and Malaysia. The ASEAN Optimist Sailing Championship 2005 was held at Regency Tanjung Tuan Resorts, Port Dickson, Negeri Sembilan. The Navy Day Open Regatta 2005 was only ranked as a one-star competition and it was opened only to all Malaysian sailors and was held at the Navy Training Centre, Lumut, Perak.
Table 1. Mean scores (M) and standard deviations (SD) for cognitive anxiety, somatic anxiety and self-confidence of two competitions

<table>
<thead>
<tr>
<th>Competition</th>
<th>ASEAN Optimist Sailing Championship 2005</th>
<th>Navy Day Open Regatta 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time-to-event</td>
<td>(1) 2 Weeks</td>
<td>(1) 2 Weeks</td>
</tr>
<tr>
<td></td>
<td>(2) 1 Week</td>
<td>(2) 1 Week</td>
</tr>
<tr>
<td></td>
<td>(3) 1 Day</td>
<td>(3) 1 Day</td>
</tr>
<tr>
<td></td>
<td>(4) 1 Hour</td>
<td>(4) 1 Hour</td>
</tr>
<tr>
<td>Cognitive Anxiety</td>
<td>M 16.1</td>
<td>M 17.5</td>
</tr>
<tr>
<td></td>
<td>SD 2.9</td>
<td>SD 4.5</td>
</tr>
<tr>
<td>Somatic Anxiety</td>
<td>M 14.1</td>
<td>M 13.6</td>
</tr>
<tr>
<td></td>
<td>SD 4.0</td>
<td>SD 4.0</td>
</tr>
<tr>
<td>Self-Confidence</td>
<td>M 32.8</td>
<td>M 32.3</td>
</tr>
<tr>
<td></td>
<td>SD 2.8</td>
<td>SD 3.3</td>
</tr>
</tbody>
</table>

Results

Preliminary descriptive analyses were computed for all dependent variables in the study. Table 1 displays the mean scores and standard deviations for cognitive anxiety, somatic anxiety and self-confidence of sailors in two sailing competitions with time-to-event: 1 = two weeks, 2 = one week, 3 = one day and 4 = one hour prior to the start of the competition.

The analysis showed that the pattern and absolute values of the cognitive state anxiety was almost identical between the two competitions. Table 1 illustrates mean group cognitive state anxiety scores between ASEAN Optimist Sailing 2005 and Navy Day Open Regatta 2005 by time-to-event, the time-to-event 4 (M=34.8 ± 1.7 & M=35.3 ± 1.8) prior to competition for these two competitions showed an increase from time-to-event 1 (M=16.1 ± 2.9 & M=17.5 ± 4.5).

The somatic state anxiety for Navy Day Open Regatta 2005 increased from time-to-event 1 (M=13.6 ± 4.0) to time-to-event 4 (M=28.8 ± 5.1). The similar increment were also seen in the somatic state anxiety for the ASEAN Optimist Sailing Championship 2005 with time-to-event 1 (M=14.1 ± 4.0) to time-to-event 4 (M=28.6 ± 5.2) prior to competition.

In contrast, the state of self-confidence decreased gradually from time-to-event 1 prior to competition and decreased dramatically on time-to-event 4 before the competition starts for both competitions as illustrated in Table 1. The self-confidence state decreased dramatically and more during time-to-event 4 prior to the ASEAN Optimist Sailing Competition 2005 compared to the Navy Day Open Regatta 2005.

Table 2 displays Paired t-Test between the ASEAN Optimist Sailing Championship 2005 and Navy Day Open Regatta 2005. No significance difference was noted between the two competitions (p > 0.05).

Discussion

The present study investigated the comparison between multidimensional state anxiety and the time-to-event approach in build-up in sailing competitions. As predicted it was found that anxiety state increased and self-confidence level decreased prior to the two different levels of competition. This was consistent with previous studies [13, 15].

Within the present study, cognitive anxiety showed an upward trend over the four temporal conditions prior to competition for these two competitions.
Cognitive State Anxiety for the ASEAN Optimist Sailing Championship 2005 increased from time-to-event 1 (M=16.1 ±2.9) to time-to-event 4 (M=34.8 ± 1.7) before competition. Likewise in the Navy Day Open Regatta 2005, cognitive state anxiety increased from time-to-event 1 (M=17.5 ±4.5) to time-to-event 4 (M=35.3 ± 1.8) prior to competition. This elevation in cognitive anxiety appears to contradict previous findings, because the literature suggests that it should remain stable unless a change occurs in expectations for success [9, 16, 17]. Results of this study revealed that Navy Day Open Regatta 2005 exhibited higher levels of cognitive state anxiety compared to the ASEAN Optimist Sailing Championship 2005. This pattern was opposite to the previous study that performance expectations are mediated by various situational factors including the importance of the competition, where anxiety will be higher if the competition is more important [18]. The ASEAN Optimist Sailing Championship 2005 was more important compared to Navy Day Open Regatta 2005 but the sailor’s cognitive state anxiety was at a lower level.

A potential explanation for this result was the venue where the competition was held. The ASEAN Optimist Sailing Championship 2005 was held at the National Sailing Training Centre, Port Dickson, which is the training venue and home ground for all the subjects in this study. In addition, during the ASEAN Optimist Sailing Championship 2005, a team event and Malaysia as an organiser host was allowed to send two teams. The results of sailors were remarkably similar to the previous research that skaters experienced greater cognitive anxiety prior to an individual competition event than prior to team competition [12]. Other research has indicated that individual sport participants manifest greater anxiety state than do team sport participants [1].

Also, another plausible explanation for this result was the home advantage. Researchers have suggested factors that may be responsible for the home advantage including characteristics associated with game location – such as the crowd, travel, familiarity with the venue, and rules that might favour the home team, as well as the psychological and behavioral states [19]. Furthermore, the subjects of this study were using their own equipment during the ASEAN Optimist Sailing Competition which they used during
training sessions. On the other hand, during Navy Day Open Regatta 2005, all the subjects used rented equipment including the competition boat. Consistent with the previous findings that the home environment and familiarity of own equipments may reduce the anxiety state and increase the self confidence Level [19].

Generally, it seems that somatic state anxiety becomes elevated immediately before competition. Result of this study revealed that somatic state anxiety also rose in subjects as the time to these two competitions drew nearer. Again, the larger increase in somatic state anxiety occurred between the third and the last temporal conditions. This finding partially supported previous researches that somatic state anxiety will increase rapidly approximately 24 hours before the event [9, 20]. Somatic state anxiety reaches its peak close to the start of competition, reinforcing the multidimensional theory concerning the competition site as trigger to increased somatic state anxiety [21, 22].

The state of self-confidence of the sailors in the ASEAN Optimist Sailing Championship 2005 decreased gradually from time-to-event 1 (M = 32.8 ± 2.8) to time-to-event 4 (M = 28.6 ± 1.7) before competition. The analysis also found that the state of self-confidence score of the sailors in the Navy Day Open Regatta also decreased from time-to-event 1 (M = 32.3 ± 3.3) to time-to-event 4 (M=29.1 ± 2.9). The dramatic decrease in self-confidence occurred in the most critical period of what was perceived as the most stressful competition condition. It was clearly exhibited that one hour prior to these two competitions was the most stressful moment. The outcome of the findings partially supported previous research that lowers self-confidence when time-to-event approaching [10]. Self-confidence state in the ASEAN Sailing Championship 2005 was slightly higher than the self-confidence state in the Navy Day Open Regatta 2005. The present study supported previous findings that elite athletes possess higher levels of self-confidence [19].

The comparison between cognitive anxiety states for the two competitions showed a higher t-test difference compared to somatic anxiety and self-confidence. The paired t-test also revealed that all the cognitive anxiety was in negative (t= -1.23; t = - 2.01; t = -2.36; t = - 0.80, p > 0.05). The cognitive anxiety in the ASEAN Optimist Sailing Championship 2005 was lower than the Navy Day Open Regatta 2005, and this result illustrated that the cognitive anxiety level of sailors were higher in the Navy Day Open Regatta 2005. A plausible explanation for the higher mean in the lower level of competition was the home ground advantage [19].

The practical implications of these results may be useful for the applied sport psychologist. Firstly, the sports psychologist may need to reassess the use of relaxation techniques when working with performers prior to competition [9]. This study may also be beneficial in the field of sport psychology, contributing both to sailors and coaches, by suggesting better and more effective stress management strategies.

Furthermore, the possibility that different antecedents may cause different temporal in the CSAI-2R subscales which indicates that cognitive state anxiety, somatic state anxiety and state self-confidence are multidimensional constructs, a situation which may be important for sailors, coaches and sport psychologists. Future research may explore the influences of various relaxation techniques to reduce cognitive and somatic state anxiety and maintain state of self-confidence prior to sailing competition. Also, future research may explore the significant difference across gender. In addition, it is also possible to include various stress management intervention in the future studies to find out which intervention works better in terms of maintaining multidimensional state anxiety prior to sailing competition.

A further methodological issue concerns the point raised in the results section was the small sample size. There is a need for more investigative effort to target a larger number of sailors to provide support for the outcomes of the present study, particularly Malaysian sailors.
References

