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The Relationship between Cognitive Abilities with Big Five Personality Factors

Dr. Gargi Sharma

Assistant Professor, Department of Psychology, Manipal University, Jaipur, Rajasthan, India

Iqbal

M.A. Student, Lovely Professional University, Phagwara, Punjab, India

Abstract:

Cognitive abilities and personality (Big 5 factor) are supposed to be core norms of the scientific community. An increasing number of studies have investigated relations between dimensions of personality and level of cognitive functioning. However, relatively little is known about whether the cognitive - personality relations vary among adults. The main aim of this study is to investigate whether there is any relationship between cognitive abilities (problem solving, reasoning) and personality (big 5 factors, OCEAN). The current study examined these issues by using survey research design and simple random sampling, 150 students were selected from lovely professional university. Appropriate statistical techniques were used for analysis of the collected data. The result revealed that there was positive correlation of one dimension of cognitive ability with the three dimensions of personality (openness in males and females, conscientiousness, extraversion in females only) and there was no relationship of reasoning the other dimension of cognitive ability under study with the personality dimensions (traits). And there was no difference in males and females in the dimensions of the personality, but there was significant difference in cognitive abilities among gender, males were high in both the dimensions of the cognitive abilities.

Keywords: Cognitive abilities, personality and OCEAN.

1. Introduction

Cognition; today, cognition is one of the most important field of psychology; it is a common term for all forms of knowing and awareness that is secret. The work of cognition is the study of our mental life. Cognition comprises of two things contents and processes. The contents are what a person knows like ideas, reality, prepositions, act, and remembrance: earth is round shaped, a green light means go. Cognitive processes are how you employ these mental contents in ways that allow you to explain the world around you and to discover innovative solutions to your life related problems.

1.1. Problem Solving

It has been found to be an important aspect of cognition; it is a proper way of achieving a goal when the goal is not voluntarily accessible. It is not possible to resolve a problem without having any concept about that. For e.g. William Eno, he was born in New York City in 1858; he became worried about the City's horrifying traffic jams. Chariots were making street traffic scary and menacing. Eno issued a journal about the necessity of street traffic reforms. His innovative solution to that troublesome issue generated new concepts, such as 'stop-signs', 'one-way streets' and 'pedestrian's islands'. Which is still having an important status to traffic safety today (Bransford & Stein, 1993)? Like Eno we also face lot of problems in our everyday lives. Significance of solving some troublesome issues in our everyday lives and the importance of resolving some extremely difficult problems, psychologists have gone up to an astonishing effort to identify the thinking process that person goes through to solve problems more effectively.

1.2. Reasoning

It has been found that reasoning plays a crucial role in problem solving; it is the mental actions of altering information to reach at closure. It is an art closely attached with critical thinking (Markmen & genter, 2001). Reasoning is attached with thinking process, intellect and cognition. In order to reason two approaches are used: Inductive and Deductive reasoning,

Inductive reasoning is from a particular to the popular (Coley and others, 2004) that is, it involves making cessation about the members of a group based on observing only some of the members of that group.

Deductive reasoning is from the popular to particular (Newstead and others, 2004) when someone learns a common rule and then understands how it can be used in some situations, but not in others, he is using deductive reasoning.

Cognitive abilities are also responsible for an individual's personality. Because cognitive functioning has an important role to play in personality of individual sometimes cognitive abilities has positive and sometimes it has negative effect on the personality of an individual. Personality is a unique and enduring pattern of characteristics that influence behaviour, emotions and attitudes and is

expressed in many situations. One of the dominant model of personality is big five factor model which explains five mostly independent dimensions that together provide a comprehensive and reliable personality assessment (e.g. Digman 1990; Goldberg, 1992).

The five factors of personality are Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (OCEAN). This model is able to explain different traits of personality in a person without overlapping.

2. Method

2.1. Objectives

1. To determine the relationship between cognitive abilities and personality factors (big five) among adults.
2. Is there any the gender difference in cognitive abilities and personality dimensions.

2.2. Hypotheses

1. There is a significant relationship between cognitive abilities and personality factors (big five) among males and females.
2. There is significant gender difference in personality and cognitive abilities.

2.3. Variables

1. Personality (big five factors).
2. Cognitive abilities (problem solving and reasoning).

2.4. Sample

The sample of this study was comprised of 150 adults in the age group of 18-25 in which 75 were males and 75 were females. The simple random sampling technique was used to collect the data and the samples were taken from the lovely professional university, students were chosen randomly from all blocks of lovely professional university.

2.5. Tools Description

1. Ten item personality inventory (TIPI) by Gosling, S. D., Rentfrow, P.J., & Swann, W. B. (2003)
2. Problem solving ability test by Dubey, L.N. (2010)
3. Reasoning ability test by Dubey, L.N. (1977)

2.6. Data Analysis

The following statistical techniques were used for analysis of data.

1. Pearson's product moment correlation.
2. t-test

3. Results

Variables	Openness Males	Conscientiousness Males	Extraversion Males	Agreeableness males	Emotional Stability Males
Reasoning	.074	.070	.140	.173	-.133
Problem solving	.351**	.163	.204	.173	-.336**

Table 1: the correlation matrix of cognitive abilities with personality among males

**P < 0.01 level. *P < 0.05 level.

Table 1 shows that the problem solving of the males is positively correlated with the personality trait of openness at the significance level of 0.01 (.351**) and problem solving of males is also correlated with emotional stability but negatively at 0.01 level of significance. It shows that when problem solving is high the person is also high in the personality trait of openness but when it comes with emotional stability (neuroticism level) it is vice versa.

Variables	Openness Females	Conscientiousness Females	Extraversion Females	Agreeableness Females	Emotional stability females
Reasoning	.217	.116	.194	.106	.032
Problem solving	.336**	.288*	.262*	.055	-.279*

Table 2: the correlation matrix of cognitive abilities with personality among females

**P < 0.01 level. *P < 0.05 level.

The table 2 shows that there is a positive correlation of cognitive ability problem solving with the personality traits of openness at the significance level of 0.01, and at 0.05 significance level with conscientiousness, and also with the trait of extraversion at the level of 0.05 level of significance but problem is negatively correlated with the emotional stability at the significance level of 0.05. The result shows that females who are high in problem solving are also high in openness, conscientiousness, and extraversion but vice versa with neuroticism.

Group	N	df	Mean	Sd	t value
Reasoning of Males	75	148	67.71	26.13	2.26
Reasoning of females	75		56.51	33.89	

Table 3: t Test

* $P < 0.05$ level.

As can be seen from the table 3 it shows that the t value is 2.26 which is significant at 0.05 level (1.98). So, the result reveals that there is a significant gender difference in reasoning. The males are high in cognitive ability (reasoning) the mean score of males is 67.71 and mean score of females in reasoning is 56.51, which means males are high in reasoning ability than females.

Group	N	df	Mean	Sd	t value
Males	75	148	10.14	4.51	2.40
Females	75		8.54	3.57	

Table 4: Independent sample t test in order to compare the mean score of males and females in cognitive ability (problem solving)

* $P < 0.05$ level.

As we can see from the table 4 the mean score of males are 10.14 and mean score of females are 8.54 and the t value is 2.40 which are significant at the level of 0.05. Males score more than females in problem solving. So, there is again a significant difference among gender in cognitive ability. The problem solving ability is more in males than females.

Sr. No.	Variables	Mean Score Males	Mean Score Female	S.D Males	S.D Females	t- value
1	Openness	4.78	4.51	1.51	1.59	1.04
2	Conscientiousness	4.34	4.25	1.03	1.22	.469
3	Extraversion	4.65	4.50	1.21	1.32	.705
4	Agreeableness	4.85	4.63	1.18	1.41	1.00
5	Emotional Stability	4.45	4.12	1.33	1.39	1.46

Table 5: Independent t test in order to compare the mean score of males and females in five personality dimensions

As we can see from the table 5 that the mean score of both males and females are same in different personality dimensions and the t value is also not significant at any five dimensions of the personality either at 0.05 level or 0.01 level. So the results revealed that there is no significant gender difference in personality dimensions. Both males and females are equal in personality traits. The second hypothesis of the current study is partially accepted, because there is gender difference in cognitive abilities among males and females, but there is no such difference in personality traits.

4. Conclusion

On the basis of the result it has been concluded that there was significant correlation of one dimension of cognitive ability with the three dimensions of personality (openness in males and females, conscientiousness, extraversion in females only) and there was no relationship of reasoning the other dimension of cognitive ability under study with the personality dimensions (traits). To add one more point here is that there was negative correlation of problem solving with the personality dimension of neuroticism (emotional stability, in both males and females).

It has also been concluded that there was no difference in males and females in the dimensions of the personality, but there was significant difference in cognitive abilities among gender, males were high in both the dimensions of the cognitive abilities (reasoning and problem solving).

5. References

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