



Review Article

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IMPACT OF PRAKRITI ON COGNITION AND WORKING MEMORY: A REVIEW

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ABSTRACT

State of body and mind depends upon individual Prakriti (type of body constitution). Medha is grasping power, for which proper functioning of memory and mind is essential. Medha includes Dhee (wisdom), Dhriti (retaining power of mind) and Smriti (memory) which are the component of higher mental function. Cognition involves different kind of information processing, recollection and overall process involved in the formation of memory. Working memory is a mental workspace for processing of both new input and retrieved memories. Dosha decide the Sharirik (bodily constitution) and Mansik Prakriti (psychological constitution) of individual. It helps to understand and describe individual health status and intelligence like characteristics. Prakriti have an effect on the working of higher mental function, every individual has its own constitution type and hence mental function works differently according to its constitution.

Keywords: Cognition, Working Memory, Medha, Prakriti, Dosha.

INTRODUCTION

The literal meaning of the word Medha is intellect. The term Medha is often used for higher mental function. In Amarkosha, Medha means to have a proper correlation and understanding about the knowledge of the existing objects; without it, knowledge cannot be understood. According to Monnier William's Sanskrit English dictionary, it is mental vigour or power, intelligence or prudence, wisdom, retention of knowledge for long period, residue of which cannot be further expressed in proper. Medha can be understood as cognition which in turn refers to the set of ordinary pieces of knowledge that enable individuals to behave in their daily life. It is building relationships with people, using objects, communicating through language and nonverbal means, orienting in space and time, imagining and planning actions, computing etc.¹ Cognition involves different kind of information processing which occur at different stages. Information taken in by the sense organs goes through an initial stage of perception, which involves the analysis of its content. Even at the early stage of processing the brain extracts meaning from the input, in an effort to make sense of the information it contains. The process of perception will often lead to the making of some kind of record of the input received and this involves learning and memory storage. Once a memory has been created for some item of information, it can be retained for later use, to assist the individual in some other setting. This will normally require the retrieval of the information. Retrieval is sometimes carried out to access some information stored in the past and to provide the basis for further mental activities such as thinking. Thought processes often make use of memory retrieval.² The short-term working memory is assumed to function as a mental workspace in which a variety of processing operations are carried out on both new input and retrieved memories.³ Medha includes all the three domains required for higher mental function, i.e., Dhee, Dhriti and Smriti. All the three are interrelated with each other. As per context, the term Medha signifies Grahana Shakti, Dharana Shakti, Viveka Shakti or Smriti. Grahana Shakti means power of grasping or ability to grasp; Dharana Shakti means

retention power; Viveka Shakti is power to discriminate and Smriti is potential to recollect. For grasping, proper functioning of Smriti and Buddhi (intelligence) is essential.⁴

In developing children, working memory capacity increases with age and reaches the adult level at an age of approximately 15 years.⁵ More than 200 million children under 5 years fail to reach their potential in cognitive development because of various factors like poverty, poor nutrition, ignorance etc.⁶ Estimated prevalence rates of mild intellectual disability (IQ of 50-70) vary considerably from 1.7 to 79.3 per 1000 and rates of severe intellectual disability (IQ below 50) range from 2.2 to 7.3 per 1000.⁷ Individuals with cognitive impairment are known to be at high-risk for mental health problems.⁸ Working memory deficit are found in developmental disorders and learning disabilities like ADHD (Attention Deficit/Hyper Activity Disorder), dyslexia, dyscalculia, dysgraphia, dyspraxia.⁹ It can also occur in the absence of any disorder and is a risk factor for poor educational progress.¹⁰ Children with poor working memory have poor academic progress, difficulties in following instructions, problem in combining, processing with storage, place-keeping difficulties, short attention span and are often highly distractible.

Ayurveda has described bodily constitution (Sharirik Prakriti), psychological constitution (Mansik Prakriti), and role of Dosha in deciding the Prakriti. It helps to understand and describe individual health status and intelligence like characteristics. Assessment of constitution is necessary to understand the physical and psychological nature of the individual since these humors govern biological, psychological, physiological as well as pathological changes going on within the individual. The Tridoshas (Vata, Pitta and Kapha) are governing physiological and functional entity of the body. Their role can be elicited starting from cellular level and up to organ/ organ system level. There functions are evidenced by the change of physical state (Dravyatah), characteristics (Gunatah) and function (Karmatah) of the system, body part or body. In physiological state Vata, Pitta and Kapha can't be taken as any system having their separate

function; else they work on the principle of maintaining equilibrium in the body by the virtue of their particular characteristics which are more or less opposite to each other.

DISCUSSION

The function of the body is according to its constitutional type (Prakriti). Immunological status varies according to constitutional type and so pathological state too has its root in it. The term 'Prakriti' has also been used in the sense of personality. If seen in terms of Doshas, Doshaja Prakriti is the physical typology based on the principle of Tridosha. Human body behaves in a complex wholesome manner in which physical and psychological factors of Prakriti cannot be isolated. The role of Doshas in terms of Prakriti and its impact on Cognition and Working Memory can be proved by the functions ascertained to Vata, Pitta and Kapha. The function of cognition is the sum total of the process of perception and up to recall. Vata coordinates all the Gyanendriyas (sensory faculties) i.e., Shabda (sound), Sparsha (touch), Roopa (sight), Rasa (taste), Gandha (smell) and helps in enjoyment of the objects.¹¹ Thus Vata plays part in the process of perception. Among the five types of Vata, Prana Vayu controls the functioning of Buddhi and Manasa, while Udana Vata helps in recalling the past experiences. Vata dosha is comprised of Vayu (air) which is responsible for movement and Aakasha (space) which provides space for free flow of particle/matter. None of the particle either large or subtle basic element (Mahabhuta) like Agni (fire), Jala (water) or Prithvi (earth) will move without the force of Vayu. Even the in the body Pitta, Kapha, all the seven Dhatu (major structural components of the body) and mala (Waste) are inactive without the action of Vata.¹² Air propels object to move, it is necessary for breathing. As in the body such is also in the mind, Vayu provides motion to our thought process.¹³ Again the equilibrium required for maintenance of the process in normal state depends upon the condition of Dosha in that particular situation. Variation in the Doshas is according to Desha (habitat), Kala (time) and Prakriti. Dominance of any particular Dosha in the body according to constitution type makes the body prone for that respective condition. Same is applied for the state of mind. Due to the Shighra guna of Vata, Vata Prakriti people are Shrutagrahi i.e. seems to have quick understanding /grasping (understands what is heard) but have Alpa Smriti i.e. has poor recalling power or forget things quickly.¹⁴ It may be understood that they have good short term working memory but poor long term memory. Vata Prakriti people have lack of patience, have less discriminative power, Madhyama gyana (moderate spiritual knowledge) and Madhyama vigyana (moderate applied knowledge).¹⁵ They are unsteady in respect of Dhriti, Smriti, Buddhi and movement.

The cognitive state of the people with Pitta Prakriti is according to the characters of Pitta dosha. Sadhaka Pitta which remains in Hridaya is said to be responsible for good Medha, Pragya Buddhi and Abhiman.¹⁶ Alochaka Pitta is classified as Chakshu Vaisheshika and Buddhi Vaisheshika. Buddhi Vaisheshika is situated at sringatata (between the two brows).¹⁷ Pitta dosha is composed of Agni (fire) and Jala (water). The Agni provides heat, light and plays an important part in the process of transformation. Perception, judgment and criticism of the mind are because of Ushna (hot) and Tikshna (sharp) properties of Agni and so for Pitta Dosha. Pitta is related to tejas, which is the strength of the intellect, understanding and discriminating power. Thus Pitta is responsible for logical thinking and understanding. Pitta Prakriti people are vighraha vakta (hostile debater), kshipra kopaprasada (quick temper recovery), Madhya gyana (moderate spiritual knowledge), Madhya vigyana (moderate applied knowledge),¹⁸ Asahishnu (intolerant), teekshna parakrama (very aggressive), klesha asahishnu (low stress tolerant).¹⁹

Kapha Prakriti person has good self-control and has good knowledge of Shastras (classics). Function of Buddhi depends upon the state of Kapha. Knowledge and intelligence is endowed by Tarpaka and Avalambaka Kapha. Kapha is also responsible for the best qualities of Dhriti which regulates the state of mind.²⁰ Kapha Prakriti people are intellectual but take more time to grasp any subject, once grasped things are retained for long time.²¹ Snigdha (unctuousness) and Sthira guna of Kapha help to retain the grasped knowledge for a long period. Kapha dosha consists of Jala (water element) and Prithvi (earth element) and creates structure, strength and immunity. Kapha is related to Ojas which is the force of stability and contentment. The Prithvi (earth element) creates solidity, stability, provides material form and structure as it is heavy, gross, dense and static. And so is, in the functioning of mind according to Prakriti of individual. Earth creates dependability, reliability, consistency and stubbornness. The water element embodies flow and liquidity. Water flows along the path of least resistance. It is moist, heavy, gross and soft. The water element creates liquid matter, which has cohesion like earth but has more movement and less density. In the mind, water creates love, gentleness, compassion and attachment. Kapha Prakriti people have Asheeghra kshoba (low irritability) and alpa krodha (slow temper), Shant (calm), Chira grahi (slow to comprehend), Vidyavanta (excellent Knowledge), Dhreetiman (Patience), Asheeghra arambha (Slow initiative), Asheeghra vikara (Slow onset of diseases) and Ojasvina (Optimum Resistance) type of cognitive state.²²

CONCLUSION

According to the elemental model of Ayurveda, all physical, physiological and psychological entities are created and governed directly or indirectly from the five basic elements; Aakasha, Vayu, Agni, Jala, Prithvi. These elements in permutation and combination mode united to form Tridoshas i.e., Vata, Pitta, Kapha. All the three Doshas are present, in varying degrees, in every individual. All of us have a unique Prakriti, as all have unique genetic blueprint and that account for the differences in the physical and mental function. Smriti is recollection of whole process involved in the formation of the faculty of memory. In Vata and Pitta Prakriti person short term memory or working memory is thought to be the best whereas in person with Kapha Prakriti, long term memory is considered to be the best.

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