A Correlation Study between Tri-Guna and Emotional Style: A Theoretical Approach toward Developing a Working Model to Integrate Tri-Guna with Affective Neuroscience and Well-Being

Abstract

Background: Science of well-being is getting focused across all walks of life from health care to organizational behavior. Indian psychological principles of Tri-Guna offer a universal theoretical framework to understand the behavioral aspects of emotions and well-being, whereas affective neurosciences have explored neural circuits underlying few universal emotional styles. Both Tri-Guna and emotional styles are dynamic and vulnerable for modifications with training. Hence, establishing a relation between Tri-Guna and emotional style offers a novel insight to explore neural basis of Tri-Guna and its application in health and behavioral sciences. **Aims:** To establish the correlation between Tri-Guna and emotional styles in healthy adult subjects. **Materials and Methods:** Healthy adults ($n = 121$, 18–21 years) of both genders were individually administered with questionnaires to assess Tri-Guna (Vedic personality inventory) and emotional style (emotional style questionnaire). The relationship between Tri Guna (Sattva, Rajas and Tamas) and Six dimensions of emotional styles (attention, self awareness, outlook, resilience, social intuition and sensitivity to context) were assessed using Pearson's correlation coefficient. **Results:** All the emotional styles showed a positive correlation with Sattva and negative with Rajas and Tamas, except resilience. Resilience showed a negative correlation with Sattva and positive with Rajas and Tamas. Further, between Rajas and Tamas, emotional styles showed a stronger correlation with Tamas. **Conclusions:** Sattva guna showed an association with emotional styles that favors to develop a positive emotional pattern. Having fairly understood neural circuitry of emotional styles, this first preliminary correlation data will provide a theoretical framework to explore neural circuitry involved in understanding emotional aspects of Tri-Guna.

Keywords: *Emotion, emotional style, meditation, Tri-Guna, well-being*

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Introduction

A paradigm shift is being witnessed in health care wherein the person's subjective well-being is gaining attention equivalently or even more than the externally assessed objective evidence for optimal health. Well-being is a multidimensional construct that is strongly associated with emotion. Although happiness is considered to be the core emotional state for well-being, factors such as positive emotions, engagement and meaning of life,[1] self-acceptance, positive relationships with others, personal growth, purpose in life, environmental mastery, and autonomy[2] are the components that are associated with psychological well-being. However, these components in the prevalent scientific literature are assessed as an independent entity in a piece-meal approach and evaluated in terms of response to a specific internal or external event, rather than resulting from a strategic and intentional decision. The components in these sociobehavioral scales will differ across cultures; therefore, using these as a universal metric to assess emotion and well-being is limited.[3] Therefore, there is a need to have a theoretical framework suited universally that can integrate all the components of emotion and behavior in evaluating subjective well-being. Indian psychological concept of Tri-Guna suits in offering such an integrated approach.

Tri-Guna integrates multiple components such as psychological, physiological, character strengths, and spiritual virtues into ambit of well-being.[4] Although traditionally

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assessing Tri-Guna is based on observation and experience, it has an extraordinarily strong testable theoretical construct.[5,6] Tri-Guna considers both state and trait states, where the trait components are relatively constant accounting for personality type and state components are a dynamic part where a particular combination is formed of different components from Tri-Guna, viz., Sattva, Rajas, and Tamas.[7-9] Sattva guna is said to lead toward balance and stability, Rajas leading to activity and imbalance, and Tamas toward inertia and dullness.[10] This constant and dynamic aspects of Tri-Guna are uniqueness of Indian psychological principles in understanding emotion and well-being. Thus, within a constant trait characteristic, there is a dynamic core wherein different aspects of Tri-Guna will form a particular combination which are amenable for training and modulation. This dynamic aspect provides a larger scope for behavioral training, so that a favorable guna is brought to dominance, thereby modulating the trait characteristics, thus making psychological well-being resulting from a strategic and intentional decision. Thus, emotion and well-being is a free floating in Indian psychological principle rather than as an exclusive response to an internal or external event.

Emotional patterns of an individual determine one's emotional attributes. Decades of research in affective neurosciences have resulted in deciphering six major dimensions in emotional styles, of which the underlying neural circuitry is fairly explored.[11] These emotional styles are attention, self-awareness, outlook, resilience, social intuition, and sensitivity to context.[11] The combination of these emotional styles in different proportions forms the basis for the emotional pattern of an individual and the subjective well-being. These emotional styles are proposed to be amenable to modulation by various strategies, especially with meditation practices.[11] Similarly, Tri-Guna are also amenable to change and modulate by yoga and meditation practices with a goal to improve on Sattva guna.[12] Considering these similar overlapping characteristics between emotional styles and Tri-Guna, the present study was designed to address two questions. One, understand the correlation between Tri-Guna and emotional styles, and second, does the predominance of guna determine the pattern of autonomic reactivity to a uniform physical and mental stress in laboratory conditions. In the present manuscript, we report the first part of the data of correlating Tri-Guna with emotional styles.

Materials and Methods

Healthy young educated individuals between the age group of 18 and 21 years were briefed about the protocol and were requested to volunteer for the study. A total of 121 subjects of both genders were recruited with a nonprobability convenience sampling, and written informed consent was obtained. A narrow age group was selected to maintain the homogeneity. All the participants were studying in an undergraduate medical course and were able to read, write, and comprehend in English language. All the participants were in similar social environment at the time of the study and are exposed to the same academic pressure. Participants were requested to report to the investigators at their leisure. When the participants arrived, Vedic personality inventory (VPI) and emotional style assessment questionnaires were administered to them individually. Participants answered the questionnaire independently; however, for any clarifications, one of the investigators were available in person. It was made sure that investigators' interaction during this process was minimal and did not influence the participants' response to the items of the questionnaire. In a self-generated structured format, the demographic data and basic personal information was obtained. The institutional ethics committee had reviewed the protocol and accorded the permission to conduct the study (No GIMS/IEC/2019-2020 dated: 17/10/2019).

Vedic personality inventory

VPI is a standardized inventory to assess the distribution of characteristics of Tri-Guna, viz., Sattva, Rajas, and Tamas in an individual, which was developed by Wolf et al. in 1998.[13] The inventory has a total of 56 items, of which 15 for Sattva, 19 for Rajas, and 22 for Tamas that are randomly sequenced. Each item is to be scored on Likert scale of 7 (1 = very strongly disagree, 2 = strongly disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = strongly agree, and 7 = very strongly agree). The percentage of guna scores is calculated by dividing sum of all the response of a guna by the total possible score for the corresponding guna, and the score is converted into percentage (for example, 15 questions of Sattva guna will have a total score of 105; if the score obtained after answering is 60, the percentage of Sattva guna is 60/105 = 0.5714 = 57.14%). To obtain the standardized score of guna, the sum of percentage score of all the three guna is divided by each guna score (e.g. the score of Sattva is 57.14, Rajas 42.86, and Tamas 35.71; the sum of three scores is 135.71, standardized sattva 57.14/135.71 = 42.10%; similarly, for Rajas and Tamas).

Emotional style assessment

Emotional style assessment questionnaire assesses the six dimensions of emotional style, viz., attention, resilience, outlook, social intuition, self-awareness, and sensitivity to context.[11] Each style is assessed by 10 statements with TRUE or FALSE response. Thus, there are totally 60 statements assessing all the six emotional styles; every statement in each dimension is scored either zero or one based on the response as per the guidelines of Davidson and Begely in 2012.[11] The total score of each emotional style is obtained. Based on the total score, the inference of each emotional style is as follows.

- Attention is categorized into focused (score >8) and unfocused (score <3)

- Self-awareness dimension is divided into self-aware (Score >8) and self-opaque (score <3)
- Outlook is inferred as positive outlook (score >7) and negative outlook (score <3)
- Resilience dimension is divided into slow to recover (score >7) and fast to recovery (score <3)
- Social intuition is categorized into socially intuitive (score >8) and puzzled (score <3)
- Sensitivity to context is grouped as sensitive (score >8) and turn off to the context (score <3).

While preparing the present manuscript, a shortened version of the emotional style assessment questionnaire was published.[14] In this, the 60 statements of all the emotional styles from Davidson and Begely in 2012[11] were reduced to 24-item scoring in a Likert scale ranging from 1 to 7. This abridge version is significantly correlated with larger version and is sensitive in assessing all the emotional styles.[14] The original version[11] is used in the present study. In this version, interpretation of resilience score needs a special mention, where the score and the resilient capability have inverse relation.

Statistics

SPSS ver 20 (Armonk, NY: IBM Corp.) was used for descriptive and correlation analysis. Descriptive statistics is provided as mean and SD; Pearson's correlation was applied to understand the relationship between VPI with all the six emotional styles. $P < 0.05$ was considered statistically significant level.

Results

A total of 121 participants between the age group of 18 and 21 years of either gender consented to be the volunteers for the study were included in the study. The mean age of the cohort was 18.61 ± 0.96 years. Among the participants, 72 (59.5%) were male and 49 (40.5%) were female. All were studying in their undergraduate courses.

The average score of the cohort in VPI [Figure 1] of Sattva guna was 42.66 ± 6.95 (max–min: 19.40–62.97), Rajas guna was 31.65 ± 3.74 (max–min: 22.26–44.13), and Tamas guna showed 25.68 ± 4.48 (max–min: 14.75–37.20).

The average score of all the six dimensions of emotional style of the cohort is provided in Table 1. The Pearson's correlation values between VPI and emotional styles are provided in Table 2. Sattva guna showed a significant positive correlation with attention and self-awareness, whereas Rajas and Tamas guna were negatively correlated [Figure 2]. Outlook dimension showed a positive correlation with Sattva and negative with Rajas and Tamas guna, whereas resilience on the contrary showed a significant negative correlation with Sattva and positive with other two gunas [Figure 3]. The last two dimensions of emotional styles, social intuition and sensitivity to context, showed a significant positive correlation with Sattva and negative with Rajas and Tamas guna [Figure 4]. However, for Tamas guna, the negative correlation with

Table 1: The mean and standard deviation score of the emotional styles of the cohort

Emotional style	Mean±SD (*n*=121)
Attention	4.80±1.75
Self-awareness	5.65±1.71
Outlook	6.42±1.72
Resilience	4.93±1.74
Social intuition	6.07±1.84
Sensitivity to context	6.71±1.46

SD=Standard deviation

Table 2: Pearson's correlation between Vedic personality inventory and emotional styles

Emotional style	Sattva	Rajas	Tamas
Attention	0.313**	-0.206**	-0.314**
Self-awareness	0.384**	-0.251*	-0.386**
Outlook	0.424**	-0.272**	-0.430**
Resilience	-0.334**	0.318**	0.253*
Social intuition	0.222*	-0.266**	-0.121
Sensitivity to context	0.351**	-0.356**	-0.246**

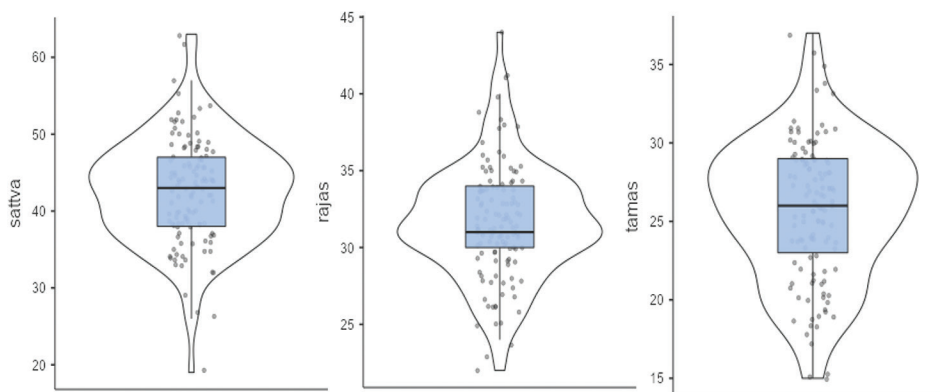Correlation is significant at *P<0.01, **P<0.001

Figure 1: The mean and standard deviation with butterfly plot of Sattva, Rajas, and Tamas of the cohort
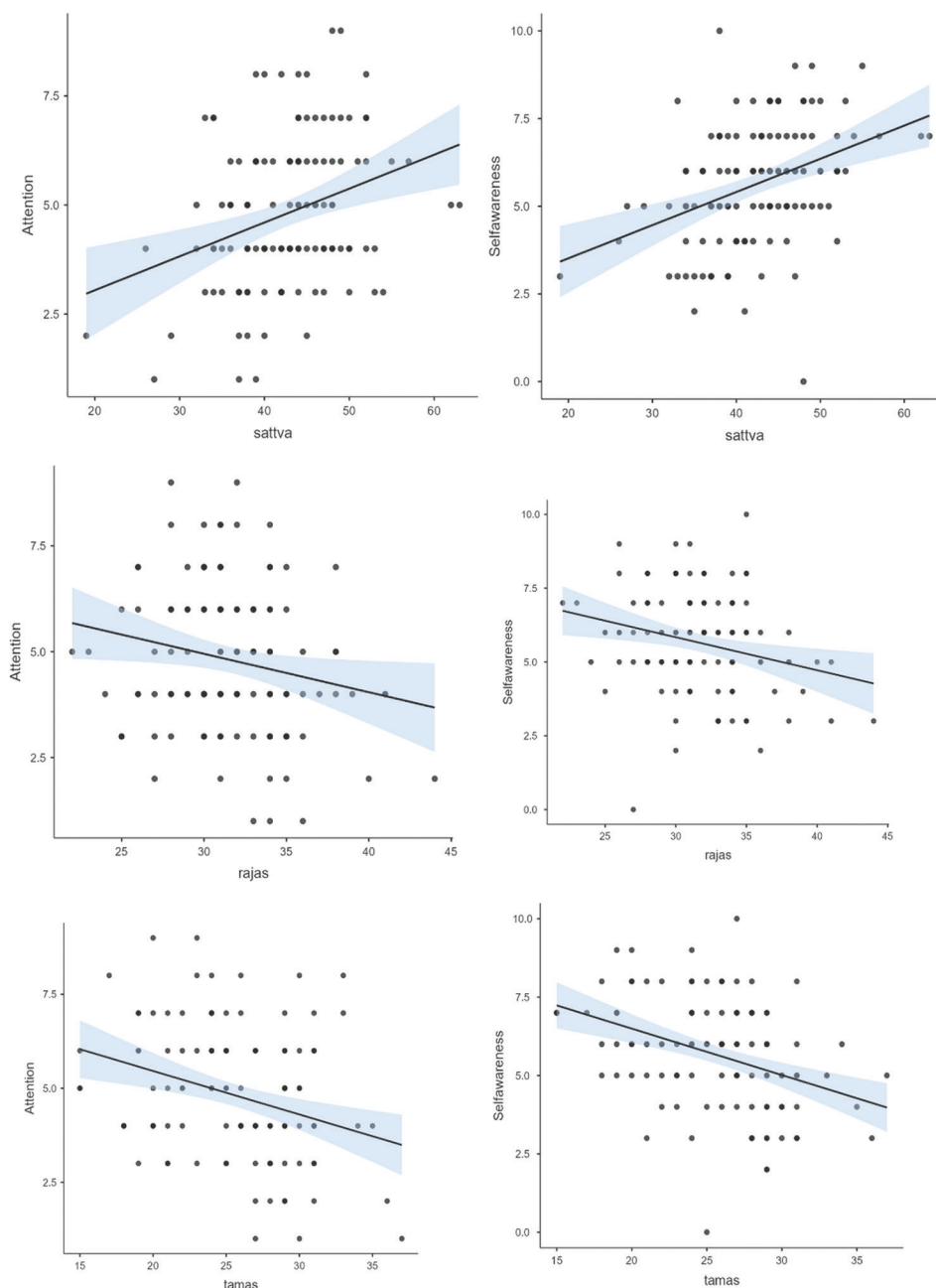
Figure 2: The correlation of Attention and Self-awareness with Sattva, Rajas, and Tamas Guna. Attention and self-awareness showed a significant positive correlation with Sattva guna. The negative correlation of Tamas was more than Rajas Guna

social intuition did not reach significant level. Although both Rajas and Tamas guna showed a similar correlation with emotional styles, the relationship with Tamas was stronger when compared to Rajas guna.

This questionnaire has good internal consistency, α = 0.70–0.92, with Cronbach's alpha 0.85(Sattva), 0.92(Rajas) and 0.90 (Tamas).

Discussion

In the present study, Sattva guna showed a positive significant correlation with all emotional styles except

for a negative relation with resilience. Rajas and Tamas guna showed a significant negative correlation with all emotional styles except resilience, which showed a positive relation. It is worth to recollect here that the scoring of emotional style resilience is such that higher the score in resilience dimension, lower is the resilient capabilities. Thus, the negative correlation between Sattva and resilience must be inferred as more the Sattva guna better is the resilience. Similarly, higher the scores of Rajas and Tamas, lesser is the resilience. This is the first study to assess the correlation between Tri Guna and emotional styles, thus providing a
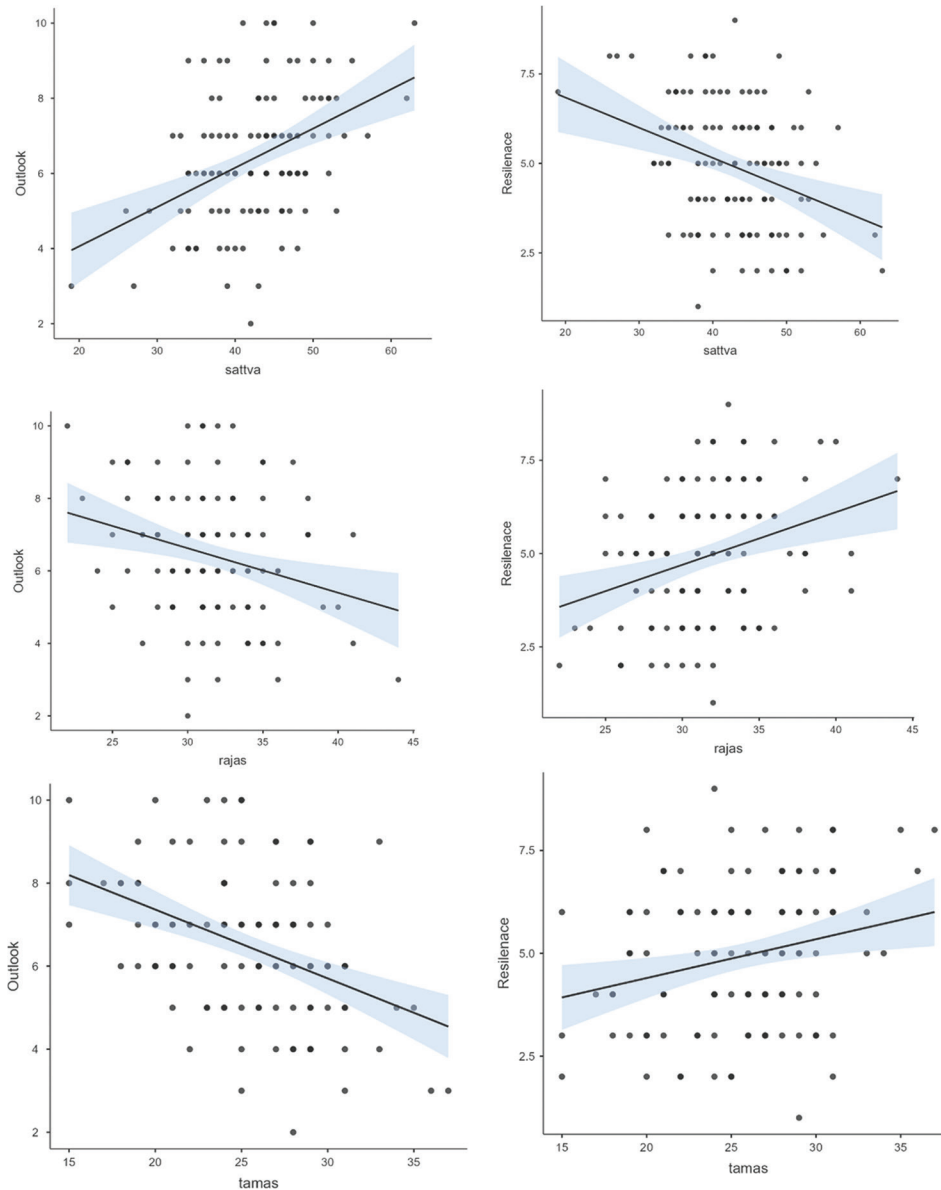
Figure 3: The correlation of outlook and resilience with Sattva, Rajas, and Tamas. Outlook and resilience showed a significant positive and negative correlation, respectively, with Sattva. Whereas, the relationship reversed in Rajas and Tamas, with stronger correlation in later

foundation for further exploration to understand the neural underpinning associated with Tri Guna and emotion.

Emotional-style attention assesses the ability to stay focus and ignore the distractions. Although attention is largely considered to be a cognitive skill, it is included as one of the emotional styles. Individuals with higher attention score have the cognitive ability to handle emotional distractions efficiently; on the contrary, lesser the attention score, more will be the drifting of focus to emotionally distracting stimuli. During stressful situation, people with high attention tend to focus on negative aspects of stressor and modulate their mood efficiently.[15] Therefore, attention emotional style empowers an individual with a skill to have a selective attention to the relevant emotional stimuli, thereby equips individual to accomplish the goal.

In the present study, attention and Sattva guna showed a significant positive correlation, whereas Rajas and Tamas are negatively correlated. The connections between prefrontal and parietal regions determine the level of attention and are known to enhance working memory as well.[16] Studies have found a positive correlation between Sattva with many cognitive variables such as intelligence, short-term memory, and concentration; whereas, Rajas and Tamas are negatively correlated.[8] Increased attention is known to reduce the thought-related problems as observed in Sattva predominant subjects.[17,18] Whereas, Tamas predominant subjects are known to be at risk to develop psychoticism and neuroticism.[19] Children with
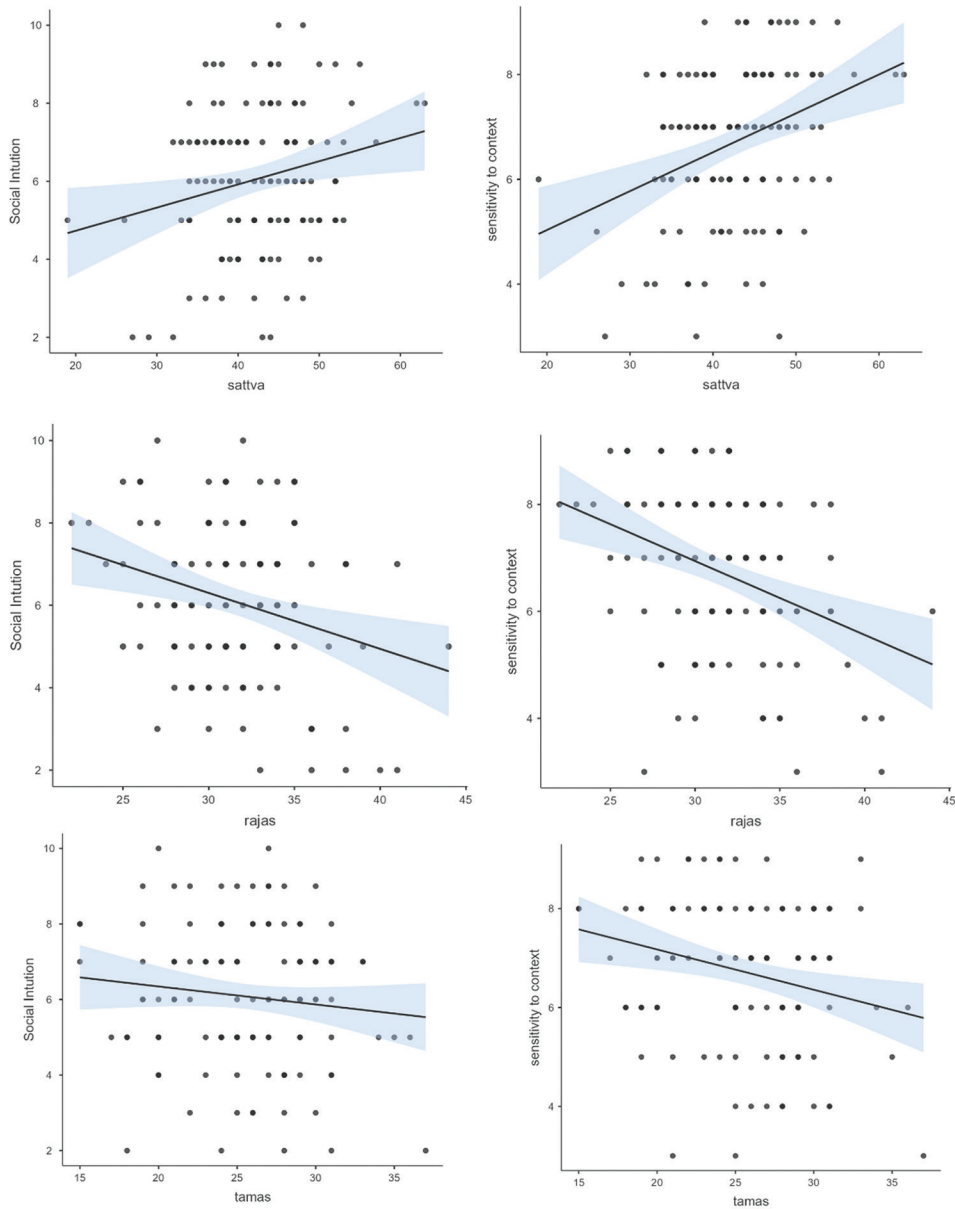
Figure 4: The correlation of social intuition and sensitivity to context with Sattva, Rajas, and Tamas Guna. Social intuition and sensitivity to context showed a significant positive and negative correlation, respectively, with Sattva. Whereas, the relationship reversed in Rajas and Tamas, with stronger correlation in later

psychoticism and neuroticism personality traits are known to get distracted to emotionally arousing stimuli (anger) and have lesser friendship qualities.[20] Such a mind that is vulnerable to emotional distracters (mind wandering) is considered to be the core factor for a state of unhappiness,[21] which is characteristic of predominance in Rajas and Tamas guna.[18] Therefore, emotional-style attention is core skill for having a happy mind.[14] According to Tri-Guna theory, Sattva predominance is associated with positive emotions and matured emotional intelligence for which attention capability is core component,[18,22,23] which is corroborated in the present study.

Being aware of an emotional state is a prerequisite to pay attention toward emotional stimulus. Emotional-style self-awareness is the ability to perceive the ones somatic signals that reflects the emotional state. Higher the ability of being self-aware amplifies the subjective experience of emotions,[24] which enhances the accuracy of self-report of mood states.[25] However, lesser the ability of being self-aware, opaquer is individual for own emotional states. The intensity of insula activity determines the ability of self-awareness.[26] In the present study, Sattva was positively and Rajas and Tamas were negatively correlated with self-awareness. Personality with neuroticism type experience more anxiety, depressive mood, and loneliness,[27] and these are known to be positively

correlated with Rajas and Tamas guna as assessed using VPI.[22] Further, Rajas and Tamas are also correlated positively with attentional problems and negatively with openness to experiences and self-actualization.[8,28] These observations demonstrate that despite being aware of the mood state, paying adequate attention to it is a necessary condition to modulate emotion, which is likely to be less in Rajas- and Tamas-predominant individuals. Our observation with Tri-Guna and emotional styles of attention and self-awareness demonstrates that the Sattva predominance will have higher attention and being more self-aware of the internal states. This needs to be further assessed by exploring the connectivity between insula, prefrontal, and parietal cortex and their role in cognitively regulating emotions.

Emotional-style outlook assesses the ability of an individual to maintain positive emotion; the ability to sustain a positive emotional state for a longer duration is known to bring about optimism in life. On the other hand, inability to sustain positive emotion could lead to pessimistic outlook. Emotional-style resilience provides the information about an individual's ability to recover from negative emotion. Higher the resilience, faster is the recovery from negative emotions, therefore also the ability to sustain positive outlook. Thus, both outlook and resilience dimension are related to each other. This ability to recover from negative emotional state depends on the connectivity between prefrontal and amygdala.[29] In the present study, increasing Sattva is shown to improve resilience and outlook, whereas Rajas and Tamas were negatively correlated.

Sattva showed a negative correlation and Rajas and Tamas a positive correlation with subscales of anxiety, angry, depression, and phobia.[18,19,22] There is a report demonstrating that Rajas and Tamas were predominant guna in the clinical population suffering from moderate depression, obsessive–compulsive disorders and anxiety and they showed impaired quality of life.[30-32] These observations corroborate the Indian psychological texts, which states that emotional instability, despair, timidity, and rumination are the characteristics of Rajas- and Tamas-predominant people.[7,33] Therefore, sustenance of aversive response is the common underlying emotional attribute associated with affective disorders. The sustenance of aversive response is inversely related to the intensity of inhibitory influence of prefrontal cortex on amygdala.[34] Hence, in addition to neural circuit that involved in self-awareness and attention, simultaneous effective inhibitory influence of prefrontal on amygdala will enable for optimal emotional modulation. Therefore, with these results it could be inferred that the Sattva guna is associated with more resilience and facilitates faster recovery from adversities and maintain a positive outlook by increasing self-awareness and attention. All these different components involved in emotional styles need

to be explored more in relation to Tri-Guna in affective neuroscience.

Social intuition refers to the ability of the person to be sensitive to capture and read nonverbal cue such as facial expression and body language and decode the subtle emotional intends. This ability is a prerequisite in developing organizational behavior and individual social well-being. Further, this ability also determines the level of altruistic behavior that an individual could cultivate. The connections between fusiform gyrus and amygdala determine the ability of developing this emotional style and social cognition.[35] Sensitivity to context refers to the degree of our emotional and behavioral responses to the social context i.e., being self-aware of the social environment. Inappropriate behavior is expected with reduced sensitivity to context, which is dependent on the connection between hippocampus and prefrontal cortex. Therefore, both social intuition and sensitivity to context reflects the emotional and behavioral appropriateness that governs the social situation. Our results have shown Sattva being positively correlated with these two emotional styles and negative correlation with Rajas and Tamas. There are reports demonstrating that Sattva-predominant people appreciate art better than Rajas and Tamas predominant.[22] Sattvic leaders are known to be more efficient, creative, and express more wisdom in an institutional setup, and there are reports demonstrating that managers who could able reduce their Rajasic and enhance Sattvic characteristics could able to express their organizational citizenship behavior.[36,37]

All these evidences endorse the notion for both personal and collective well-being Sattva is the most and Tamas is the least favorable guna with Rajas being intermediate.[38] The underlying neurophysiological aspects are not yet explored. The present study, a preliminary attempt in this direction, offers an insight considering the emotional styles, of which the underlying neural circuitry is well established.

Conclusions

Similar to Tri-Guna, emotional styles are also not a static attribute but possess dynamic characteristics. The underlying neural mechanism associated with the emotional styles that are mentioned in the study is fairly explored. There are emerging evidence demonstrating that plasticity changes in these circuits could be induced by training. There are reports demonstrating that yoga/meditation practice could enhance sattva across age group and among various professionals which has resulted in improving their well-being.[39-42] Therefore, the scope to train a specific emotional style through yoga/meditation practice is a possibility which needs to be explored. Thus, integrating yoga/meditation-based training to modulate targeted emotional style offers a working model to integrate Tri-Guna-based understanding of affective neuroscience

and this approach probably could fulfill certain challenges in Tri-Guna research.[43]

Conflicts of interest

There are no conflicts of interest.

References

1. Seligman ME, Rashid T, Parks AC. Positive psychotherapy. Am Psychol 2006;61:774-88.
2. Ryff C, Singer BH. Know thyself and become what you are: A Eudaimonic approach to psychological well-being. J Happiness Stud 2008;9:13-39.
3. Tov W, Diener E. "Subjective Well-being". Research Collection School of Social Sciences. Paper 1395; 2013.
4. Schmidt S, Walach H, editors. Meditation – Neuroscientific Approaches 317 and Philosophical Implications, Studies in Neuroscience, Consciousness and Spirituality. Switzerland: Springer International Publishing; 2014.
5. Feuerstein G. The Yoga Tradition: Its History, Literature, Philosophy and Practice. Prescott: Hohm Press, Sedlmeier 2011, Sedlmeier; 2001. p. 2011.
6. Cornelissen RM, Misra G, Varma S, editors. Indian psychology and the scientific c method. In: Foundations of Indian Psychology, Concepts and Theories. Vol. 1. Delhi: Longman/ Pearson; 2010. p. 253-87.
7. Paranjpe AC, Rao KR. Psychology in the Advaita Vedanta. In: Ramakrishna Rao K, Paranjpe AC, Dalal AK, editors. Handbook of Indian Psychology. New Delhi: Foundation Books; 2008. p. 253-85.
8. Sitamma M. Trigunas: A review of empirical studies. In: Ramakrishna Rao K, Marwaha SB, editors. Towards a Spiritual Psychology – Essays in Indian Psychology. New Delhi: Samvad India Foundation; 2005. p. 262-76.
9. Puta M, Sedlmeier P. The Yoga Sutras of Patanjali. New York: North Point Press; 2009.
10. Frawley D. Ayurveda and the Mind: The Healing of Consciousness. Wisconsin: Lotus Press; 1997.
11. Davidson RJ, Begley S. The Emotional Life of Your Brain: How Its Unique Patterns Affect the Way You Think, Feel, and Live-and How You Can Change Them. London: Penguin; 2013.
12. Sedlmeier P, Srinivas K. How do theories of cognition and consciousness in ancient Indian thought systems relate to current western theorizing and research? Front Psychol 2016;7:343.
13. Wolf DB. The Vedic personality inventory: A study of the Gunas. J Indian Psychol 1998;16:26-43.
14. Kesebir P, Gasiorowska A, Goldman R, Hirshberg MJ, Davidson RJ. Emotional style questionnaire: A multidimensional measure of healthy emotionality. Psychol Assess 2019;31:1234-46.
15. Mikolajczak M, Roy E, Verstrynge V, Luminet O. An exploration of the moderating effect of trait emotional intelligence on memory and attention in neutral and stressful conditions. Br J Psychol 2009;100:699-715.
16. Gazzaley A, Nobre AC. Top-down modulation: Bridging selective attention and working memory. Trends Cogn Sci 2012;16:129-35.
17. Daftuar CN, Anjuli JJ. Occupational stress, organizational commitment and job involvement in Sattva, Rajas and Tamas personality types. J Indian Psychol 1997;15:44-52.
18. Archana Das GM, Venu Gopal DV. Trigunas and psychological problems. J Indian Psychol 2009;27:47-52.
19. Stempel HS, Cheston SE, Greer JM, Gillespie CK. Further exploration of the Vedic Personality Inventory: Validity, reliability and generalizability. Psychol Rep 2006;98:261-73.
20. Pavlou K, Benson V, Hadwin JA. Exploring links between neuroticism and psychoticism personality traits, attentional biases to threat and friendship quality in 9-11-year-olds. J Exp Psychopathol 2016;7:437-50.
21. Killingsworth MA, Gilbert DT. A wandering mind is an unhappy mind. Science 2010;330:932.
22. Hopkins JA. The Congruence of Personality Psychology and Religion: Investigating Eastern Typologies. University of Colorado at Boulder. Unpublished manuscript; 2003.
23. Khemka SS, Ramarao NH, Hankey A. Effect of integral yoga on psychological and health variables and their correlations. Int J Yoga 2011;4:93-9.
24. Carver CS, Scheier MF. Attention and Self-Regulation: A Control-Theory Approach to Human Behavior. New York: Springer; 1981.
25. Gibbons FX, Smith TW, Ingram RE, Pearce K, Brehm SS, Schroeder DJ. Self-awareness and self-confrontation: Effects of self-focused attention on members of a clinical population. J Pers Soc Psychol 1985;48:662-75.
26. Bird G, Silani G, Brindley R, White S, Frith U, Singer T. Empathic brain responses in insula are modulated by levels of alexithymia but not autism. Brain 2010;133:1515-25.
27. Thompson ER. Development and validation of an international English big-five mini markers. Pers Individ Dif 2008;45:542-8.
28. Venu Gopal DV. Trigunas and psychological problems. J Indian Psychol 2009;27:47-52.
29. Kim MJ, Whalen PJ. The structural integrity of an amygdala-prefrontal pathway predicts trait anxiety. J Neurosci 2009;29:11614-8.
30. Anoopkumar KV, Balodhi LD. Sattwa, Rajas and Tamas (SRT) factors in depression. Int J Indian Psychol 2016;3:56, 74.
31. Sharma A, Sharma V, Singh TB. A study of trigunas and color preferences among patients of depression and obsessive-compulsive disorder. Indian J Posit Psychol 2012;3:58.
32. Sharma MP, Salvi D, Sharma MK. Sattva, Rajas & Tamas factors and quality of life in patients with anxiety disorders: A preliminary investigation. Psychol Stud 2012;57:388-91.
33. Davidson RJ, Begley S. The Emotional Life of Your Brain: How Its Unique Patterns Affect the Way You Think, Feel, and Live-and How You Can Change Them. 1st edition: Hudson stress press, Penguin group; 2013.
34. Davidson RJ. Anxiety and affective style: Role of prefrontal cortex and amygdala. Biol Psychiatry 2002;51:68-80.
35. Dalton KM, Nacewicz BM, Johnstone T, Schaefer HS, Gernsbacher MA, Goldsmith HH, et al. Gaze fixation and the neural circuitry of face processing in autism. Nat Neurosci 2005;8:519-26.
36. Sharma S, Singh A, Mehrotra S. Sattva Guna as a predictor of Wisdom and PWB. Int J Indian Psychol 2016;4:158-67.
37. Anuradha MV, Kumar YL. Trigunas in organizations: Moving toward an east-west synthesis. Int J Cross Cult Manage 2015;15:195-214.

38. Puta M, Sedlmeier P. The concept of tri-guna: A working model. In: Meditation-Neuroscientific Approaches and Philosophical Implications. Switzerland: Springer International Publishing; 2014. p. 317-64.

39. Deshpande S, Nagendra HR, Raghuram N. A randomized control trial of the effect of yoga on Gunas (personality) and health in normal healthy volunteers. Int J Yoga 2008;1:2-10.

40. Amaranath B, Nagendra HR, Deshpande S. Effect of integrated yoga module on personality of home guards in Bengaluru: A randomized control trial. J Ayurveda Integr Med 2016;7:44-7.

41. Rani NJ. Impact of yoga training on triguna and self-ideal disparity. Psychol Stud 2007;52:174-7.

42. Khanna P, Singh K, Singla S, Verma V. Relationship between triguna theory and well-being indicators. Int J Yoga Philos Psychol Parapsychol 2013;1:69.

43. Ilavarasu JV, Mohan S, Hankey A. Triguna as personality concept: Guidelines for empirical research. Int J Yoga Philos Psychol Parapsychol 2013;1:15.