

Sternberg's Approach to Intelligence: A Literature Review

Anmol,
Ph.D. Student & JRF Scholar,
Post Graduate Department of Psychology,
Ravenshaw University, Cuttack, India.

Abstract : Sternberg defines intelligence as follows- "Intelligence is how well an individual deal with the environmental changes throughout their lifespan." For Sternberg, people deal with the environment using their intelligence and abilities that allow them to adapt, shape and even select an alternate yet better environment. So, intelligence as per Sternberg relates more to adaptation, shaping, and selecting an environment suitable to the individual's needs. The Triarchic theory proposed by Sternberg was the first to go against the psychometric approach and was based more on the cognitive approach to intelligence. The triarchic theory led to the derivation of cognitive styles theory in which Sternberg describes the various cognitive differences among individuals. His theories can be broadly classified into three categories which includes the theory of working of the mind, the triarchic theory of intelligence and the theory of cognitive styles. This paper will review the theory of working of the mind and the triarchic theory of intelligence and compare it to various other theories of intelligences. The aim of this review is to investigate whether significant differences exist between Sternberg's approach to intelligence as compared to the approach to intelligence undertaken by his predecessors.

IndexTerms - Triarchic theory, Homunculus, Synthetic giftedness, Cognitive approach.

I. INTRODUCTION

Robert Jeffrey Sternberg is one of the top hundred psychologists of the 20th century in the American Psychological Association, APA monitor [1]. He has been the past president of the APA and has been engaged as Professor of Human Development at Cornell University, USA. Many of his predecessors used to view intelligence as a static function. However, as per Sternberg, intelligence is somewhat malleable and therefore, theorists should take into consideration of various variables like culture, gender, age, parental siding, parental styles, and so on while analysing intelligence [2]. Hence Sternberg stresses that intelligence can be influenced by various factors in the environment of an individual and therefore can vary in regard to one's experiences and exposure to different conditions [3].

Rationale of the Study

Before Sternberg, general intelligence was the idea that dominated most of the intelligence theories [4]. Although existing review of related literature documents the various theories of intelligence, there is a need to find the qualitative differences between the various theories. This paper will investigate whether significant differences exist between Sternberg's approach to intelligence as compared to the approach to intelligence undertaken by his predecessors? Whether Sternberg theory is just an extension of general factor theory of intelligence or whether it is qualitatively different than the general factor theories of intelligence?

II. REVIEW OF LITERATURE

Sternberg proposed various theories to explain human intelligence. His theories can be broadly classified into three categories which are as follows-

- Theory of Working of the Mind [5]
- The Triarchic theory of Intelligence [6]
- Theory of Cognitive Styles [7]

Theory of Working of Mind

As for Sternberg, the mind is composed of various components that help in the evaluation, planning, and execution of various cognitive processes. The three main components of mind as proposed by Sternberg includes-

- i. Meta-components.
- ii. Performance components.
- iii. Knowledge acquisition components.

Meta-components

Meta-components are also called as homunculus. Homunculus is a fictitious person inside our head that controls our actions and also manages other components of cognitive processes [8]. The main function of the meta-components is to help us solve problems and take decisions [5]. In other words, the meta-components are involved in the processes of the mind, which involve problem-solving and decision-making. It is worthwhile to note that the fictitious person or the homunculus mentioned by Sternberg relates more to the cognitive component of an individual and should not be confused with mental illness or the psychiatric disorders in which multiple personalities can exist within the same individual [9].

Performance components

Performance components are the processes that help in the execution of actions which are dictated by the meta-components. The performance components therefore help helping to achieve the goals or objectives which were postulated by the meta-components [10]. While meta-components take part in executive processes of planning and monitoring, they take the help of performance

components to execute the plans into actions. Hence, performance components are involved in cognitive tasks like perceiving problems in our long-term memory, perceiving the relationship between objects and so on [10].

Knowledge acquisition components

Knowledge acquisition components help us in the acquisition and classification of knowledge. They help to sort out relevant as well as irrelevant information [5]. Another use of the knowledge acquisition component is that they help in the integration of various pieces of information and therefore help us to comprehend a holistic view of acquired information. It is worthwhile to note that the various components discussed above do not work in isolation [10]. Meta-components help in the planning and decision-making process. While the performance components help in the execution of actions as decided by the meta-components, the knowledge acquisition components help us in the acquisition and proper categorization of information.

The Triarchic Theory

The triarchic theory of intelligence was proposed by Sternberg, in which he discusses three different aspects of intelligence [6]. The Triarchic theory proposed by Sternberg was the first to go against the psychometric approach and was based more on the cognitive approach to intelligence. The triarchic theory led to the derivation of cognitive styles theory in which Sternberg describes the various cognitive differences among individuals [11]. Another similar derivative of triarchic theory is related to the seven different styles of people based on the components of the triarchic theory [11]. According to the triarchic theory, intelligence has three aspects-analytical, creative and practical aspects.

Analytical intelligence

Analytical intelligence is also known as componential intelligence. People who are rich in componential intelligence are also said to be gifted with analytical giftedness [6]. The main functions of analytical intelligence involve abstract thinking, logical reasoning, and verbal and mathematical skills. People having analytical intelligence are influential and proficient in planning, abstract thinking, data analysis, and so on [12]. Such people are able to see solutions not easily seen by others and rely more on abstract thinking to solve the problem. This is the type of intelligence as per Sternberg, which is most often measured by existing forms of intelligence test. The example of professions which cater to the needs of analytical giftedness people include statistics, computer science, data analysis, and so on. Alan Turing, the famous mathematician who broke the Enigma codes used by Germans to transmit encrypted messages during the World War II, had a very impressive analytical intelligence [13]. One drawback that people with analytical intelligence might face is that individuals who are adept at analytical intelligence may not be adept or proficient at creating unique and creative ideas of their own.

Creative intelligence or Experiential intelligence

Creative intelligence was previously called as experiential intelligence. People who are gifted with creative intelligences are also said to be people with creative giftedness or synthetic giftedness [11]. The main functions of creative intelligence involve-

- Creative and divergent thinking.
- Generating new ideas.
- Ability to deal with global situations.

Sternberg elaborates creative intelligence using the two types of experiences which are the noble experiences and the automated experiences [6]. Novel situations are the one that has never been encountered before and the automated situations are the ones which due to consistent execution and practice, have become automated in nature. That is, such automated actions can be performed without efforts or with little effort on the part of the performer. Sternberg claims that people with creative intelligence are very good at noble situations and can, therefore, create new solutions which many people would not notice. Hence, such people contribute to society by providing a new perspective on a problem. However, often, these people may not be seen with the highest IQ. The people who are rich in creative intelligence are often not seen with the highest IQ because Sternberg says that there are no adequate and proper tests of intelligence that can measure creative intelligence precisely [14]. One drawback of people with creative intelligence is that they may not be practically able to prove their ideas using logic and reasoning. Example of famous personalities under creative intelligence category includes Leonardo da Vinci, Walt Disney, R.K. Narayan and so on. The notion of creative intelligence under the triarchic theory, which focuses on the noble and automated experiences can be related to the theory of fluid intelligence and crystallized intelligence as proposed by Raymond Cattell. Cattell proposed that intelligence is of two types, which are the fluid intelligence and the crystallized intelligence [15]. Fluid intelligence is used to solve problems pertaining to noble situations, whereas the crystallized intelligence helps in solving problems based on the existing knowledge and experiences of an individual [15].

Practical Intelligence

The third component of Triarchic theory is called as practical intelligence or contextual intelligence [6]. People rich in contextual intelligence are also called as street-smart persons. The main characteristic features of practical intelligence include-

- Ability to apply knowledge to the real world.
- Ability to adapt to, shape, and select a better environment.

People with contextual intelligence can use and apply their knowledge to solve problems in real life more efficiently than others. One drawback is that individuals with practical intelligence may not possess creative and logical skills, as was seen in people with creative intelligence or logical intelligence.

Significant differences exist among the three components of the triarchic theory. The first component relates to analytical thinking and is called as analytical intelligence. People with analytical intelligence are able to analyse, reason, and apply logic to problem-solving in a better way than others [16]. People rich in creative intelligence are said to be gifted with synthetic giftedness. The main characteristic of such individuals is that they can create or invent new solutions to existing problems. The imagination of such people is based more on divergent thinking rather than convergent thinking. Another critical difference between analytical intelligence and creative intelligence is that individuals with analytical intelligence formulate solutions which are not noble ideas or are not original ideas of such individuals. Rather, such individuals just combine various forms of logic and

abstract thinking to arrive at the solution. However, individuals rich in creative intelligence can see and create new ideas of their own, which others can't see [12]. Finally, we have the practical intelligence category in which the individuals can apply their existing knowledge to solve the problems. Such people are also able to prioritize their goals efficiently than others and are termed as street smart persons. Sternberg has acknowledged that an individual is not restricted having intelligence in only one of the three categories. Many people may possess an integration of all the above three forms of intelligence and can also have higher levels of all these three types of intelligences [11]. Sternberg also mentions that in order to be successful one requires a balanced interplay among the three types of intelligence. When it comes to relations with another theory, Sternberg triarchic theory relates to that of Aristotle's views on intelligence [17]. As per Aristotle, the intelligence is composed of three aspects which are theoretical, productive, and practical components. The theoretical component is related to the analytical component, the productive component is related to the creative component, and the last component, that is the practical component of Aristotle theory is directly related to the practical component of triarchic theory [17]. Sternberg has extended his Triarchic theory to different types of people, which has led to the formation of cognitive styles[16].

A question that arises at this junction is that why do intelligent people fail? There are various factors for why people who are intelligent are unable to achieve their full potentials. Some of these factors are impulsiveness, procrastination, lack of motivation, self-efficacy, fear of failure, and the attitude of the society. In particular, the last component, that is the attitude of the society towards an individual is a critical factor in determining the realization of the full potential of the individual's intelligence [18]. For example, during the orthodox Christian era, it was believed and propagated that earth is the centre of the universe and other objects in the universe follows the movement of the earth. Copernicus and Galileo were opposed to such notions and presented alternative scientific views which were later proved to be true [19]. However, both the views of Copernicus and Galileo were deliberately suppressed by the then-existing authorities of the Church.

III. CONCLUSION

Before Sternberg, general intelligence was the idea that dominated most of the intelligence [4]. Sternberg's theory focusses on cognitive aspects of intelligence, which was overlooked by his predecessors. In fact, the Sternberg triarchic theory was the first to go against the psychometric approach and take more of the cognitive approach to intelligence. Sternberg also stressed that traditional measures of intelligence did not measure intelligence adequately, and therefore, criticized the existing intelligence tests which were heavily focussed on measuring only the analytical component of intelligence [2]. As compared to Gardner theory of multiple intelligences Sternberg triarchic theory discusses the processes of intelligence rather than elaborating on the various domains of intelligence only. Sternberg theory also views emotions as a distinct form of intelligence [20]. In the light of present evidences, it is concluded that Sternberg's theory of intelligence significantly differs than his predecessor's theories of intelligences which were based on a common factor or a single intelligence factor. Hence, Sternberg adopts a cognitive approach to intelligence theory rather than a behaviouristic viewpoint.

REFERENCES

- [1] "Eminent psychologists of the 20th century." .
- [2] R. J. Sternberg, "The theory of successful intelligence," *Interam. J. Psychol.*, 2005.
- [3] R. J. Sternberg, "Culture and intelligence.," *Am. Psychol.*, 2004.
- [4] "Triarchic Theory of Intelligence." Nov-2017.
- [5] R. J. Sternberg, "Metacognition, Abilities, and Developing Expertise: What Makes an Expert Student?," 2001.
- [6] R. J. Sternberg, "Toward a triarchic theory of human intelligence," *Behav. Brain Sci.*, 1984.
- [7] R. J. Sternberg and E. L. Grigorenko, "Are cognitive styles still in style?," *Am. Psychol.*, 1997.
- [8] K. Baltzer-Jaray, "Homunculus," in *Bad Arguments: 50 Common Fallacies and How to Avoid Them*, 2017.
- [9] A. Piper, "Multiple personality disorder," *British Journal of Psychiatry*. 1994.
- [10] B. M. Shore and A. C. Dover, "Metacognition, Intelligence and Giftedness," *Gift. Child Q.*, 1987.
- [11] R. J. Sternberg, "A Triarchic Theory of Human Intelligence," in *Human Assessment: Cognition and Motivation*, 2012.
- [12] H. J. Eysenck, "The triarchic mind: A new theory of human intelligence," *Pers. Individ. Dif.*, 2007.
- [13] P. F. G. Twinn, "ALAN TURING: THE ENIGMA," *Bull. London Math. Soc.*, 1985.
- [14] R. J. Sternberg, "The nature of creativity," *Creat. Res. J.*, 2006.
- [15] R. B. Cattell, "Theory of fluid and crystallized intelligence: A critical experiment," *J. Educ. Psychol.*, 1963.
- [16] "Beyond IQ: A Triarchic Theory Of Human Intelligence," *Anal. Teach.*, 1986.
- [17] R. B. Tigner and S. S. Tigner, "Triarchic Theories of Intelligence: Aristotle and Sternberg," *Hist. Psychol.*, 2000.
- [18] S. S. Shergill, "Highlights of this issue," *British Journal of Psychiatry*. 2014.
- [19] P. Berton, S. Atherton, P. Berton, and S. Atherton, "Brief History," in *The Japanese Communist Party*, 2018.
- [20] R. J. Sternberg, *The psychology of problem solving*. 2003.