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Exploring The Link Between Prakruti And Iq: An Observational Study In Adolescents

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Abstract-
Ayurveda's concept of 'Prakruti' classifies humans into doshaj/dehaj and manas prakruti. Prakruti is established at conception and remains the same until death. Prakruti determines an individual's physical and mental predispositions. Intelligence is one of the psychological character that is influenced by prakruti of an individual. This study explored the association between Ayurvedic Doshaj Prakruti and intelligence quotient (IQ) in adolescents.72 healthy participants aged 15-16 years were classified into six Dwandwaj Prakruti types—using a validated questionnaire. IQ was assessed with Bhatia's Battery of Performance Tests of Intelligence, a standardized and performance-based tool. The results indicated variations in mean IQ across Prakruti groups, with Vata-Kaphaj and Vata-Pittaj showing comparatively lower IQ levels, Pitta-Vataj and Pitta-Kaphaj exhibiting moderate IQ, and Kapha-Vataj and Kapha-Pittaj prakruti group demonstrating higher IQ scores. This article emphasizes the comparative results and relationship between Dwandwaj prakṛuti and an adolescents IQ.
This observational analysis highlights intrinsic cognitive differences among adolescents based on constitutional types, laying an empirical foundation for personalized cognitive approaches rooted in Ayurvedic principles. It also underscores the potential value of Prakruti assessment as a complementary tool in cognitive research and adolescent educational approach.
Keywords- *Adolescents, Cognition, Dwandwaj Prakruti, Intelligence Quotient (IQ), Prakruti.*
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INTRODUCTION

Ayurveda, the ancient system of Indian medicine, emphasizes the concept of *Prakruti* as a fundamental determinant of an individual's constitution. *Prakruti* is established at the time of conception and remains constant throughout life, shaping both physical and psychological attributes of a person (1) . It plays a crucial role in understanding predispositions to health, disease patterns, prognosis, and therapeutic strategies (2). Each *prakruti* type, defined by the predominance of *doshas*, is also believed to influence psychological characteristics, including cognitive faculties such as intelligence (3–6).

Intelligence, in modern scientific terms, refers to the capacity to acquire knowledge, adapt to new environments, reason logically, and apply thought for problem-solving. The Intelligence Quotient (IQ) provides a standardized measure of this ability and is widely utilized in psychological, sociological, and educational research (1). Previous studies have highlighted variability in cognitive and psychological performance depending on constitutional and genetic factors (7). Ayurvedic texts also suggest that doshic dominance may determine differences in memory, learning ability, and overall intellectual capacity. For instance, *Pitta* dominance has been linked with sharp intellect, *Kapha* with strong memory and stability, while *Vata* predominance is associated with quick grasping but variable retention (4–6) These descriptions correspond with modern observations of individual differences in intelligence (8).

Although the relationship between genetics and cognitive performance has been extensively explored in contemporary research, limited empirical evidence exists linking Ayurvedic constitutional types with measurable intelligence levels. Adolescence is a critical period marked by rapid cognitive and emotional development, making it an ideal stage to study intelligence and constitution (9). With the advent of Ayurgenomics, the integration of traditional Ayurvedic principles and modern biological sciences provides an opportunity to scientifically examine such associations (10). Understanding these links could have important implications for personalized education and cognitive health strategies.

Against this background, the present study aims to investigate the association between *Dwandwaj Prakruti* (dual constitutional types) and Intelligence Quotient (IQ) in adolescents. The primary objective is to compare IQ across different *Prakruti* groups using standardized assessment tools. This work seeks to

provide empirical evidence for the Ayurvedic proposition that *Prakruti* influences cognitive function and to establish a potential foundation for personalized cognitive approaches rooted in traditional principles.

MATERIALS AND METHODS-

The study undertaken was an observational study based on *Prakruti* and intelligence assessment among the study subjects. The study was conducted at Karmaveer Bhaurao Patil Vidyamandir, Bharati Vidyapeeth, Katraj, Pune. Institutional Ethics committee permission was sought from the Bharati Vidyapeeth College of Ayurveda, Pune. The study was registered with CTRI Regn no.: CTRI/2024/07/070051. The study was conducted only on healthy individuals in age group of 15-16 years after obtaining written informed consent from the participants and their parents. Screening of individuals was done according to the inclusion and exclusion criteria. Assessment of *doshaj prakruti* of individuals was done by using a reliable and valid questionnaire by CCRAS prakruti web portal, till the target sample was achieved. The study was conducted in 6 groups. 12 students of each *Dwandwaj Prakruti (vatapittaj, vatakaphaj, pittavataj, pittakaphaj, kaphavataj, kaphapittaj)* were included in each group.

Sample size- N=72

Justification: Since this is an exploratory study, 12 participants (11) of each *dwandwaj prakruti. i.e. vatapittaj, vatakaphaj, pittavataj, pittakaphaj, kaphavataj, kaphapittaj* were recruited in the study.

Sampling method- Purposive sampling

Inclusion criteria:

- Healthy students of the age 15-16.
- Individuals irrespective of gender, religion, caste, or socio-economic status.

Exclusion criteria:

- K/H/O Congenital defects, hormone imbalances, acute /chronic systemic diseases.
- K/H/O Psychological disorders.

Assessment criteria

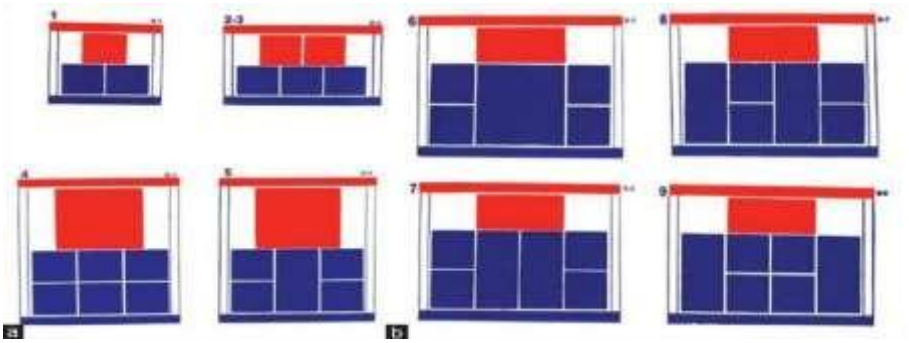
1) **Assessment of *Prakruti***: The assessment of individuals' *doshaj prakruti* was conducted with a credible and valid questionnaire from the CCRAS prakruti portal. The proforma consisted of total forty three questions.

Then *prakruti* was assessed by the score obtained e.g. if 17 criteria was of *Vata Prakruti*, 15 of *Pitta prakruti* and 11 of *Kapha prakruti*, which shows the *Prakruti* of volunteer was *Vatapradhana Pitta* (predominance of Vata dosha). Such twelve volunteers of each *dwandwaj prakruti* were selected. These selected total seventy two volunteers were divided in six groups, according to dominance of *prakruti* as follow. *vatapittaj, vatakaphaj, pittavataj, pittakaphaj, kaphavataj, kaphapittaj* .

2) **Measurement of IQ**: IQ evaluated using 'Bhatia's Battery of Performance Test of Intelligence'. Performance in each subtest of IQ test is considered as assessment criteria. The subtests included in Bhatia Battery are-

a. Pass along Test [Figure 1a and b]
b. Kohs' block design Test [Figure 2a and b]
c. Pattern drawing Test [Figure 3]
d. Immediate memory Test
e. Picture construction Test [Figure 4].

Figure 1



(a and b) Sample picture for Pass along Test

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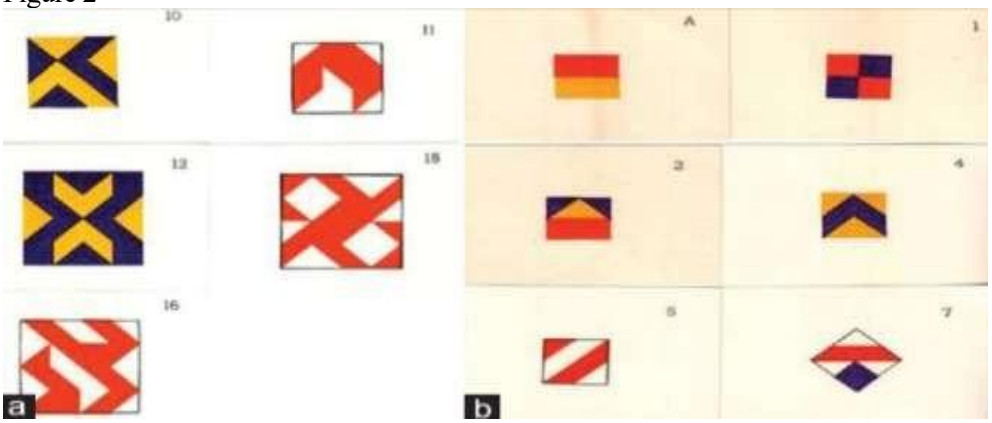
Figure 2



(a and b) Sample pictures for Kohs' block design Test

Figure 3

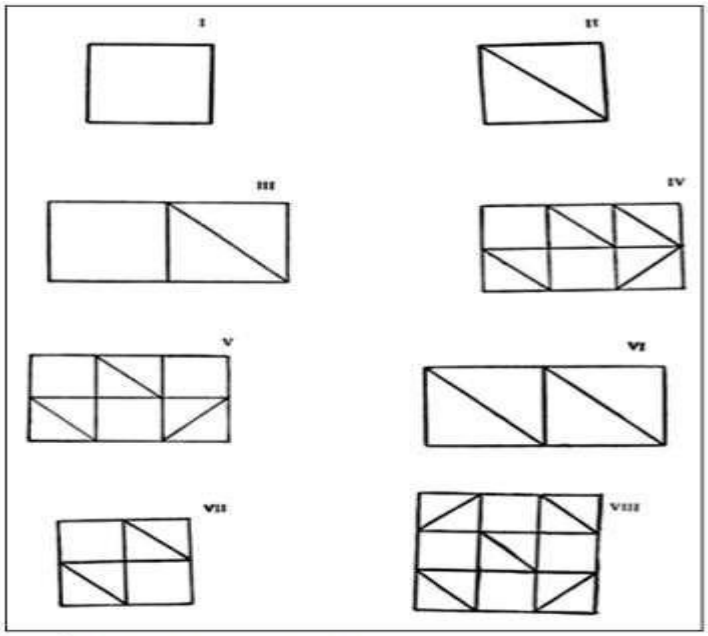


Figure 3: Sample pictures for pattern drawing test

Figure 4

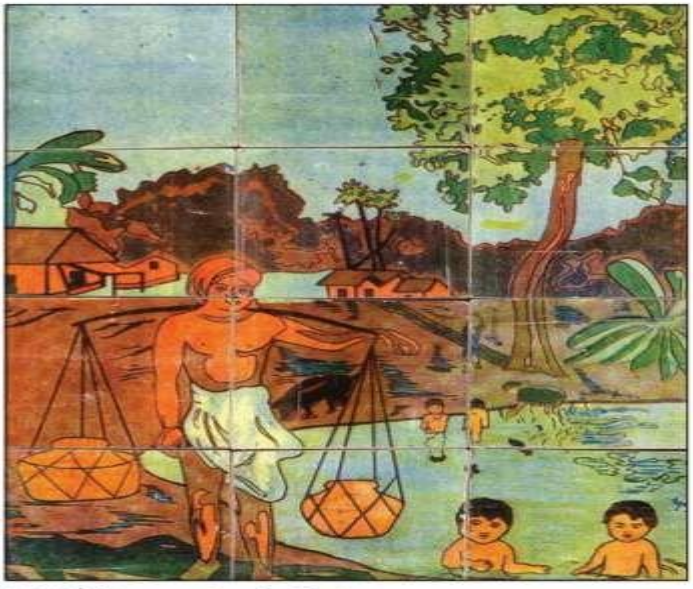


Figure 4: Picture construction Test

RESULTS-

Table 1-Distribution according to *Deha prakruti*:

Deha prakruti	No. of individuals	Percentage
Vatapittaj	12	16.66
Vatakaphaj	12	16.66
Pittavataj	12	16.66
Pittakaphaj	12	16.66
Kaphavataj	12	16.66
Kaphapittaj	12	16.66
Total	72	100

Table 2- Distribution of intelligence quotient in relation to Deha Prakruti

IQ	Vatapittaj		Vatakaphaj		Pittavataj		Pittakaphaj		Kaphavataj		Kaphapittaj	
	N	%	n	%	n	%	n	%	N	%	N	%
88-100	3	4.17	4	5.55	2	2.77	2	2.77	2	2.77	1	1.38
101-110	9	12.5	7	9.72	8	11.11	8	11.11	7	9.72	8	11.11
111-120	0	0	1	1.38	2	2.77	2	2.77	3	4.16	3	4.16
Total	12	16.66	12	16.66	12	16.66	12	16.66	12	16.66	12	16.66

Table 3- Comparison of Prakruti and mean intelligence quotient-

Deha prakruti	**Frequency (n)**	**Mean IQ**	**SD**	**SE**
Vatapittaj	12	102.92	5.25	1.51
Vatakaphaj	12	103.92	3.75	1.08
Pittavataj	12	105.16	4.86	1.40
Pittakaphaj	12	106.16	5.98	1.73
Kaphavataj	12	106.42	4.76	1.37
Kaphapittaj	12	107.5	4.34	1.25
F=3.24, p-value=0.011, SD=Standard Deviation, SE=Standard error, IQ=Intelligence quotient				

A one-way ANOVA was conducted to compare the mean IQ scores across the six *Deha Prakruti* types. Since the p-value is less than 0.05, there is a statistically significant difference in mean IQ scores among the *Deha Prakruti* types. This indicates that *Deha Prakruti* is associated with differences in IQ scores in this sample.

The IQ of 72 subjects registered for the study was distributed normally with a range of 22.00 (95-117). The lowest IQ found was 95 and highest was 117.

The highest mean IQ was observed in Kapha-Pittaj (107.5 ± 4.34) and Kapha-Vataj (106.42 ± 4.76), while the lowest was recorded in Vata-Pittaj (102.92 ± 5.25) and Vata-Kaphaj (103.92 ± 3.75).

The mean IQ of the study population was 105.35 with standard deviation 4.95 and median 105.5. This suggests that the average IQ of the study sample is 105.5.

Kapha-dominant groups consistently demonstrated higher IQ, aligning with Ayurvedic descriptions of stability and strong memory. Vata-dominant groups showed lower IQ, reflecting cognitive variability associated with Vata traits.

DISCUSSION-

The concept of *prakruti* is a unique one and widely accepted by all the compendias of Ayurveda (2,12). Considering the significance of it in theoretical as well as clinical aspects, it should be well understood.

Intelligence, the ability to vary the behaviour, as per knowledge stored from past experience, to suit the varying situation and requirements in the given environment, will vary from individual to individual (from one to another). It can be measured by using reliable, validated, specially designed tests like Bhatia's Battery of Performance Test of Intelligence. It is administered by using verbal and performance tests .
In the present study, *Vatakaphaj prakruti* followed by *Vatapittaj prakruti* has shown less IQ, *Pittavataj prakruti* followed by *pittakaphaj prakruti* has shown moderate IQ and *kaphavataj prakruti* followed by *kaphapittaj prakruti* has shown highest IQ. The order of *prakrutis* arranged by descending mean IQ will be - *Kaphapittaj > Kaphavataj ≈ Pittakaphaj > Pittavataj > Vatapittaj > Vatakaphaj.*
In Ayurvedic literature, *Prakruti* is considered a key determinant of mental traits such as intelligence. Each *dosha*, individually or in combination, imparts distinct cognitive and psychological characteristics.
According to Acharya Charaka, due to the *Sheeghra Guna, vata prakruti* individuals seem quick in understanding (grasping) but weak in recalling things means they have good short term memory but poor long term memory (4). While Acharya Sushruta has said that they have lack of patience and less discriminative power (5). According to Acharya Vagbhata, they are unsteady in respect of *Dhruti, Smruti, Buddhi and Cheshta* (activities) (6).
Pitta dominance is consistently associated with sharp intellect and quick comprehension (12). This indicates that individuals with *Pitta* predominance possess high mental acuity, critical thinking, and decisiveness. *Teekshna guna* of *pitta* is also associated with *Agni*, therefore it is associated with high IQ.
Kapha dominance is linked with strong memory and emotional stability (3,13). *Kapha Prakruti* supports long-term retention, deep focus, and calm,systematic learning. Hence, *kapha prakruti* is endowed with highest IQ.
Modern psychology parallels these findings. Kapha traits resemble stable working memory and long-term consolidation, Pitta resembles strong executive functioning, while Vata parallels cognitive fluctuations documented in neuropsychological research (14,15). These observations also resonate with studies showing that temperament and constitutional differences impact learning ability and cognitive outcomes (7,9).
The emerging field of Ayurgenomics further supports the idea that *prakruti* is rooted in genetic diversity, with distinct expression profiles linked to metabolism, stress response, and cognition (10,16). Thus, this study contributes to bridging Ayurvedic classifications with modern biological science, suggesting that constitution may have both traditional and molecular correlates.

Genetics and IQ

Ayurgenomics, which integrates traditional Ayurvedic principles with modern genomics. By establishing an empirical link between specific *Dwandwaj Prakruti* types and measurable cognitive functions, this research provides a foundation for exploring the genetic underpinnings of these constitutional differences in the cognitive abilities. This correlation suggests that there may be specific genetic markers or expressions that influence the physiological and psychological characteristics defined by an individual's *Prakruti*. Future Ayurgenomics research can leverage these findings to identify the genetic variations responsible for the differences in cognitive function, memory, and learning abilities among different constitutional types. This could lead to a deeper understanding of how our genetic makeup, or '*Prakruti'* at a molecular level, influences our cognitive potential.

CONCLUSION-

The present observational study demonstrates a significant association between *Deha Prakruti* types and Intelligence Quotient (IQ) scores in adolescents aged 15-16 years. The findings reveal that individuals characterized by *Kapha-dominant prakrutis,* specifically *Kaphapittaj* and *Kaphavataj,* tend to have higher mean IQ scores compared to those with *Vata-dominant prakrutis* such as *Vatapittaj* and *Vatakaphaj*, who exhibited relatively lower IQ scores. Individuals with *Pittavataj* and *Pittakaphaj prakrutis* showed intermediate IQ levels. This suggests that the Prakruti as described in Ayurveda correlates with differences in cognitive function measured by IQ in this population. These results highlight the potential of incorporating *prakruti* assessment for personalized educational strategies and cognitive development approaches.
Given the limited sample size and age range, further research involving larger, more diverse cohorts is necessary to validate these findings and explore underlying mechanisms in greater detail. Integrating Ayurvedic concepts such as *prakruti* with modern neuropsychological evaluations could provide insights

into research areas like personalized cognitive medicine and facilitate tailored interventions for optimizing intelligence and learning outcomes.

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