

The Differences between Anxiety and Self-Confidence between Team and Individual Sports College Varsity Athletes

Howard Zhenhao Zeng

The study was designed to compare the differences on the levels of Cognitive State Anxiety, Somatic State Anxiety, and Competitive Trait Anxiety, as well as State Self-Confidence, State Sport-Confidence, and Trait Sport-Confidence for varsity athletes between team sports (TS) and individual sports (IS). College varsity athletes (N = 69, TS = 39, IS = 30) aged 18 to 23 years were tested and analyzed during the study. Anxiety and self-confidence scores were obtained to compare the mean differences in the levels of anxiety and self-confidence of the participants. According to the Independent Group t Test, the means Cognitive State Anxiety, Somatic State Anxiety, and Competitive Trait Anxiety scores for TS athletes was significantly ($p < .05$) higher than the mean scores for IS athletes. On the other hand, the means State Self-Confidence, State Sport-Confidence, and Trait Sport-Confidence scores for TS athletes were significantly ($p < .05$) higher than the mean scores for IS athletes. In conclusion, TS athletes have lower levels of cognitive state anxiety and somatic state anxiety as compared to IS athletes; however, the level of competitive trait anxiety for the athletes of team and individual sports are similar. TS athletes have higher levels of state self-confidence, state sport-confidence, and trait sport-confidence as compared to IS athletes when they competed with their opponent(s). Further research was recommended.

INTRODUCTION

In sport competition, anxiety and self-confidence are considered to be two important psychological factors that influence optimal athletic performances (Martens, Vealey,

Howard Zhenhao Zeng, M.S., is Visiting Scholar, Department of Physical Education, Springfield College, Springfield, MA. He was Associate Professor, Zhongshan University, Guang Zhou, China.

& Burton, 1990; Vealey, 1986). Hogg (1980) indicated that athletes of the individual sports (e.g., swimming) showed low anxiety levels as compared to the team sports (e.g., softball, field hockey) groups. Carron (1982) made some interesting comparisons to competitive anxiety, the factors "include male and female athletes, team and individual sport athletes, competitive and non-competitive sport athletes and athletes of different age" (p. 102).

Martens et al. (1990), however, indicated that no significant differences between the levels of anxiety and type of sport, status, race of participants. Feltz (1982) indicated that individuals with a high level of anxiety will increase the threat potential of the activity and will decrease strenuous activities, while those with high level of self-confidence are more likely to initiate and continue at highly strenuous activities as well as with low level of anxiety in sport. The present study was designed to investigate the levels of various anxiety and self-confidence in team sport and individual sport athletes. The following hypotheses were examined: (a) no difference would be expected on the levels of anxiety variables for team sport athletes and individual sport athletes; and (b) no difference would be expected on the levels of self-confidence variables for team sport athletes and individual sport athletes.

METHOD

The study was designed to compare the differences on the levels of Cognitive State Anxiety, Somatic State Anxiety, and Competitive Trait Anxiety, as well as State Self-Confidence, State Sport-Confidence, and Trait Sport-Confidence for varsity athletes between team sport and individual sports.

Participants

Four intercollegiate athletes teams from a Division III college were invited to take part in this study. A total of 69 varsity athletes from team sports and individual sports (23 male baseball players; 16 male volleyball players, 24 male track and field athletes, and six male gymnastics athletes). The age range of the athletes was between 18 and 23 years old. All participants were informed of the procedures of the study and the possible risks and benefits associated with the study.

Testing Instrumentation

The levels of anxiety and self-confidence were measured by two recognized psychological measurement instruments. The Sport Competition Anxiety Test for Adults (SCAT-A, Martens, Vealey, et al., 1990) was used to determine the Competitive Trait Anxiety levels of the participants. The SCAT-A consists of 15 items and each item has a 3-point ordinal response scale. The 10 items were scored from 1 to 3 (hardly ever = 1, sometimes = 2, often = 3). The lowest possible score was 10 (low competitive trait anxiety) and the highest possible score was 30 (high competitive trait anxiety). Intraclass reliability was reported as .85 (Martens, Vealey, et al., 1990).

For the validity issue, according to Martens (1977), concurrent validity was "determined by correlating other personality constructs with SCAT" (p. 46). On the adult version (SCAT-A) (Martens, 1977), concurrent validity was determined by correlating SCAT-A (Martens, 1977) with the Trait Anxiety Inventory for Adult (TAIA) (Spielberger, Gorsuch, & Lushene, 1970). A low to moderate positive correlation between the situation-specific SCAT-A (Martens, 1977) and the general anxiety scale should exist. For the validity of the SCAT, Martens, Vealey, et al. (1990) indicated that a correlation coefficient

cient of .44 was obtained between the sport-specific anxiety scale and the general anxiety scale. Therefore, clear support was shown for the concurrent validity of the SCAT-A (Martens, Vealey, et al., 1990).

The Competitive State Anxiety Inventory-2 (CSAI-2, Martens, Burton, Vealey, Bump & Smith, 1990) was used to determine the Cognitive State Anxiety, Somatic State Anxiety, and State Self-Confidence levels of participants. They indicated that the intraclass reliability of CSAI-2 to range from .79 to .90. The assessment of validity had been accomplished by comparing the CSAI-2 to eight scales which measure anxiety. The researchers continued, "the coefficients are highly congruent with hypothesized relationship among the CSAI-2 subscales and scales of related constructs" (p. 136). The CSAI-2 (Martens, Burton, et al., 1990) consists of 27 items and the response to each item was scored on a Likert scale, ranging from 1 (not at all) to 4 (very much so). The researchers indicated that the CSAI-2 was composed of three subscales used to measure Cognitive State Anxiety, Somatic State Anxiety, and State Self-Confidence, with scores ranging from a low of 9 to a high of 36. Furthermore, the researchers indicated that the higher the score, the greater the state anxiety or the greater the state self-confidence; a total score for the scale was not needed. Finally, the CSAI-2 should be administered as close to competition as possible with a maximum of 1 hr before competition (Martens, Burton, et al., 1990).

The Trait Sport-Confidence Inventory (TSCI, Vealey, 1986) and the State Sport-Confidence Inventory (SSCI, Vealey, 1986) were used to determine the Trait Sport-Confidence levels and the State Sport-Confidence levels of the participants. Vealey (1986) demonstrated that reliability and validity procedures for both TSCI and SSCI including item discrimination, internal consistency, test-retest reliability, content validity, concurrent validity, and construct validity. The TSCI was composed of 13 items designed to assess how self-confident an individual feels when taking part in a sport (Vealey, 1986). Response to each item was on a 9-point Likert scale, ranging from low to high. The Trait Sport-Confidence was measured by asking participants to answer how they generally feel when they compete. The score was computed by summing all responses (Vealey, 1986). The test-retest reliability coefficients among a sample of high school and college athletes were $r = .86$ (1 day later), $r = .89$ (1 week later), and $r = .83$ (1 month later) (Vealey, 1986). Therefore, Vealey (1986) stated that "the test-retest reliability ($r = .86$ across time and samples) for the TSCI was well above the accepted criterion" (p. 228).

Also, the SSCI (Vealey, 1986) had 13 items and each item had a 9-point Likert scale (Vealey, 1986). In an upcoming competition, participants were asked to indicate their personality states at that moment (Vealey, 1986). The SSCI score was computed by summing all responses. She stated that concurrent validity was tested by "correlating measures of related personality constructs with the TSCI and SSCI" (p. 228). All of the correlation coefficients were significant (Vealey, 1986). Furthermore, the TSCI was correlated with Competitive Trait Anxiety ($r = .28$), and the SSCI was correlated with 'Competitive Trait Anxiety' ($r = .64$). Finally, Vealey (1986) indicated that "state sport-confidence is a significant predictor of performance" (p. 233).

Procedures

All participants were tested in a team setting. The procedure consisted of two phases. During the first phase, the CSAI-2 (Martens, Burton, et al., 1990) and SSCI (Vealey, 1986) were administered. The testing was administered on the day of a scheduled com-

petition, as close as possible prior to the competition. During the second phase, the SCAT (Martens, Vealey et al., 1990) and the TSCI (Vealey, 1986) were administered on a practice day late during the same week. Martens, Burton, et al. (1990) and Vealey (1986) indicated that both the CSAI-2 and the SSCI should be administered before the SCAT and the TSCI; if not, responses to the two state measures might be influenced by having previously responded to the two trait measures. In addition, before testing, the participants were given the following instructions: (a) answer each question as it applies to yourself; (b) give only one answer to each question; and (c) answer all questions.

Statistical Analysis

The Independent Group *t* Test statistical analysis was used to determine if there were differences in the levels of anxiety and self-confidence between the team sport and individual sport athletes. The Statistical Package for Social Sciences (SPSS, 2000) was employed for the process of computing. The independent variable was the type of sport (team sport and individual sport). The dependent variables measured were the anxiety scores and the self-confidence scores.

RESULTS

The descriptive statistics for the data of Independent Group *t* Test are presented in Table 1. The independent groups *t*-ratio comparing mean anxiety and self-confidence scores for team and individual sports athletes are presented in Table 2. According to the Independent Group *t* Test statistical analysis, the mean Cognitive State Anxiety (Martens, Burton, et al., 1990) score for team sport athletes was significantly higher than the mean score for individual sport athletes, $t = -2.45^*$. The mean Somatic State Anxiety (Martens, Burton, et al., 1990) score for team sport athletes was significantly higher than the mean score for individual sport athletes, $t = -3.38^*$. The mean Competitive Trait Anxiety (Martens, Vealey, et al., 1990) score for team sport athletes was not significantly different from the mean score for individual sport athletes, $t = -1.89^{**}$.

TABLE 1
Descriptive Statistics for the Data of the Independent Group *t* test (N = 69)

Variables	Sports	N	M	SD
Cog-A	Team	39	18.46	4.41
	Indi.	30	21.10	4.49
Som-A	Team	39	15.64	3.85
	Indi.	30	19.03	4.46
Tra-A	Team	39	18.33	4.93
	Indi.	30	20.37	3.61
S-conf.	Team	39	28.23	4.51
	Indi.	30	26.07	4.02
SS-conf.	Team	39	98.23	13.17
	Indi.	30	81.10	12.41
TS-conf.	Team	39	102.77	8.78
	Indi.	30	81.23	12.38

Note: Cog-A = 'Cognitive State Anxiety'
 Som-A = 'Somatic State Anxiety'
 Tra-A = 'Competitive Trait Anxiety'
 S-conf. = 'State Self-confidence'
 SS-conf. = 'State Sport-Confidence'
 TS-conf. = 'Trait Sport-Confidence'

TABLE 2
Independent Groups *t*-ratio Comparing Mean Anxiety and self-confidence Scores for Team and Individual Sports Athletes (N = 69)

Group	Means	<i>n</i>	Mean Diff.	S.E. Diff.	<i>t</i>	<i>p</i>
Cog-A Team	18.46	39	-2.64	1.08	-2.45	<.05
Indi.	21.10	30				
Som-A Team	15.64	39	-3.39	1.00	-3.38	<.05
Indi.	19.03	30				
Tra-A Team	18.33	39	-2.03	1.07	1.89	>.05
Indi.	20.37	30				
S-conf. Team	28.23	39	2.16	1.04	2.07	<.05
Indi.	26.07	30				
SS-conf Team	98.23	39	17.13	3.12	5.49	>.05
Indi.	81.10	30				

*Table *t* (.05)(67) = ± 2.00

Note: Cog-A = 'Cognitive State Anxiety'
 Som-A = 'Somatic State Anxiety'
 Tra-A = 'Competitive Trait Anxiety'
 S-conf. = 'State Self-confidence'
 SS-conf. = 'State Sport-Confidence'
 TS-conf. = 'Trait Sport-Confidence'

On the other hand, the mean State Self-Confidence (Martens, Burton, et al., 1990) score for team sport athletes was significantly higher than the mean score for individual sport athletes, $t = 2.07^*$. The mean State Sport-Confidence (Vealey, 1986) score for team sport athletes was significantly higher than the mean score for individual sport athletes, $t = 5.49^*$. The mean Trait Sport-Confidence (Vealey, 1986) score for team sport athletes was significantly higher than the mean score for individual sport athletes, $t = 8.45^*$. The independent group *t* ratio comparing mean scores of anxiety and self-confidence for athletes between team and individual sports is presented in Table 2. The bar graph for mean score of three types of anxieties between team and individual sports athletes is presented in Figure 1. The bar graph for mean score of three types of self-confidences between team and individual sports athletes is presented in Figure 2.

DISCUSSION

The study was designed to compare the differences among three anxiety variables and three self-confidence variables for varsity athletes between team sport and individual sports. The findings of present study were consistent with the findings of Hogg (1980) who indicated that athletes of the individual sport (swimmers, fifth graders) showed low anxiety levels as compared to the team sports (softball, field hockey) groups. The consequence of this result might just as Carron (1982) described "individuals who possess higher levels of the personality trait of sport competitive anxiety have a greater tendency to view competitive situations as most threatening" p. 103).

The findings of this investigation, however, were contradicting disagreed with the finding of Martens et al. (1990), indicating that no significant differences between the levels of anxiety and type of sport, status, race of participants. Unfortunately, no previ-

Note: * = $p < .05$; ** = $p > .05$

FIGURE 1

Bar graph of comparing anxieties scores for athletes between team sport and individual sport.

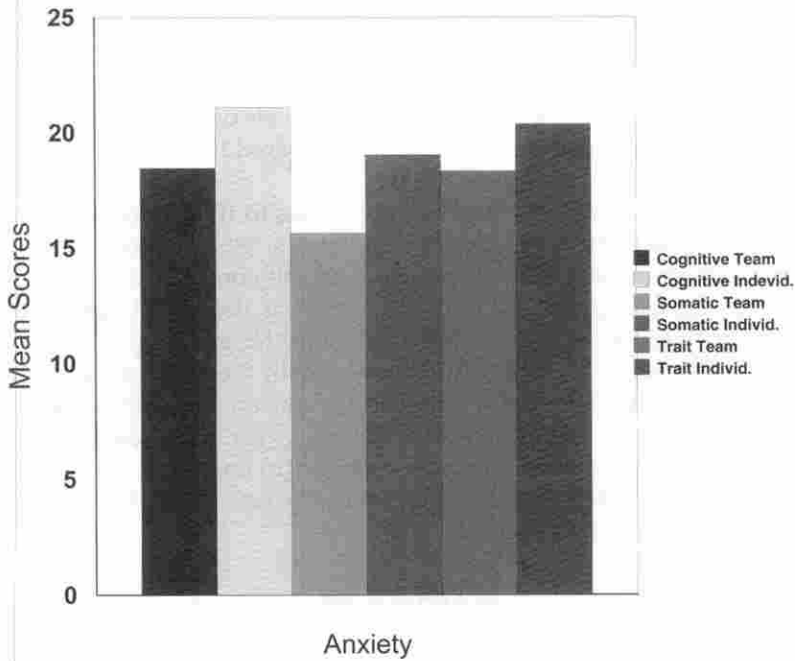
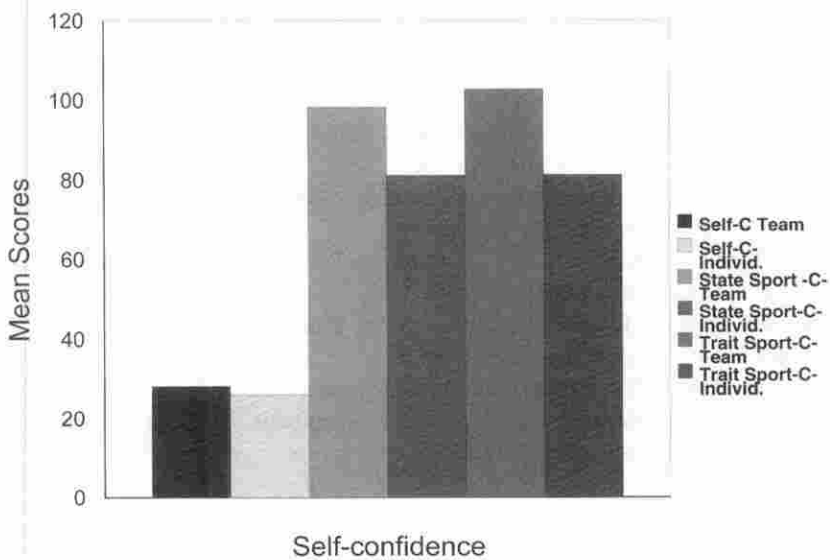


FIGURE 2

Bar graph of comparing self-confidence scores for athletes between team sport and individual sport.



ous research finding was found in comparison the differences of self-confidence for athletes between team and individual sports. In conclusion, for college varsity athletes, team sport athletes had lower levels of cognitive state anxiety and somatic state anxiety as compared to individual sport athletes when they competed with their opponent(s); however, the level of competitive trait anxiety for the athletes of team and individual sports were similar. Team sport athletes had higher levels of state self-confidence, state sport-confidence, and trait sport-confidence as compared to individual sport athletes when they competed with their opponent(s).

The present study provided a part of supporting to the findings of previous researchers (e.g., Hogg's study, 1980), and Carron's study, 1982), which relate to the topic of the differences between the levels of anxiety and self-confidence for the college varsity athletes between team sport and individual sport. It also found that the findings of the current research there are some differences with the findings of the previous researchers (e.g., Martens et al., 1990). Further research, therefore, is need in order to further understanding the differences between various anxiety and self-confidence at the level of college varsity athletes, which including: (a) more team and individual sports events should be involved in the investigation; (b) both male and female athletes should be included in participants; and (c) a more advanced statistical method (e.g., analysis of variance) should be utilized.

REFERENCES

- Carron, A. (1982). Sociocultural and behavioral aspects. In E. E. Zeigler (Ed.), *Physical Education and sport: an Introduction* (pp. 94-116). Philadelphia, PA: Lea & Fefiger.
- Feltz, D. (1982). Path analysis of the causal elements in Bandura's theory of self-efficacy and an anxiety-based model of avoidance behavior. *Journal of Personality and Social Psychology*, 42(4), 764-781.
- Hogg, J. M. (1980). Anxiety and the competitive swimmer. *Canadian Journal of Applied Sport Sciences*, 5(2), 183-187.
- Martens, R. (1977). *Sport Competition Anxiety Test*. Champaign, IL: Human Kinetics.
- Martens, R., Burton, D., Vealey, R. S., Bump, L. A., & Smith, D. E. (1990). Development and validation of the Competitive State Anxiety Inventory-2. In R. Martens, R. Vealey, & D. Burton (Eds.), *Competitive anxiety in sport* (pp. 117-213). Champaign, IL: Human Kinetics.
- Martens, R., Vealey, R. S., & Burton, D. (Eds.). (1990). *Competitive anxiety in sport*. Champaign, IL: Human Kinetics.
- Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). *STAI manual*. Palo Alto, CA: Consulting Psychologists.
- Statistical Package for Social Sciences (SPSS, 2000). *SPSS Base 10.1 for Windows: User's guide*. Chicago, IL: SPSS.
- Vealey, R. (1986). Conceptualization of sport-confidence and competitive orientation: Preliminary investigation and instrument development. *Journal of Sport Psychology*, 8(2), 221-246.

