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RESEARCH ARTICLE

SUPERSTITIOUS BEHAVIOR AND DECISION MAKING AMONG INDIVIDUAL DUAL AND TEAM SPORT GROUPS

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ABSTRACT

This study examined the superstitious behavior and decision making among individual, dual and team sport groups. To obtain required data, the investigators had selected Ninety (N=90) female intercollege level athletes of 19 to 25 years of age to act as subjects. They were divided into three groups; Thirty ($n_1=30$) Individual Sports, Thirty ($n_2=30$) Dual Sports and Thirty ($n_3=30$) Team Sports athletes of various games and sports. The purposive sampling technique was used to select the subjects. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. To measure the level of superstitions behaviors of the subjects, the superstitions beliefs and behaviour scale constructed by Buhrmann *et al.* (2004) was administered and to measure the level of decision making by applying decision making questionnaire prepared by French *et al.* (1993). One Way Analysis of Variance (ANOVA) was employed to compare the different among Individual Dual and Team Sport Groups. Where 'F' values were found significant, LSD (Least Significant Difference) Post-hoc test was applied to find out the direction and degree of difference. For testing the hypotheses, the level of significance was set at 0.05. The results revealed significant intra-group differences among individual, dual and team sports on the variable superstitious behavior and decision making. It is concluded that the individual sport group has low superstitious belief and better decision making level as compared to their counterpart dual and team sport.

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INTRODUCTION

Sport psychology focuses on teaching practical mental skills to athletes, so that they can develop their psychological abilities to the same high level as their physical abilities. The key difference between winning and losing, or a good performance and a poor performance, may be at the mental skill level rather than the physical skill level. As with physical skills, these mental skills need to be taught correctly, fine-tuned by the coach and athlete. Superstition is regarded as a "belief that one's fate is in the hands of unknown external powers governed by forces over which one has no control." In the scientific sense, superstition is fundamentally irrational; however, superstitious beliefs are popularly accepted as evidenced in the emotional behaviour of the holder. Additionally, holding a superstition carries pejorative taint in that some people don't wish to admit to this of belief. Since these beliefs are transmitted via social inter-action, they are reflected in human experiences within athletic organizations. Their existence within the sphere of athletics re-quires

investigation. Personality which influence the performance also affected by many factors like, Superstitious Behavior and Decision Making etc. Hence there is need to study effect of Superstitious Behavior and Decision Making. The concept of superstition in strategic decision making and its impact on decision outcomes. We propose that, in addition to rational and intuition approaches, managers sometimes rely on supernatural or non-physical causality, i.e., superstition. To understand this silent but critical issue, we apply a two-level study approach to investigate superstition among business decision makers in China. On the personal/decision-maker level, we examine how personal traits are linked to superstitious belief and practice in business decision. On the incident/decision level, we examine how decision characteristics are linked to the use of superstition and consequent decision outcomes. Compared to rational thinking and intuition, superstition seems to have a distinct role in decision-making. Myers (1962) indicated that a person's decision making process depends to a significant degree on their cognitive style; as in most decision-making situations, an individual faces different degrees of uncertainty. In probabilistic terms, this situation is called ambiguity. Decision making is the process of sufficiently reducing uncertainty and

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doubt about alternatives to allow a reasonable choice to be made from among them. Lopez (1977) has defined a decision as a judgment, a final resolution of a conflict of needs, means or goals; and a commitment to action made in face of uncertainty, complexity and even irrationally. Therefore decision making is an important part of all science-based professions, where specialists apply their knowledge in a given area to making informed decisions. The present study aimed to determine the difference in superstitious behavior and decision making among individual, dual and team sport groups.

Selection of Subjects

For this purpose, the investigators had selected Ninety ($N=90$) female intercollege level athletes of 19 to 25 years of age to act as subjects. They were divided into three groups; Thirty ($n_1=30$) Individual Sports, Thirty ($n_2=30$) Dual Sports and Thirty ($n_3=30$) Team Sports athletes of various games and sports. The purposive sampling technique was used to select the subjects. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study.

Table 1. A break-up of selected sample

Sr. No	Individual Sports	Dual Sports		Team Sports	
1.	Archery	10	Chess	10	Basketball
2.	Shooting	10	Tennis	10	Handball
3.	Fencing	10	Badminton	10	Football
	Total	($N_1=30$)	Total	($N_2=30$)	Total
					($N_3=30$)

Tools

- To measure the level of superstitions behaviors of the subjects, the superstitions beliefs and behaviour scale constructed by Buhrmann *et al.* (2004) was administered.
- To measure the level of decision making was measured by applying decision making questionnaire prepared by French *et al.* (1993).

Instrumentation

Superstitions Behaviors questionnaire consists of forty two ($N= 42$) questions. These questions were to be answered by a tick mark in the respective boxes given next to each question. The questionnaire was arranged in a logical order and each question was worded clearly to enable the subjects to understand and answer those questions without much difficulty. The responses to the questions were "Agree", "Dis-Agree" and "Not Aware". Decision making questionnaire consisted of twenty one ($N = 21$) items measuring the decision making. The respondents were required to record their responses in six categories, very infrequently or never, infrequently, quite infrequently, quite frequently, frequently and very frequently or always. The scoring of each of the items was as follows; very infrequently or never = 1, infrequently = 2, quite infrequently = 3, quite frequently = 4, frequently and very frequently or always = 6. There was no right or wrong answers in this questionnaire. There was none allocated for the completion of both the questionnaires but the subjects were instructed not taken too much time over any questions. The

questionnaires were distributed to the respondents along with the writing material. After the completion of the questionnaires, questionnaires were collected and checked that no response was left unanswered.

Statistical Techniques

One Way Analysis of Variance (ANOVA) was employed to compare the different among Individual Dual and Team Sport Groups. Where 'F' values were found significant, LSD (Least Significant Difference) Post-hoc test was applied to find out the direction and degree of difference. For testing the hypotheses, the level of significance was set at 0.05.

Table 2. Analysis of Variance (ANOVA) results with regard to superstitious behavior among Individual Sports (Archery, Shooting and Fencing)

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	8.36	2	2.53	.35	.70
Within Groups	264.70	27	9.67		
Total	243.16	29			

F 0.05 (2, 27)

It is evident from table 2 that results of Analysis of Variance (ANOVA) among various sport groups (archery, shooting and fencing) with regard to individual sports athletes on the variable superstitious behavior were found statistically insignificant ($P>0.05$). Since 'F' ratio was not found statistically significant, therefore, there is no need to apply the post hoc test.

Table 3. Analysis of Variance (ANOVA) results with regard to superstitious behavior among Dual Sports (Chess, Tennis and Badminton)

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	1250.46	2	65.23	1.246	.283
Within Groups	1303.00	27	41.96		
Total	1573.46	29			

F 0.05 (2, 27)

It is evident from table 3 that results of Analysis of Variance (ANOVA) among various sport groups (Chess, Tennis and Badminton) with regard to dual sports athletes on the variable superstitious behavior were found statistically insignificant ($P>0.05$). Since 'F' ratio was not found statistically significant, therefore, there is no need to apply the post hoc test.

Table 4. Analysis of Variance (ANOVA) results with regard to superstitious behavior among Team Sports (Basketball, Handball and Football)

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	70.86	2	50.33	.453	.429
Within Groups	1663.10	27	51.96		
Total	1743.66	29			

F 0.05 (2, 27)

It is evident from table 4 that results of Analysis of Variance (ANOVA) among various sport groups (Chess, Tennis and Badminton) with regard to dual sports athletes on the variable

superstitious behavior were found statistically insignificant ($P>0.05$). Since 'F' ratio was not found statistically significant, therefore, there is no need to apply the post hoc test.

Table 5. Analysis of Variance (ANOVA) results with regard to superstitious behavior among Various Sport Groups (Individual, Dual and Team Sports)

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	24267.40	2	11643.70	267.22*	.000
Within Groups	3510.70	87	41.38		
Total	25788.12	89			

$F\ 0.05\ (2, 87)$

It is evident from table 5 that results of Analysis of Variance (ANOVA) among various sport groups (individual, dual and team sports) with regard to superstitious behavior were found statistically significant ($P<.05$). Since the obtained F-ratio 267.22* was found statistically significant, therefore, Post-hoc test (LSD) was applied to find out the degree and direction of differences between paired means among various sport groups (individual, dual and team sports) with regard to superstitious behavior. The results of Post-hoc test have been presented in table 6 below.

Table 6. Comparison of Mean Values of Post-hoc test (LSD) among various Sport Groups (Individual, Dual and Team Sports) with regard to superstitious behavior

Group (A)	Group (B)	Mean Difference (A-B)	Sig.
Individual Sports (Mean=39.43)	Dual	-21.90*	.000
	Team	-59.30*	.000
Dual Sports (Mean=61.33)	Individual	21.90	.000
	Team	-37.40*	.000
Team Sports (Mean=98.73)	Individual	59.30*	.000
	Dual	37.40*	.000

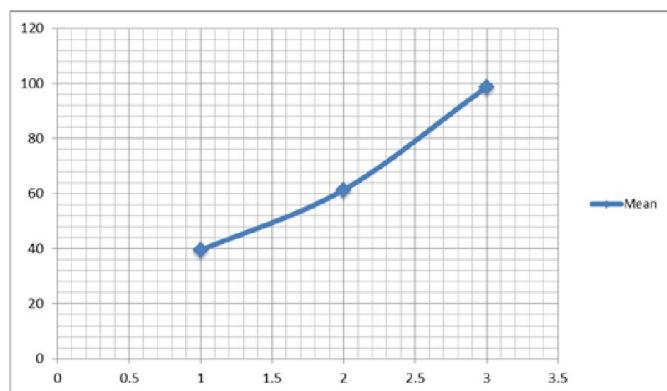


Figure 1. Graphical representation of mean scores among various Sport Groups (Individual, Dual and Team Sports) with regard to superstitious behaviour

A glance at table 6 showed that the mean value of individual sports group was 39.43 whereas dual sports had mean value as 61.33 and the mean difference between both the groups was found 21.90. The p-value sig .000 shows that the individual sport group had demonstrated significantly better on superstitious behavior than their counterpart's dual sport

group. The mean difference between individual and team sport group was found 59.30. The p-value sig .000 revealed that the individual sport group had exhibited significantly better on superstitious behavior than their counterpart's team sport group. The mean difference between team and dual sport group was found 37.40. The p-value sig .000 showed that the dual sport group had demonstrated better significantly better on superstitious behavior than their counterpart's team sport group.

Table 7. Analysis of Variance (ANOVA) results with regard to decision making among Individual Sports (Archery, Shooting and Fencing)

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	24.40	2	15.70	.962	.391
Within Groups	322.90	27	11.07		
Total	338.20	29			

$F\ 0.05\ (2, 27)$

It is evident from table 7 that results of Analysis of Variance (ANOVA) among various sport groups (archery, shooting and fencing) with regard to individual sports athletes on the variable decision making were found statistically insignificant ($P>0.05$). Since 'F' ratio was not found statistically significant, therefore, there is no need to apply the post hoc test.

Table 8. Analysis of Variance (ANOVA) results with regard to decision making among Dual Sports (Chess, Tennis and Badminton)

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	.56	2	.33	.017	.983
Within Groups	389.00	27	13.46		
Total	329.76	29			

$F\ 0.05\ (2, 27)$

It can be seen from table 8 that results of Analysis of Variance (ANOVA) among various sport groups (chess, tennis and badminton) with regard to dual sports athletes on the variable decision making were found statistically insignificant ($P>0.05$). Since 'F' ratio was not found statistically significant, therefore, there is no need to apply the post hoc test.

Table 9. Analysis of Variance (ANOVA) results with regard to decision making among Team Sports (Basketball, Handball and Football)

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	6.46	2	3.53	.353	.706
Within Groups	275.90	27	11.48		
Total	283.36	29			

$F\ 0.05\ (2, 27)$

It can be observed from table 9 that results of Analysis of Variance (ANOVA) among various sport groups (basketball, handball and football) with regard to team sports athletes on the variable decision making were found statistically insignificant ($P>0.05$). Since 'F' ratio was not found statistically significant, therefore, there is no need to apply the post hoc test.

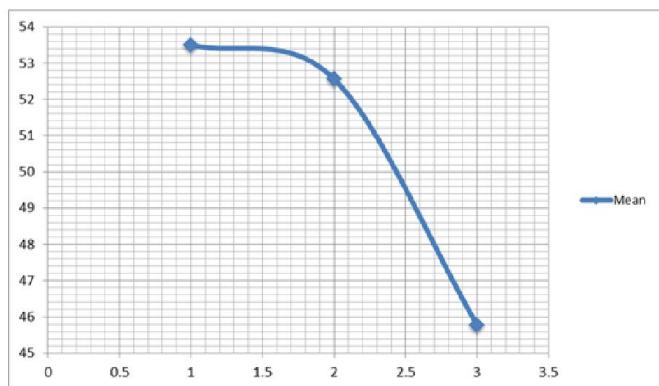
Table 10. Analysis of Variance (ANOVA) results with regard to decision making among Various Sport Groups (Individual, Dual and Team Sports)

Source of variance	Sum of Squares	df	Mean Square	F-ratio	Sig.
Between Groups	3064.86	2	1417.43	167.45	.000
Within Groups	1031.13	87	11.76		
Total	4076.00	89			
					F 0.05 (2, 87)

It is evident from table 10 that results of Analysis of Variance (ANOVA) among various sport groups (individual, dual and team sports) with regard to decision making were found statistically significant ($P < .05$). Since the obtained F-ratio 167.45 was found statistically significant, therefore, Post-hoc test (LSD) was applied to find out the degree and direction of differences between paired means among various sport groups (individual, dual and team sports) with regard to decision making. The results of Post-hoc test have been presented in table 11 below.

Table 11. Comparison of Mean Values of Post-hoc test (LSD) among various Sport Groups (Individual, Dual and Team Sports) with regard to Decision Making

Group (A)	Group (B)	Mean Difference (A-B)	Sig.
Individual Sports (Mean=53.50)	Dual	0.94	.000
	Team	7.72	.000
Dual Sports (Mean=52.56)	Individual	0.94	.000
	Team	6.78	.000
Team Sports (Mean=45.78)	Individual	7.72	.000
	Dual	6.78	.000

**Figure 2. Graphical representation of mean scores among various Sport Groups (Individual, Dual and Team Sports) with regard to Decision Making**

A glance at table 11 showed that the mean value of individual sports group was 53.50 whereas dual sports had mean value as 52.56 and the mean difference between both the groups was found 0.94. The p-value sig .000 shows that the individual sport group had demonstrated significantly better on decision making than their counterpart's dual sport group. The mean difference between individual and team sport group was found 7.72. The p-value sig .000 revealed that the individual sport group had exhibited significantly better on decision making than their counterpart's team sport group. The mean difference

between team and dual sport group was found 6.78. The p-value sig .000 showed that the dual sport group had demonstrated better significantly better on decision making than their counterpart's team sport group.

RESULTS AND DISCUSSION

The present study has highlighted the significance of differences with regard to superstitious behavior and decision making among Individual Dual and Team Sport Groups. A perusal at Analysis of Variance (ANOVA) tables 2-4 with regard to superstitious behavior of individual sport (archery, shooting and fencing), Dual Sports (Chess, Tennis and Badminton) and Team Sports (Basketball, Handball and Football) group revealed insignificant differences among various sport groups. But when we find out the intra-group difference between individual, dual and team sports it is revealed significant differences between these groups. The findings of Analysis of variance (ANOVA) tables 5-6 with regard to superstitious behaviour individual, Dual and Team Sports revealed significant differences among sport groups. The outcome of the above results might be due to the impact of stress, and increased task persistence constitutes one means by which self-efficacy, enhanced by superstition, improves performance.

Therefore, Post-hoc test (LSD) was applied to find out the degree and direction of differences between paired means among various sport groups (individual, dual and team sports) with regard to superstitious behaviour. After the analysis it can safely be reviewed that individual sport group has lower superstitious behaviour as compare to their counterpart dual and team sport. If evidence from past research is valid, then superstitious beliefs and behavior in collegiate athletes is a result of the individual's decision making. Performing more studies and exploring a variety of variables would yield a greater insight to more possible causes and reasoning behind superstition. Learning more about superstitions could assist sport psychologists, coaches, and players in understanding how individual athletes view the sport and effectively find strategies that can further enhance performance. According to Dr. Richard Lustberg, creator of the Web site Psychology of Sports, superstitious behavior and rituals play a significant role in the mental preparation for a competition (Chick, 2008).

One may wonder whether the beneficial effects of superstition on performance would also hold in real-life situations. In fact, correlational support for this possibility exists in the realm of sports. Buhrmann and Zaugg (1981) found that for competitive basketball players, superstitious beliefs and performance are positively related: Superior teams, as well as superior players within a team, exhibit more superstitious behaviors. In light of the present findings, this suggests that even in real-life performance situations, superstitious thoughts and behaviors result in performance benefits. It is interesting to note that much of the article is devoted to covering the superstitious elements in the game rather than the aspects of game play and strategy, and that the superstitious beliefs filter throughout the team, in this instance, from the coach and play- to the manager. Some athletes admit to their superstitions, and naturally enough, they are reported to the public without

hesitation. One may wonder whether the beneficial effects of superstition on performance would also hold in real life situations. In fact, correlational support for this possibility exists in the realm of sports. Bal et al. (2014) found that and concluded that the individual sport group has low superstitious belief and better decision making level as compared to their counterpart dual and team sport. A perusal at Analysis of Variance (ANOVA) tables 7-9 with regard to decision making of individual sport (archery, shooting and fencing), Dual Sports (Chess, Tennis and Badminton) and Team Sports (Basketball, Handball and Football) group revealed insignificant differences among various sport groups. The outcome of the above results might be due to the practical environment includes different types of games. But when we find out the intra-group difference between individual, dual and team sports it is revealed significant differences between these groups. The findings of Analysis of variance (ANOVA) tables 10-11 with regard to decision making individual, Dual and Team Sports revealed significant differences among sport groups. The findings might be as results of pressures of their study and less responsibility in team sports which might lead them to the low decision-making level. Therefore, Post-hoc test (LSD) was applied to find out the degree and direction of differences between paired means among various sport groups (individual, dual and team sports) with regard to decision making. After the analysis it can safely be reviewed that individual sport group has higher decision making power as compare to their counterpart dual and team sport. Similar trends have been reported by Flaming *et al.* (2010) found that significant difference between Philippines and United States students on the variable decision making. Dureja and Singh (2011) found that Physical education students have better decision making level as compared to their counterpart psychology students.

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