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Comparison of selected psychological variables among different levels of table tennis players

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Abstract
Objective: The objective of the study is to know the psychological state i.e. Personality Trait and Competitive State Anxiety among State Level and University Level table tennis players.
Methods: To serve the purpose of the investigation, 30 male table tennis players were selected i.e. 15 players from Madhya Pradesh State level table tennis players and 15 players from University participated levels at the age group between 19 to 24 years. The Big five Inventory Personality Traits developed by John, O. P., & Srivastava, S. (1999) and Competitive State Anxiety developed by Martens, Vealey, and Burton (1990) were used to assess the personality and state anxiety level of the selected subjects. The descriptive statistics and One Way Analysis of Variance (ANOVA) with SPSS software 20 version was also used to analyze the data at .05 level of confidence.
Results: The mean and standard deviation of the factors of personality traits of State Level and University Level players are as follows; Extraversion (24.87±4.97) & (28.07±4.43), Agreeableness (31.13±4.96) & (29.87±3.60), Conscientiousness (30.67±5.60) & (30.67±4.98), Neuroticism (22.60±5.93) & (23.40±5.14) and Openness (34.40±5.83) & (33.80±6.61). There were no significant difference was found on factors of personality trait between the two levels of players, as the calculated 'f-value' of Extraversion (2.94), Agreeableness (0.01), Consciousness (0.00), Neuroticism (0.03) and Openness (0.30) were less than the tabulated 'f-value' (4.20). And the mean and standard deviations of state level and university levels table tennis players of Competitive State Anxiety are as follows; Cognitive State Anxiety (22.00±5.90) & (21.87±5.41), Somatic state anxiety (20.40±4.26) & (19.27±6.83) and Self-confidence (24.67±6.06) & (23.53±5.89). There were no significant difference was found on factors of Competitive Anxiety between the two levels of players, as the calculated 'f-value' of Cognitive state anxiety (0.00), somatic state anxiety (0.29) and Self-confidence (0.27) were less than the tabulated 'f-value' (4.20).
Conclusion: the present study shows that the players of the state and university level have similar level of competitive state anxiety and personality trait. Further it also recommend that same study could be done with the elite level players or by increasing the sample size or comparison with the beginners to get better knowledge regarding the similarities exists in the present study.

Keywords: Table tennis players, big five personality trait (extraversion, agreeableness, conscientiousness, neuroticism and openness), competitive state anxiety (cognitive state anxiety, somatic state anxiety and self-confidence)

Introduction

Table Tennis is an Indoor sport which is play with racket and ball over a rectangular table, equally divided by a net and it is also popularly known as "Ping Pong" or "Indoor Tennis" etc. This game plays with different tactics and strategy like attacker, defender, counter-hitter/blocker and all-rounder. For a successful athlete in this game once need to get good training session based on all the sports specific motor fitness components. Table tennis player's positive emotions during matches enhanced the win rate of a competition; conversely, a nervous or anxious emotional state negatively affected the bad result of the competition. So, table tennis player should have good physical fitness and mental strength also. People may have the misconception of playing over a small table without effort and much fitness, but the fact is a good player has to have almost all motor physical fitness as well as mental fitness. The game of table tennis is one of the fastest objective games with a fine coordination of eye-hand and eye-leg. One should have good agility and reaction time ability as the playing surface is small in size and has to react very fast. But despite coaches and players often mentioning the

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importance of the mental side of the game, mental skills training remains largely unused now a day in coaching sessions (Larcombe, 2016) [4]. Lesyk (1998) [10] state that there are nine specific mental skills (i.e. A high level of self-motivation, High, realistic goals, Good people skills, Positive self-talk, Positive mental imagery, Control over anxiety, Control over emotions and Maintaining concentration) that contribute to success in sports. These factors can be learned and improved with instruction and practice by the athletes as well as to become a successful citizen of the society. The positive directed table tennis players can increase concentration, increased motivation, increased confidence, positive sensations, and adaptive behaviours, whereas negative directed players found in decreased concentration, decreased motivation, too confident, decreased confidence, negative sensations, and maladaptive behaviours. And neutral directed players take more risk and take less risk, and no perceived influence on own performance (Martinent & Ferrand., 2009) [16]. The human personality is a marvellously intricate structure, delicately woven the motives, emotions, habits and thoughts, into patterns that balance the pulls and pushes of the outside world. The experience, perception, memory, imagination, instincts, habits, thoughts and sentiments constitute personality. It is also and basic traits to identified sports excellence. So, it is necessary to identify and cultivate those personality traits which are most conductive to sports and a great extent to determine the athlete performance (Larcombe, 2016) [4]. And anxiety means a distributed state of mind; emotional reactivity; arousal; nervousness; and unrealistic and unpleasant state of mind. Anxiety is also an essential ingredient of any competitive situations and without certain level of anxiety, there cannot be competitive performance of an athlete (Ajmer et al., 2018) [1]. Elite athletes have been found to possess various mental and psychological skills like goal setting, imagery ability, focusing attention, emotional control and psychological routines that are at significantly higher levels than those of less-than-elite athletes. A lot of sports officials, coaches, team managers, and athletes talk about the benefits and significance of sports psychology but rarely include it in their training regimen. Personality traits is the sum of the characteristics that make a person's unique. The most basic level of personality is called the psychological core. The deepest component, it includes attitude and values, interests and motives, and beliefs about our self and our self-worth (Robert & Danie, 2017) [19]. Jing et al. (2006) [11] state that activity, optimism, flexibility, tolerance, cooperation, stability, exploring sense, tension, consistent, self-discipline, independence, determination and dedication are the following items that consists on the personality trait of excellent players. The processing efficiency theory predicts that anxiety reduces the processing capacity of working memory and has detrimental effects on performance (Williams et al., 2002) [23]. Athletic performance anxiety is the part of family of performance-related fear-of failure constructs that include test anxiety, speech anxiety and the "stage fright" that factors musicians and dancers can experience within their evaluate performance situations (Tonny & Jeff, 2004). Athletes with high levels of self-motivation, sometimes called intrinsic motivation, take part in sport because athletes feel better when they achieve something (Larcombe, 2016) [4].

Many sports psychologist have studied and find out the characteristic of elite athletes. The complexity, multiplicity and randomness of table tennis matches researchers need to develop lots of skills and tactics to overcome those plateau (Guan et al., 2011) [9]. Successful table-tennis players were characterized by few interfering anxiety reactions (worry cognitions), little vigilant coping, and an extended use of cognitively avoidant self-regulatory techniques (Krohne & Hindel, 1988) [13]. The high and average level competitors of different types of sports have significant differences in personality characteristics (Dowd & Innes, 1981). The present study will also help the scholars and coaches to better understanding with athlete or students in various fields of research as well as the adoption of better training methods.

Methodology
To serve the purpose of the investigation, 30 male table tennis players were selected i.e. 15 players from Madhya Pradesh State level table tennis players and 15 players from University participated levels at the age group between 19 to 24 years. The Big five Inventory Personality Traits (Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness) developed by John, O. P., & Srivastava, S. (1999) [12] and Competitive State Anxiety (Cognitive State Anxiety, Somatic State Anxiety and Self-Confidence) developed by Martens, Vealey, and Burton (1990) [15] were used to assess the personality and state anxiety level of the selected players. The descriptive statistics and One Way Analysis of Variance (ANOVA) with SPSS software 20 version was also used to analyze the data at 0.05 level of significance.

Big Five Inventory of Personality				
Variables/Factors/Traits	Scores	Indicate	Scores	Indicate
Extraversion	High Scores	Very Social	Low Scores	Prefer to work Alone
Agreeableness	High Scores	Typically Polite and like People	Low Scores	Tell it like it is
Conscientiousness	High Scores	Tend to follow rules and prefer clean homes	Low Scores	May be Messy and cheat others
Neuroticism	High Scores	Experience Emotional Instability and Negative Emotion	Low Scores	Not Being Emotional Easily
Openness	High Scores	Day Dream a lot	Low Scores	May be very down to earth

| Competitive State Anxiety	
Traits Scores	Indicate
Near to 9	Low
18	Average
Near to 36	High

Table 1: Descriptive Statistics of Big Five Inventory of Personality Test-

Factors	Group	N	Mean	Std. Deviation	Std. Error
Extraversion	State Level	15	24.87	4.97	1.28
	University level	15	28.07	4.43	1.14
Agreeableness	State Level	15	31.13	4.96	1.28
	University level	15	29.87	3.6	0.93

Conscientiousness	State Level	15	30.73	5.6	1.45
	University level	15	30.67	4.98	1.29
Neuroticism	State Level	15	22.6	5.93	1.53
	University level	15	23.4	5.14	1.33
Openness	State Level	15	34.4	5.83	1.5
	University level	15	33.8	6.61	1.71

The mean and standard deviation of the factors of personality traits of state level players are as follows; Extraversion (24.87 ± 4.97), Agreeableness (31.13± 4.96), Conscientiousness (30.67±5.60), Neuroticism (22.60±5.93) and Openness (34.40 ±5.83). And the mean and standard deviation of university level players are as follows Extraversion (28.07±4.43), Agreeableness (29.87±3.60), Consciousness (30.67±4.98), Neuroticism (23.40±5.14) and Openness (33.80±6.61) respectively.
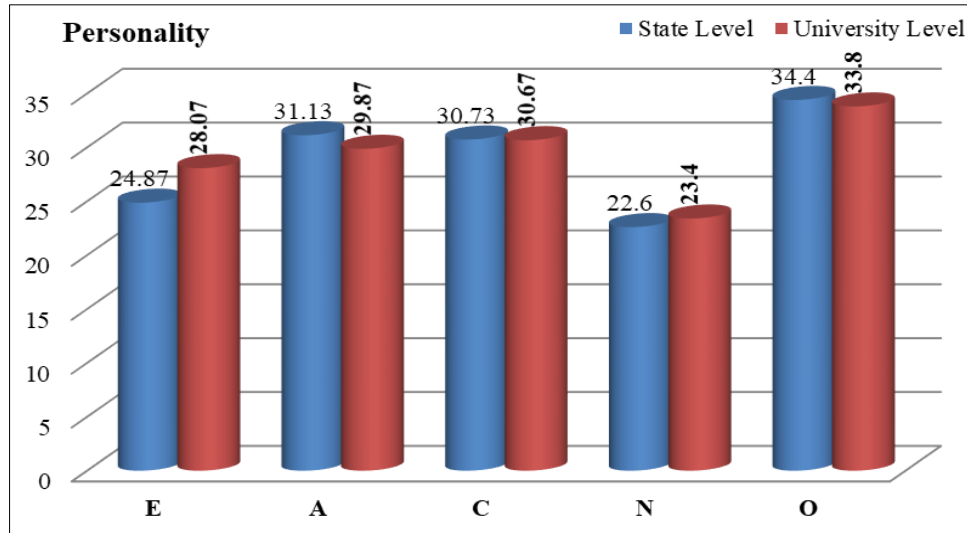
NB: E (Extraversion), A (Agreeableness), C (Conscientiousness), N (Neuroticism) and O (Openness)

Fig 1: Graph represented the mean score of big five personality test of table tennis players in different levels.

Table 2: Comparison of Big Five Personality between State Level and University Level Table Tennis Players by applying One Way Analysis of Variance

Factors/Traits	Groups	Sum of Squares	df	Mean Square	F	Sig.
Extraversion	Between Groups	58.8	1	58.80	2.94	0.10
	Within Groups	559.07	28	19.97		
	Total	617.87	29			
Agreeableness	Between Groups	0.13	1	0.13	0.01	0.94
	Within Groups	642.67	28	22.95		
	Total	642.8	29			
Conscientiousness	Between Groups	0.03	1	0.03	0.00	0.97
	Within Groups	660.93	28	23.60		
	Total	660.97	29			
Neuroticism	Between Groups	0.83	1	0.83	0.03	0.87
	Within Groups	872.53	28	31.16		
	Total	873.37	29			
Openness	Between Groups	7.5	1	7.50	0.30	0.59
	Within Groups	709.87	28	25.35		
	Total	717.37	29			

Table 2 shows that the variables of big 5 personality trait among table tennis players between state level players and university level players have found no significant difference at .05 level of significance, as the calculated 'f-value' of Extraversion (2.94), Agreeableness (0.01), Consciousness (0.00), Neuroticism (0.03) and Openness (0.30) were less than the tabulated 'f-value' (4.20).

Table 3: Descriptive Statistics of competitive state anxiety if table tennis players in different levels

Factors/Traits	Groups	N	Mean	Std. Deviation	Std. Error
Cognitive state anxiety	State level	15	22	5.90	1.52
	University level	15	21.87	5.41	1.40
Somatic state anxiety	State level	15	20.40	4.26	1.10
	University level	15	19.27	6.83	1.76
Self-confidence	State level	15	24.67	6.06	1.56
	University level	15	23.53	5.89	1.52

The mean and standard deviations of state level and university levels table tennis players are as follows Cognitive State Anxiety (22.00±5.90) & (21.87±5.41), Somatic state anxiety (20.40±4.26) & (19.27±6.83) and Self-confidence (24.67±6.06) & (23.53±5.89). This shows that the present subjects are having a bit above the moderate level of anxiety as comparison to the table given above in methodology.
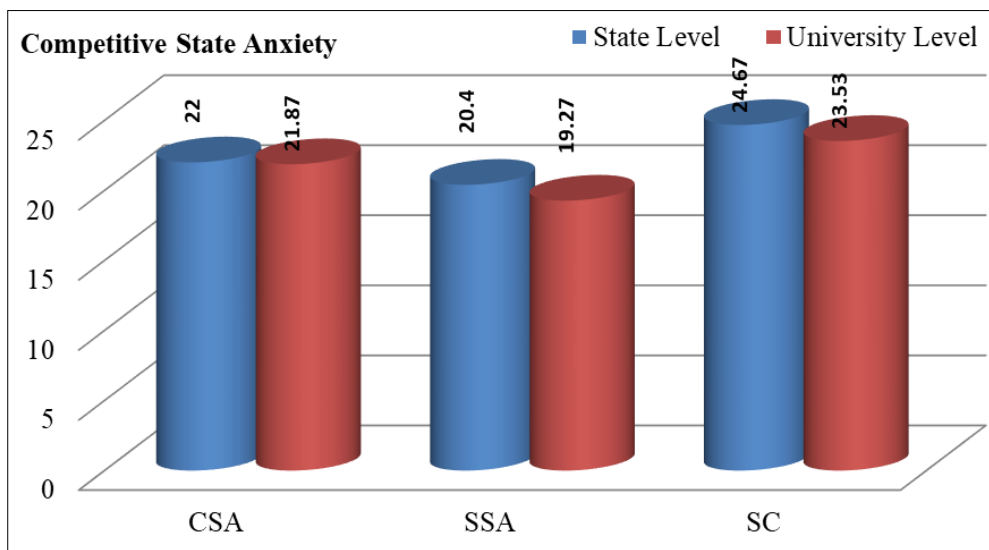
NB: CSA (Cognitive State Anxiety), SSA (Somatic State Anxiety), SC (Self-confidence)

Fig 2: Graph represents the mean score of competitive state anxiety of table tennis player of different levels.
NB: CSA (Cognitive State Anxiety), SSA (Somatic State Anxiety), SC (Self-confidence)

Table 4: Comparison of Competitive State Anxiety between State Level and University Level Table Tennis Players by applying One Way Analysis of Variance (ANOVA)

Factors	Groups	Sum of Squares	df	Mean Square	F	Sig.
Cognitive state anxiety	Between Groups	0.13	1	0.13	0.00	0.95
	Within Groups	897.73	28	32.06		
	Total	897.87	29			
Somatic state anxiety	Between Groups	6.53	1	6.53	0.29	0.60
	Within Groups	634.27	28	22.65		
	Total	640.8	29			
Self-confidence	Between Groups	9.63	1	9.63	0.27	0.61
	Within Groups	999.07	28	35.68		
	Total	1008.7	29			

Table 4 shows that the variables of competitive state anxiety among table tennis players of state level players and university level players have found no significant difference at .05 level of significance, as the calculated 'f-value' of Cognitive state anxiety (0.00), somatic state anxiety (0.29) and Self-confidence (0.27) were less than the tabulated 'f-value' (4.20).

Discussion & Finding
Athletes repeatedly do practice or training to give performance, whether win or lost both give experienced to learn and let them stick and focused on the set goal (Larcombe, 2016) [4]. Personality of elite athletes are determined by their involvement in training, flexibility to deals with teammate, tolerance with the training and instructions, cooperation with the coach and members of the team, mental stability, socialization, handling tension, consistent in training as well as the performance, self-discipline and self-respect, determination and dedication towards the set goal (Jing *et al*., 2006) [11]. The male and female elite table tennis athletes scored high on seven traits namely communicativeness, competitiveness, conscientiousness, perfectionism, apprehension, achievement, and extroversion of the 14 personality traits (Lopez & Santelices, 2012 and Eagleton, *et al*., 2007) [14, 8]. The players

of the present study scored average in Extraversion or social interactions, Agreeableness or polite with others, Conscientiousness or always prefer to follow the rules, Neuroticism or emotional instability and Openness or day dream a lot. And there was also no significance difference found between the two groups. Generally advanced athletes or players are very serious and focused on improvement of skills through training and performance commitment as comparison to intermediate and beginner so lower in social gathering and sport enjoyment (Casper & Andrew, 2008) [5]. Players of state and university levels are moderate athletes this may be the reason for scoring average in all the variables or factors of personality. High performance athletes have strong confidence with their sports performance (Craft *et al*., 2003) [7]. Athletes and coaches have developed leadership quality as the passes of time with the training and subsequently athletes develop satisfaction from the sports they engaged with (Andrew, 2009) [3]. The study by Whiting & Hutt (1972) [22] also state that, the high ability, average ability and beginners have no difference in the personality variables or factors like extraversion/introversion and neuroticism dimensions. So this may be the reason the present study also found no significance difference in the variables or factor of personality trait.

As the athletes have gone through various anxiety levels or

condition, those athletes who assigned with high anxiety training were maintaining high accuracy in performance for longer period of time as comparison to low anxiety training and non-anxiety training (Alder *et al.*, 2016) [2]. The players of the present study may also give the high intensity training programme during the period of data collection for better super compensation during the competition period which can lead to increase the level of anxiety. This may be the reason for competitive anxiety levels of the selected players were scored a bit above average. The winners have always advantages in term of mental health as well as develop high level of self-confidence from the matches he or she has played to win. Whereas, high level in anxiety and mood disturbance in those who unable to win as comparison to winners (Covassin & Pero, 2004) [6]. And both males and females have no difference on level of self-confidence and anxiety intensity, but males reported a more facilitative interpretation of anxiety. The advanced level athletes have higher self confidence levels (Perry & Williams, 1998) [18]. The study by Vincent Parnabas (2015) [21] also state that, the elite national players have also learn to manage anxiety before and during the performance in their training, but also sooner back to the normal resting state than those non elite athletes like district and state level players. The reason behind similarities exists between university and state level table tennis players in the present study may be from their training effect and the level of the competition or tournament they have participated.

Conclusion

The result of the study may be attributed to a smaller number of samples as researcher had conducted the study on 30 subjects only because of unavailability of subjects. It is attributed that skill complexity at both state and university levels might be same hence anxiety level and personality traits may be similar. The study could be further explored to assess the variations in anxiety and personality trait at elite level players or by increasing the sample size or comparison with the beginners to get better knowledge regarding the similarities exists in the present study.

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