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A comparative study of abstract reasoning of team and individual players

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Abstract

Conceptualizing ideas, basics, and objects in unique and novel ways is necessary for abstract thinking. The use of abstract thinking may take many different forms in sports scenarios where the goal is to win or lose. This study's major objective was to examine team and individual players' abstract thinking. For this study's objectives One hundred twenty (N=120) male subjects were selected for the research, of which 60 came from team games and the remaining 60 from solo games. The score for abstract thinking was produced using Raven's Progressive Matrices to assess both team and individual players. To assess team and individual players' abstract thinking, a two-sample t-test was performed. Between team and individual player abstract reasoning scores, a statistically significant difference was found ($p < 0.05$, mean difference (Team Abstract Reasoning > Individual Abstract Reasoning) 3.03). Team games provide a variety of unusual and pre-structured situations that encourage more abstract thinking.

Keywords: Abstract reasoning, team & individual players

Introduction

The capacity to swiftly reason with information in order to solve new and unfamiliar situations is an example of fluid intelligence or abstracts reasoning. While abstract reasoning is based on real experiences, objects, people, and situations, it is also based upon the ability to understand and think about complex concepts. (Cherry Kendra, 2021)^[7] The ability to abstractly reason involves understanding and analyzing concepts not related to concrete experiences, objects, people, or situations. Higher-order thinking encompasses a variety of different types of thinking, including abstract reasoning. The style of thoughtful that is focused on learning as well as recalling knowledge along with facts is a simpler form of thinking than this type of thinking, which is more complicated. (Cherry Kendra, 2021)^[7]

Abstract reasoning is most strongly aligned to this skill, which is independent of any past knowledge. It involves thinking in a flexible and lateral manner, using logical reasoning, and coming up with answers that go beyond the most apparent ones. A person who is skilled in abstract reasoning would be able to use the principles of logic to extend laws or correlations to other hypothetical contexts.

Team Game and Individual Game

Team Game: Team sports feature two or more players cooperating toward a common goal. Athletics is an activity to which competing grouping contend to triumph. A grouping activity including any game or at least two participants working toward a common goal. Contradictory category contend to triumph in a grouping activity. Basketball, Volleyball, Handball, Cricket, Kabaddi, Kho-Kho, Football, Hockey. Team sports include opposing teams interacting directly and concurrently to achieve a goal. The goal is to obtain points by having same-team players guide a ball or item according to regulations. Team sports are practiced in confined groups, where participants work together to achieve a goal. The purpose is to construct a ball or similar item according to several criteria to earn points. Athletics' growing popularity has impacted not just athletes, but also fans, local and national economy. Skilled players carry out their aspirations while acting as role models, young athletes gain life skills, and fans connect over their teams while supporting local economies. Sports between two teams of players. Volleyball, basketball, and hockey are examples of team-oriented sports. Athletes compete

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alongside their teammates against an opposing team in a team game. Recently, "team games" have been questioned. Some games differ from "typical" group activities in their goals or rules. These group activities don't involve partners building a ball or similar object to earn points. Swimming and Olympic sports are sometimes considered group sports. In other group activities, like climbing, there's no limiting group or point scoring. Instead of focusing on a limiting group, the achievement is proportional to the trip's difficulty. In certain group games, participants compete against each other for championship points. A competitor who competes with his companions or comrade in a team game or recreation when one set of player's faces another. It may also be called recreations in which a group of players/competitors competes against another group. (Trivedi Rahul, 2020)^[14]

Individual Game: Individual sports are played alone. In an individual sport, a single individual or player competes with a single player or opponent in a given event. Golf, bowling, and tennis are individual sports, played without teammates. Athlete that participates in an individual event/sport or Sports in which individual athletes engage alone or there is a one-on-one competition between the participants. It's also a brave individual sports competitor. Individual sport is a one-on-one battle between a single participant and player. For example, there are many sports like wrestling, boxing, taekwondo, karate, and many events in athletics like 100mts. dash, 200mts. dash, 400mts. dash, 800mts. dash, and 1500mts. dash so on there are field events like jumping occurrence like long-jump, high-jump, as well as pole vault, and there are many throwing occurrence in the category of individual sports like shot put, discuss, javelin. (Trivedi Rahul, 2020)^[14]

Methodology

Selection of Subjects

One Hundred and twenty (N=120) male individuals were chosen as the study's subject in order to accomplish the study's goal. Out of 120 athletes, 60 were chosen from team sports including handball, basketball, hockey, and volleyball, while the remaining 60 were chosen from individual sports like badminton, tennis, athletics, and squash. The subject's age varied from 19 to 30 years old.

Selection of test to measure abstract reasoning

In general, RPM is a non-verbal test used for evaluating human intelligence and abstract reasoning. Raven's Progressive Matrices are a non-verbal test used for evaluating human intelligence and abstract reasoning. It's also examined to be a non-verbal evaluate of fluid quick-witted. (Bilker, 2012)^[15]. It's solitary of the utmost prevalent types of exams that are given to twain groups along with individuals arranging in age from five years old all ways up to the-specific elderly. It is composed of sixty questions with a choice of answers, with each question progressively becoming

more difficult. (Kaplan, 2009)^[9] In 1936, John C. Raven was the first person to design the exams that are used today. It is the responsibility of the subject to determine which component of a pattern is lacking in order to successfully complete each test item. The name of the exam comes from the fact that many patterns are given in the shape of a matrix with dimensions of 6 × 6, 4 × 4, 3 × 3, or 2 x 2. (Raven, 1936)^[12]

Administration of RPM Test

The individuals were instructed to fill out their personal information on the record form after receiving pens and record forms. When this is finished, test booklets are distributed. Subjects were advised to wait until everyone was ready before opening the books. The researcher opened the exam book and first described the A1 issue, how it would be done, and how to record the solution. Once everyone is aware of how to solve the issue, we go on to the next one, A2, and ask the students for the solution. If everyone can respond, we go on to the following question, which is A3. Subjects are prepared to administer the test if they were able to respond to that question as well. If not, the individuals repeat the A1 issue and follow the identical steps from A1 through A3 as before.

Scoring of RPM

The total number of successfully solved questions a person solves when given the freedom to work quietly through the whole series from start to finish determines their score on the scale. The consistency of a person's work may be evaluated by deducting from each of the five sets' scores the score that would typically be anticipated given the same overall score on the scale. The predicted score is shown in Table SPMII in the handbook. The following numerical example illustrates the discrepancy between a person's overall score and the score he or she receives on each set: Disparities: 0, +1, -2, -1, +2. The total score on the scale cannot be taken at face value as an accurate representation of a person's overall capacity for intellectual activity if one of the sets' scores for that individual deviate from the others by more than 2. Even when there are break-up disparities of more than two points, the overall score seems to be generally genuine. However, researcher regarded any tests that had a disparity of greater than 2 points in any set as invalid pertaining study.

Statistical analysis

The statistical analysis of data collected on one twenty subjects belonging to different game was done using IBM SPSS 20.0. In order to compare abstract reasoning of team and individual player Two-sample T-Test was used after determining mean, standard deviation and normality of data.

Results

Table 1: Descriptive Statistics of abstract reasoning

Individual Players or Team Players		N	Mean	Std. Deviation	Std. Error Mean
Ravens SPM Score	Team Players	60	50.8333	5.25991	.67905
	Individual Players	60	47.8000	6.91057	.89215

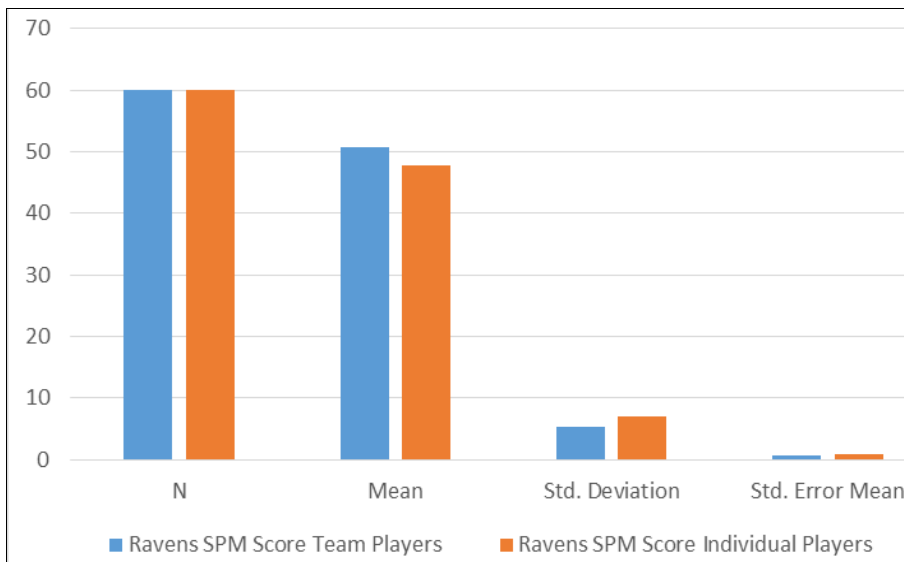


Fig 1: Bar graph representation of abstract reasoning.

Table 1 and Fig. 1 represents the descriptive statistics of abstract reasoning of selected Individual Players or Team Players. The abstract reasoning mean and standard deviation

of Individual Players or Team Players were 50.83 ± 5.25 and 47.80 ± 6.91 respectively.

Table 2: Normality Statistics (Skewness & Kurtosis) of abstract reasoning and academic score.

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ravens SPM Score	120	-1.738	.221	7.156	.438

Table 2 and Fig. 3 represents the normality statistics of abstract reasoning of selected Individual Players or Team Players. The obtained std. error of skewness and kurtosis for abstract reasoning was 0.221 which is significantly greater

than 0.05, from which it can be concluded that the scores of abstract reasoning of selected Individual Players or Team Players were normally distributed.

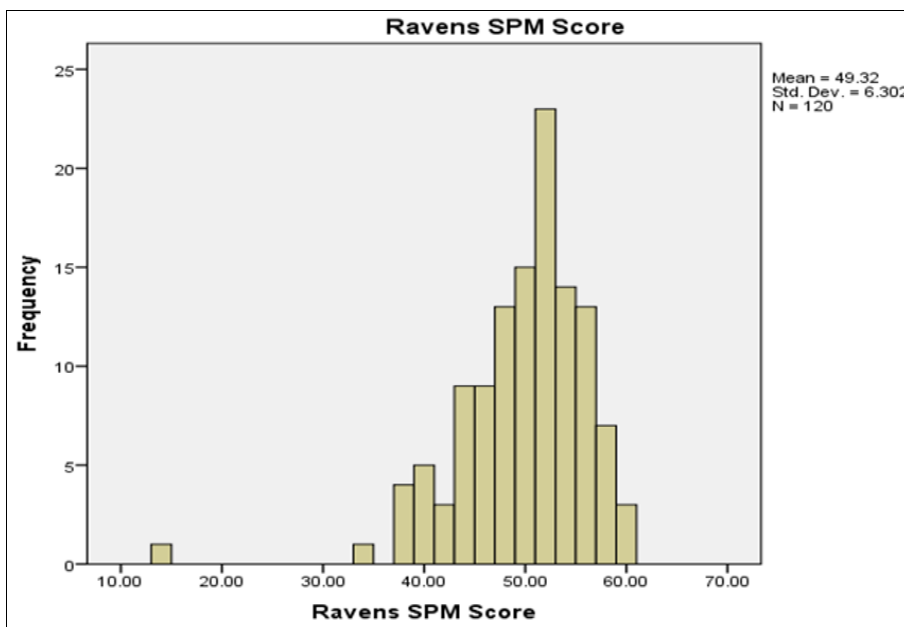


Fig 3: Graphical representations of normality statistics of abstract reasoning

Table 3: Significance of variation between Mean of Abstract Reasoning for Individual Players and Team Players

		Levene's test for equality of variances			t-test for equality of means				
		F	Sig.	t	DF	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Ravens SPM Score	Equal variances assumed	1.308	.255	2.705	118	.008	3.03	.81309	5.25357
	Equal variances not assumed			2.705	110.18	.008	3.03	.81146	5.25521

Table 3 represents the value of Levens test and T-statistics. The Levens is an assumption for two-sample T-test for determining homogeneity of group. The obtained value for Levens test for Abstract Reasoning for Individual Players and Team Players was 0.255, which is more than 0.05 and hence the assumption of equality of variance is not violated. The obtained T-value for Abstract Reasoning for Individual Players and Team Players was 2.705, which is significant as its p-value is 0.008 which is less than 0.05. As a result, the null hypothesis of equality of means between two groups cannot be rejected, and the Abstract Reasoning for selected Individual Players and Team Players can be interpreted differently. Table 1 shows that Team Players' Abstract Reasoning is higher than that of Individual Players, implying that chosen Team Players had higher Abstract Reasoning than Individual Players and that the difference was significant.

Conclusion

The present study comes to the conclusion that individual game players and team game players have significantly different levels of abstract thinking. Individual games, in their most fundamental form, are based on cyclic activities or constant abilities, both of which demand organized and predefined movement. This places a restriction on abstract thinking since there is little space for novel and unusual circumstances. Whereas team games are based on non-cyclical activities or a variety of skills, neither of which require structured or predetermined movements because they occur in a variety of ways according to the various situations of the game, which require abstract reasoning for a variety of unfamiliar situations.

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