MANTRA, CHAKRA ACTIVATION, NEUROENDOCRINE MODULATION, SPIRITUAL INTELLIGENCE, AND EXPANDED CONSCIOUSNESS: AN INTEGRATIVE EAST–WEST CONCEPTUAL FRAMEWORK

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Abstract

The growing scientific interest in meditation and consciousness has created new opportunities to integrate traditional contemplative knowledge with contemporary scientific research. But the existing studies are mostly conducted in isolation from each discipline and they do not provide a comprehensive understanding of the mechanism of change, which is the interaction between the psychological, neurological, endocrine and spiritual mechanisms of mantra meditation. This conceptual paper seeks to bridge this gap by developing the Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM), which is an integrative East–West model fusing Indian philosophical systems with the modern understanding and ideas of psychology, neuroscience, psych neuroendocrinology and consciousness studies. It is based on classic ideas of mantra, chakras, and expanded consciousness, as well as findings from contemplative science, providing a sequential conceptual model in which mantra practice can trigger multi-chakra activation, which can lead to modulation of neuroendocrine systems, psychological transformation, spiritual intelligence, and finally expanded consciousness and ethical conduct. The paper also presents the Multi-Chakra Activation Theory, which suggests that in the conceptual stage, one mantra could have an effect upon more than one psycho-spiritual energy centre or chakra. Furthermore, six research propositions are formed to support further empirical validation of the proposed framework. The study adds to the literature by combining Eastern contemplative wisdom with Western scientific research and offers a detailed interdisciplinary explanation of the human transformation caused by mantra use. The proposed model offers important implications for psychology, neuroscience, integrative healthcare, yoga, education, organisational behaviour, and workplace spirituality, and provides a theoretical foundation for future interdisciplinary research.

Keywords: Mantra Meditation, Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM), Neuroendocrine Modulation, Spiritual Intelligence, Expanded Consciousness.

1.INTRODUCTION

The quest for higher consciousness and self-transformation has been one of the main issues in philosophy, spiritual and scientific investigations throughout human history (Laukkonen & Slagter, 2021). In fact, meditation, prayer and mantra recitation have been considered across civilisations as profound tools for developing mental clarity and emotional balance, developing ethical awareness, and developing spiritual realisation (Metzner, 2023). These ancient practices have gained increasing popularity as a subject of study in recent decades by researchers in neuroscience, psychology, psychoneuroendocrinology and consciousness studies and have a growing evidence base with respect to their psychological and physiological beneficial effects (Nayak, 2025). Yet the ways in which the subtle energy systems, neuroendocrine systems, spiritual intelligence, and expanded states of consciousness could all be simultaneously affected by mantra practice do not seem to be fully understood (Newberg, 2018). In order to fill this void, the present paper suggests a conceptual framework which draws from both Eastern and Western thought and science of India (Pagnoni & Guareschi, 2020). In this study, the author proposes a model known as the Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM) that explains the multidimensional human transformation that may take place through mantra meditation through psychological, neurological, endocrine and spiritual pathways (Parsons, 2024).

1.1 Background of the Study

The study of consciousness is one of the most promising interdisciplinary areas in the twenty-first century and has received increased attention from neuroscience, psychology, cognitive science, philosophy, medicine and religious studies (Pascoe et al., 2020). Although modern science has made great strides in understanding the brain and its functions, cognition and human behaviour, there is still only partial understanding of the mechanisms behind higher states of consciousness, spiritual experiences and self-transformation (Pascoe et al.,

2021). As a result, scholars have been investigating more and more the traditional contemplative practices that have been developed over centuries in different cultures and traditions (Ray, 2025a).

In these practices of contemplation, mantra meditation stands in a unique place in the knowledge system of India (Ray, 2025b). Mantras are derived from the Vedas, Upanishads, Yoga, and Tantric scriptures, and are considered more than just words or sounds; they are sacred formulas that can be used to shift consciousness, align mental processes, and enhance spiritual development (Sacchet et al., 2024). Classical Indian philosophy sees sound (Shabda) as one of the basic principles of creation and mantra is one of the important tools that can be used to harmonise the individual with universal consciousness (Schmalzl et al., 2019). Om Namam Shivaya, the Gayatri Mantra, Om (Aum), and the Maha Mrityunjaya Mantra have been used in the past to develop concentration, emotional equilibrium, ethical sensibilities, and self-realisation.

Today, however, Western scholarship has largely focused on mantra in terms of psychology, neuroscience, psychophysiology and the study of consciousness. Repeatedly reciting mantras and meditating have been shown to lower stress and improve attentional control, emotional regulation, neuroplasticity, and physiological functions such as autonomic nervous system activity and hormonal regulation. There is growing evidence from neuroimaging and psychoneuroendocrinology that contemplative practices can induce measurable changes in brain activity and endocrine function, and offer a scientific perspective for the physiological effects of meditation.

Another issue that is of interest today is the connection between spirituality and human flourishing. Spiritual intelligence, psychological well-being, ethical leadership, and workplace spirituality have emerged as growing areas of research in scholarly literature as a result of their links with resilience, compassion, purpose, emotional regulation, and prosocial behaviours. Despite the growing body of research on meditation and spirituality, however, relatively little research has focused on the mechanisms by which mantra practice could impact these higher-order psychological and spiritual results (Tang et al., 2019).

In ancient yogic texts, the use of mantra is said to affect subtle psycho-spiritual energy centres known as chakras, which govern the circulation of prana and further propel the development of consciousness. Modern understandings have also claimed a correspondence between the chakras and the endocrine system, suggesting that the activation of the chakras may be linked to neuroendocrine processes that impact cognition, emotion, and behaviour (Travis & Shear, 2020). Though these are theories, they need to be tested empirically and they provide an intriguing transdisciplinary approach to incorporating ancient contemplative wisdom with today's neuroscience and psychology (Tseng, 2022).

Against this background, the present paper suggests a conceptual framework based on the integrative approach, which will bring together the Indian philosophical traditions and modern scientific thoughts (Van Dam et al., 2018). In particular, it suggests that mantra practice can stimulate different ensembles of chakras, which can result in neuroendocrine modulation, psychological shifts, spiritual intelligence enhancement, and ultimately in expanded consciousness (Verma, 2022). This paper brings together the insights from the disciplines of Yoga, Tantra, psychoneuroendocrinology, neurotheology, transpersonal psychology and the studies of consciousness and presents the Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM) as a holistic theoretical framework to understand the multidimensional effects of mantra meditation (Vieten et al., 2018).

1.2 Research Problem

While the psychological and physiological effects of meditation are explored in a wealth of literature, the majority of studies concentrate on mantra practice in one particular discipline. Neuroscientific studies focus on neural correlates of meditation, psychological studies focus on cognitive and emotional benefits of meditation and traditional Indian literature focuses on mantra in the spiritual and metaphysical context (Wahbeh et al., 2019). Therefore, there is yet no scientific theory that methodically synthesises these various views into a single coherent explanation of how the use of mantras could affect consciousness.

In addition, most conceptualisations see chakra activation, neuroendocrine modulation, spiritual intelligence and expanded consciousness as independent areas of research, not processes that influence each other. Researchers do not have an interdisciplinary model to help them grasp what kind of mechanisms may underlie the ability of mantra meditation to assist in attaining holistic human development (Yaden et al., 2022). Hence, there is a need for a theoretically cohesive and unified framework that can connect Indian contemplative practices with the current neuroscience and psychology.

1.3 Research Gap

Though there is growing academic interest in meditation and consciousness research, there are some gaps in the current literature.

First, past research has tended to focus on mantra meditation either from a spiritual or contemporary scientific point of view, and there has been little that has unified these two streams of knowledge.

Second, while many publications refer to the chakra theory and the endocrine systems, there is no widely accepted theory and model that explains how the action of mantras on the chakras can be conceptually related

to the neuroendocrine regulation in order to explain the influence of chakra activation on psychological and spiritual development.

Third, the connection between the use of mantra practice, the neuroendocrine modulation, spiritual intelligence and expanded consciousness has been underutilised in theoretical work, and the linkage between these constructs has not been sufficiently explicated.

Lastly, there is no systematic East–West integrative perspective that combines the traditions of Indian philosophy, psychoneuroendocrinology, neurotheology, transpersonal psychology, and consciousness research to account for the multidimensional impact of mantra meditation. To fill these gaps, the Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM) was developed in the present paper.

1.4 Objectives of the Study

The purpose of the present study is to fulfil the following goals:

1. To study the philosophical concept of mantra, consciousness and chakra system in the Indian school of thought and modern western scientific approach.
2. To synthesise existing literature on mantra meditation, neuroendocrine modulation, spiritual intelligence and expanded consciousness from an interdisciplinary perspective.
3. To suggest the Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM) that elucidates theoretical linkages between mantra practice, multi-chakra activation, neuroendocrine mechanisms, psychological change, spiritual intelligence and expanded consciousness.
4. To formulate research propositions that can inform empirical research on the multiple effects of mantra meditation.

1.5 Significance of the Study

This study offers a holistic theoretical and methodological response to the interdisciplinary discussion between ancient contemplative traditions and present-day scientific research, including concepts from the field of Yoga, Tantra, neuroscience, psychology, and psychoneuroendocrinology. The proposed framework builds on conceptualisations of mantra meditation and discusses the potential psycho–neuro–endocrine mechanisms and implications of mantra meditation for spiritual development.

Theoretically, the study presents the new PNECAM framework, which may help researchers to explore the relationship between the practice of mantra, activation of chakras, hormonal balance, psychological changes, and consciousness. On a practical level, the framework could guide future studies into the science of meditation, integrative medicine, mental health, organisational behaviour, leadership development, and spiritual health. Furthermore, it serves as a basis for interdisciplinary empirical research using techniques such as neuroimaging, endocrine markers, psychometric tests and longitudinal designs to test the conceptual connections proposed above.

1.6 Organisation of the Paper

The rest of this paper will be organised into four main parts. Section 2 addresses the theoretical underpinning of mantra, chakra systems, neuroendocrine modulation, spiritual intelligence and consciousness from Indian and Western perspectives, and highlights the gaps in research. Section 3 introduces the proposed Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM) and elaborates the conceptual mechanisms in the framework, and formulates research propositions. In Section 4, the theoretical and practical implications of the proposed model are discussed, weak points of the model are identified, and directions for future research are given. Finally, the main conclusions are summarised, the limitations of the study are noted and the importance of melding ancient wisdom with modern scientific methods for the exploration of human consciousness is underscored.

2. THEORETICAL FOUNDATIONS AND LITERATURE REVIEW

Classical Indian philosophical concepts and the modern scientific views on meditation and consciousness are brought together to develop the theoretical basis of the present study. Although the scriptures of India provide an explanation of mantra as a vehicle for spiritual awakening and for the expansion of consciousness through sound, vibration and subtle energy, modern research explores the psychological, neurological and physiological impacts of mantra through empirical science. These views offer complementary insights into the ways in which the practice of mantra can impact thoughts, emotions, hormone levels, spiritual intelligence and states of consciousness. The present study does not regard these approaches as mutually exclusive but rather complementary means of knowledge and understanding of human transformation, philosophically as well as scientifically. In this regard, the Indian foundations of mantra and consciousness, Western scientific view on meditation, conceptual relationship between chakra theory and neuroendocrine modulation, and current gaps

in the research that provide a basis for developing the proposed Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM) will be studied.

2.1 Indian Perspectives on Mantra and Consciousness

The Indian philosophical tradition gives one of the oldest and most complete accounts of consciousness and human changes. While brain activity is generally considered the basis of consciousness in reductionist scientific views, in Indian philosophy Chaitanya (consciousness) is seen as the ultimate reality behind the reality of existence. In this tradition, mantra, yoga and meditation are considered to be systematic methods of self-realisation and enlargement of consciousness. According to the Sanskrit terminology, mantra means 'man' (mind) and 'tra' (instrument or protection), and it is a sacred sound or expression which purifies the mind; regulates the way of thought; and helps on the spiritual journey.

The Vedas, the sacred sound and the very source of creation, are the very roots of mantra, and the Gayatri Mantra is offered as a tool of intellectual and spiritual enlightenment. The Upanishads, especially the Mandukya Upanishad, also talk about Om (Aum), as an audible representation of Brahman, and about four successive states of consciousness: Jagrat (waking), Svapna (dreaming), Sushupti (deep sleep), and Turiya (pure consciousness). The Bhagavad Gita combines the mantras with morals, dedication, action and meditation, stating that spiritual change is not possible without inner awareness and without righteous action. Likewise, according to the Yoga Sutras of Patanjali, the repetition of mantras (Japa) is another powerful way to establish a reduced and calm mind and towards the deeper cultivation of the meditative awareness.

Tantric philosophy also extends this understanding in terms of nothingness and Nada Brahman, which states that the universe is born out of the vibration and that mantra affects subtle energy centres, called Chakras. In this way, some modern research has tried to reimagine these ancient concepts from the perspective of embodied cognition, neurophysiology, and endocrine regulation, suggesting that the chakra system could actually be more of a conceptual connection between psychological and physiological processes than a literal anatomical structure (Eddy & Smith, 2021; Jamwal & Ahluwalia, 2025; Kirkness, 2021). At the same time, current research of meditation that shows these changes in attention, emotional regulation, and cognitive functioning gives empirical support to some of the outcomes traditionally associated with mantra practice (Awasthi, 2018; Basso et al., 2019). Taken together, these views show Indian philosophy as a spiritual interpretation of consciousness, and as a theoretical basis for interdisciplinary scientific studies.

2.2 Western Perspectives on Consciousness and Meditation

Meditation has come a long way from a philosophical quest to an empirical science, as seen in the Western world. The modern study of meditation looks at it from psychological, neurological, psychophysiological, and psychoneuroendocrinological perspectives, giving empirical evidence to the benefits meditation offers with regard to cognition, emotional management, stress reduction and brain functioning. Regular meditation has been shown to produce long-term changes in the brain, including alterations in the activity of regions that control attention, self-awareness, emotional processing, and executive functioning, as revealed by neuroimaging studies (Fox et al., 2016; Cahn & Polich, 2021).

There are a number of important scholars who have influenced modern perspectives on meditation and states of consciousness. William James suggested that mystical experience is a true experience of human consciousness, which can change personality and behaviour. Carl Jung saw meditation and the chakra symbols as a metaphor for psychological development and individuation, making the chakra system not a Hindu concept but an analytic psychological tool. Through his research on the Relaxation Response, Herbert Benson showed that the repetitive practice of mantras can trigger measurable changes in the body, such as lower blood pressure, heart rate, and activity of the sympathetic nervous system, laying the groundwork for the science of mind–body medicine. Similarly, Candace Pert's theory about the molecules of emotion focused on the biochemical connection between the nervous, endocrine and immune systems, highlighting that emotional experiences are not solely located in the brain.

Recent advances in the field of psychoneuroendocrinology also show how meditation affects the functioning of the hypothalamic–pituitary–adrenal axis, endocrinology, and stress physiology, and neurotheology explores the neural underpinnings of religious and spiritual experiences. Integral Theory also suggests that the human being's growth takes place at the biological, psychological, social and spiritual levels. Together, these perspectives indicate that meditation is not only a relaxation technique but an all-round experience of psychological development and well-being that has the potential to support long-term psychological growth (Dahl et al., 2020; Goleman & Davidson, 2017). However, traditional concepts like mantra-induced chakra activation or subtle energy systems are not usually incorporated into Western models, which highlights the need for a comprehensive East-West conceptual framework.

2.3 Chakra Theory, Neuroendocrine Modulation, Spiritual Intelligence, and Expanded Consciousness

This is one of the main concepts of the yogic and tantric philosophy, a chakra system of seven psycho-spiritual energy centres which govern the flow of prana and the evolutionary stages of consciousness. While the chakras are not known in traditional medicine, scientists of the modern era have suggested theories of chakra-endocrine system relationships based on similarities in functionality (Eddy & Smith, 2021; Kirkness, 2021). The Muladhara, Manipura, Ajna, and Sahasrara chakras are connected to the adrenal glands, the pancreas, the pituitary gland, and the pineal gland, respectively, in a conceptual way (Jamwal & Ahluwalia, 2025). The associations are to be understood as conceptual, not literal, relationships.

Current studies show that meditation can affect the endocrine system by altering the function of the HPA axis, the ANS system and neurochemical pathways, all of which result in lower stress levels, better emotional regulation, improved cognitive functioning and psychological well-being (Fox et al., 2016; Basso et al., 2019; Cahn & Polich, 2021). While these findings cannot directly substantiate the activation of chakras, they offer tantalising biological explanations that could support some of the physiological benefits of contemplative practices.

The results of these multi-faceted processes include the ideas of spiritual intelligence and expanded consciousness. Spiritual intelligence is the ability to understand, feel, think about the meaning, be filled with compassion, act in an ethical way, and transcend the self; expanded consciousness is a higher level of consciousness that is beyond normal cognitive functioning. Modern empirical studies suggest that long-term meditation develops lasting psychological attributes instead of just a soothing effect, which leads to an increase in resilience, empathy, human flourishing and well-being (Dahl et al., 2020; Goleman & Davidson, 2017). The rationale behind the proposed PNECAM is a holistic approach that conceptualises mantra meditation as a multi-dimensional process that merges both the psycho-spiritual dimension and measurable processes in the brain.

2.4 Research Gap

While there is a considerable amount of evidence that meditation has psychological and physiological benefits, the research to date is not well synthesised. Most of the studies focus on meditation in isolation, either from a neuroscience, psychological or endocrinological approach; and there are relatively fewer studies that explore mantra-based meditation as a unique contemplative approach (Awasthi, 2018). Conversely, the traditional ideas on mantras, chakras, spiritual intelligence and expanded consciousness have not often been combined with the results of modern neuroscience and psychoneuroendocrinology.

It is also not yet fully understood how the activation of chakras could be interconnected with the modulatory effects of mantra on the neuroendocrine system, psychological transformation, spiritual intelligence and expanded consciousness. It is also not fully understood how the activation of chakras could be interconnected with the modulatory effects of mantra on the neuroendocrine system, psychological transformation, spiritual intelligence, and expanded consciousness. While there has been a conceptual discussion of the chakra-endocrine relationship (Eddy & Smith, 2021; Jamwal & Ahluwalia, 2025; Kirkness, 2021), empirical studies rarely look at the constructs of chakra and endocrine in one integrated interdisciplinary model.

To overcome these, the present study suggests the Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM), an integrative East–West conceptual model, which combines the knowledge of Indian philosophy with the scientific evidence of today. The model can be said to be the process of initiation which culminates in multi-chakra activation, modulation of the neuroendocrine system, psychological transformation, spiritual intelligence and finally, expanded consciousness, through the practice of mantra. PNECAM is an attempt to merge these distinct fields and offer a new theoretical framework for future interdisciplinary studies of meditation, consciousness and whole person development.

3. AN INTEGRATIVE EAST–WEST CONCEPTUAL FRAMEWORK

As shown in the literature, Indian philosophical systems and the scientific studies carried out in the present era offer complementary explanations for the transformative effects of mantra meditation. Consciousness, subtle energy, and spiritual evolution are the arena of Indian philosophy, whereas psychological, neurological, and neuroendocrine mechanisms explain meditation in Western science. While these traditions have always been distinct, they all agree that meditation can bring about measurable shifts in the human mind, actions, and happiness. To complement these interrelated views, the present study presents the Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM), a holistic conceptual framework that elucidates how mantra practice can contribute to transformation in the human being in an integrative manner, involving psychological, physiological and spiritual pathways in the process.

3.1 Development of the PNECAM Framework

The proposed PNECAM combines the elements of mantra yoga with chakra theory, contemplative neuroscience with psychoneuroendocrinology and spiritual intelligence in a cohesive manner. The proposed framework is a novel one that assumes that the process of mantra practice simultaneously impacts on many dimensions of

human functioning, rather than existing models that focus on meditation as a singular neurological or psychological process.

The framework suggests that through repeated mantra recitation, focused attention can be generated, rhythmic breathing, and sustained cognitive engagement, which can be conceptually considered as multi-chakra activation. It is suggested that this process is mediated by the interaction between the nervous system, endocrine system and psychological processes, which affects neuroendocrine regulation. As one progresses towards a state of neuroendocrine equilibrium, emotional stability, mental clarity, resilience and self-awareness also follow, leading to spiritual intelligence and a broadening of consciousness. These higher-order outcomes are expected to have an impact on ethical behaviour, compassion, servant leadership and workplace spirituality.

One of the special features of PNECAM is its sequential and interdisciplinary nature that combines ancient contemplative philosophy and modern science. The framework sees meditation outcomes as part of a developmental process rather than as discrete events. It offers a theoretical basis that can be explored via psychological testing, neuroimaging, endocrine measurements, and longitudinal meditation research studies.

Table 1: Components of the Proposed PNECAM Framework

Component	Description	Expected Outcome
Mantra Practice	Repetitive chanting with focused awareness	Attention, concentration, mental stability
Multi-Chakra Activation	Simultaneous conceptual activation of multiple psycho-spiritual centres	Energy balance and psychological integration
Neuroendocrine Modulation	Regulation of neural and hormonal responses	Stress reduction and emotional regulation
Psychological Transformation	Improvement in cognition and emotional resilience	Self-awareness and behavioural change
Spiritual Intelligence	Development of meaning, compassion and ethical awareness	Purposeful decision-making
Expanded Consciousness	Higher levels of awareness and self-transcendence	Holistic personal transformation

3.2 Multi-Chakra Activation Theory

Most of the traditional books on yoga attribute certain mantras to each chakra. But the present study introduces a new theory of Multi-Chakra Activation which states that a single mantra can conceptually activate more than one chakra at a time. Mantras have varying vibrations and symbolism which can impact several mental and spiritual aspects simultaneously.

For instance, the Gayatri mantra can conceptually activate Manipura, Ajna and Sahasrara chakras as it brings intellectual clarity, intuition and spiritual wisdom. Similarly, the Maha Mrityunjaya Mantra can have an impact on the Anahata, Vishuddha, and Ajna chakras by healing, emotional strength and awareness. This multidimensional understanding offers a richer understanding of the transformative power of mantras than the traditional focus on single chakras and sets a conceptual link between ancient yogic philosophy and contemporary systems thinking.

Table 2: Conceptual Multi-Chakra Activation through Selected Mantras

Mantra	Conceptual Multi-Chakra Activation	Primary Psychological Outcome
Gayatri Mantra	Manipura – Ajna – Sahasrara	Wisdom, cognition, higher awareness
Om Namah Shivaya	Vishuddha – Ajna – Sahasrara	Self-awareness, purification, transcendence
Maha Mrityunjaya Mantra	Anahata – Vishuddha – Ajna	Healing, resilience, emotional balance
Om	All Seven Chakras (conceptually)	Integrated consciousness and inner harmony

3.3 Psycho–Neuro–Endocrine Mechanism

The intended psycho-neuro-endocrine process elucidates the possibility of such psychological modulation by mantra meditation by describing the dynamic interaction between the nervous system, the endocrine system and the psychological system. Mantras encourage focused attention, rhythmic breathing and less mental distraction, which leads to a decrease in sympathetic nervous system activity and an increase in parasympathetic nervous system activity. These physiological changes should have effects on the hormonal systems involved in stress, such as the hypothalamic–pituitary–adrenal (HPA) axis, which should lead to better emotional regulation,

physiological balance, and less psychological stress. Furthermore, frequent contemplative practice could facilitate adaptive neuroplastic changes implicated in attention, self-awareness and emotional resilience.

People can have more focus, stability, compassion, resilience, and awareness of themselves as they improve in their neuroendocrine balance. These psychological adaptations foster conditions for the development of spiritual intelligence as defined by ethical decision-making, empathy, purpose, meaning and self-transcendence. Through sustained practice of mantra meditation, one might then move into higher levels of consciousness, characterised by deeper integration, interconnection and personal development. In the proposed framework, these outcomes are treated as successive and reinforcing psychological events rather than stand-alone psychological events.

The proposed mechanism is a conceptual pathway, and should not be construed as a biological model. It is not claiming experimental research has been done to validate the activation of chakras nor that chakra activation equates to a specific endocrine gland. Rather, the framework suggests that concepts of psycho-spiritual transformation can appear in the same conceptual space as current understandings of neuroplasticity, the autonomic nervous system, the endocrine system, emotional adaptation, and cognitive development. In line with this, PNECAM offers an interdisciplinary model which fosters dialogue between Indian philosophy of contemplation and contemporary scientific research, and also accounts for the scientific prudence to the current empirical evidence.

Overall, it is a psycho–neuro–endocrine mechanism, which can be considered as the central explanatory pathway of the proposed PNECAM model, that suggests a conceptual integration of psychological, neurological, endocrine and spiritual processes as part of a holistic approach to human transformation through mantra practice. This view provides a theoretical framework for future empirical research using neuroimaging, psychometric measures, endocrine markers, and longitudinal meditation research to assess the suggested relationships.

3.4 Proposed Conceptual Model

The proposed framework of mantra meditation is a paradigm of multidimensional transformations in which the psychological, physiological and spiritual mechanisms operate continuously in sequence. Each aspect is not a stand-alone phenomenon but a sequential step that feeds into the next one, and thus establishes a continuum of contemplative practice f or whole human development.

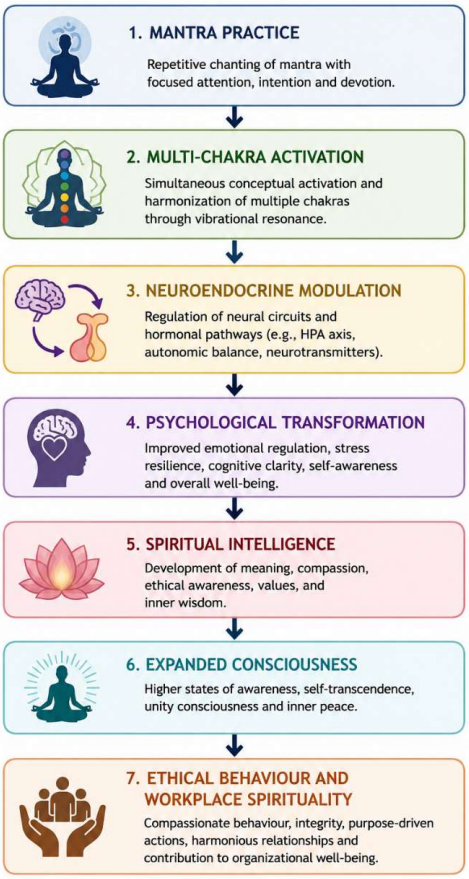

Figure 1: Proposed Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM)

The mantra practice is seen as the initial catalyst which conceptually stimulates several psycho-spiritual centres, which eventually results in a modulation of the neuro-endocrine system and psychological change. These transformations enable the cultivation of spiritual intelligence, leading to greater consciousness and ethical conduct in the workplace, thereby fostering workplace spirituality. The sequential nature of the framework sets PNECAM apart from other models of meditation that have emerged by bringing together three aspects—psychological, biological, and spiritual—into one conceptual process.

3.5 Research Propositions

Following the proposed conceptual framework, the following research propositions are formulated to enable empirical validation of the developed model, known as Psycho – Neuro – Endocrine Chakra Activation Model (PNECAM) in the future. The following propositions outline the order of constructs within the framework and serve as a conceptual foundation to explore how mantra practice could affect psychological, neurological, endocrine and spiritual development. These are used to lead the next generation of quantitative, qualitative, and interdisciplinary investigations and to confirm causal relationships in the future.

- P1: Conceptual: Multiple Chakra activation is positively affected by regular mantra practice.
- The activation of multiple chakras has a beneficial effect on neuroendocrine modulation in P2.
- P3: Psychological transformation, such as emotional regulation, resilience and cognition, is positively affected by neuroendocrine modulation.
- P4: Psychological transformation positively contributes to spiritual intelligence.
- P5: Spiritual intelligence has the potential to positively influence the expansion of consciousness.
- P6: Expanding consciousness has a positive impact on ethical behaviour and workplace spirituality.

Together, these propositions describe a rational chain of events by which the potential of mantra meditation to bring about interdisciplinary growth and development of the human person in the proposed framework PNECAM is envisioned. They outline a planned sequence of empirical research with the aid of psychometric assessments, neuroimaging (EEG and fMRI), endocrine measures, behavioural measures and longitudinal study designs. Further, the propositions provide a theoretical underpinning to support the validation of the proposed framework in a variety of clinical, educational, organisational and contemplative settings, fostering interdisciplinary connections between psychologists, neurologists, endocrinologists, yoga scholars and consciousness researchers.

4. COMPARATIVE ANALYSIS OF EXISTING MODELS AND THE PROPOSED PNECAM FRAMEWORK

Meditation and consciousness have been studied by various theories in the field of science from psychology, neuroscience, physiology, contemplative science, and consciousness studies. These views have greatly contributed to the understanding of the cognitive, emotional, behavioural, and neurological impacts of meditation, offering compelling evidence for its benefits on mental health, stress management, and neural adaptation. Most of the models in existence, however, only account for certain aspects of the meditation process-stress reduction, neuroplasticity, endocrine regulation or psychological development in isolation from one another, or the spiritual experience without establishing a solid link between these processes and one another.

Thus, an interdisciplinary approach that can incorporate the wisdom of past contemplation with the new science is still needed. This is crucial for gaining a more comprehensive understanding of the impact of mantra meditation on the human mind, body, and consciousness as a whole. In order to overcome this limitation, the present study presents a new model, namely the Psycho – Neuro – Endocrine Chakra Activation Model (PNECAM) that is a synthesis of Indian philosophical paradigms and the latest revelations from psychology, neuroscience, and psych neuroendocrinology. The framework gives a linear explanation of how, in theory, mantra can help sequentially achieve multi-chakra activation, modulation of neuroendocrine processes, psychological transformation, spiritual intelligence, and expanded consciousness, thus continuing the meditation theories with an integrative East–West perspective.

4.1 Existing Models of Meditation and Consciousness

There are a number of well-known theories whose influence has helped to enhance the perception of meditation and consciousness today. The relaxation response, first described by Herbert Benson, demonstrated repetitive mantra practice's physiological effects by decreasing stress and autonomic activation. Contemplative neuroscience examines meditation-induced neuroplasticity and functional brain connectivity, and psych neuroendocrinology of endocrine regulation and stress physiology. Likewise, the study of neurotheology examines the neural basis of humans' spiritual experiences, and Integral Theory sees human development as a multi-dimensional process of psychological, biological, social and spiritual growth.

These models have significantly advanced the field of meditation research, providing evidence for cognitive, emotional, and physiological benefits. They, however, focus more on the single dimensions of human functioning and not on how these dimensions interact in the course of meditation. Especially, they give little consideration

to traditional ideas of mantra, chakras and spiritual intelligence. The connection between contemplative practice and a fuller understanding of human development is therefore unclear.

Table 3: Comparison of Existing Meditation Models

Existing Model	Primary Focus	Major Limitation
Relaxation Response	Physiological stress reduction	Does not explain spiritual development or chakra concepts
Contemplative Neuroscience	Brain function and neuroplasticity	Limited focus on spiritual and endocrine dimensions
Psychoneuroendocrinology	Hormonal regulation and stress physiology	Does not incorporate mantra or consciousness models
Neurotheology	Neural basis of spiritual experience	Limited explanation of psychological transformation
Integral Theory	Holistic human development	Does not provide a sequential psycho–neuro–endocrine mechanism

4.2 Novel Contributions of the PNECAM Framework

The proposed model of Psycho–Neuro–Endocrine Chakra Activator (PNECAM) builds upon the past literature and suggests that mantra meditation is a sequential multidimensional process of holistic human transformation (as opposed to a set of separately verified psychological or physiological results). The current models mainly focus on one of four areas: reduction in stress, enhancement of cognition, plasticity of the brain or spiritual experience in meditation. PNECAM takes a different approach by placing all of these diverse viewpoints under a single umbrella, and by suggesting a conceptual framework that depicts the interconnectedness of psychological, neurological, endocrine and spiritual aspects of human functioning during the practice of mantra.

The framework starts with the process of mantra practice that conceptually helps in multi-chakra activation, which helps to modulate the neuroendocrine system, which also brings about some change in the psyche and spiritual intelligence and finally expanded consciousness. PNECAM presents a complete account of the transformation experienced during meditation that goes beyond the scope of other theoretical models, by arranging these constructs in a logical sequence of their development. The framework, unlike previous ones, integrates traditional yogic philosophy with modern neuroscience and psychoneuroendocrinology while doing so maintaining a clear separation between spiritual constructs and biological mechanisms.

The great innovation of the framework is the Multi-Chakra Activation Theory, which suggests that the individual mantras can have a conceptual impact on multiple psycho-spiritual centres at once instead of just one energy centre. This approach is different from the typical chakra model of the chakras, which usually equate with one mantra to each chakra, and instead is a more comprehensive interpretation of the use of mantras as a multi-dimensional process that can affect cognition, emotional regulation, moral consciousness, and spiritual development simultaneously. While this is a conceptual proposition, it does offer a new theoretical framework in which to explore interdisciplinary research into the future.

The sequential conceptual relationships between the key constructs in the framework are also important contributions. PNECAM aims to shift the focus from the psychological, neurological, endocrine, and spiritual outcomes to the seamless and interdependent stages of a dynamic developmental pathway. Enhancement of the neuroendocrine regulation is anticipated to facilitate psychological transformation and eventually spiritual intelligence and higher states of consciousness. This systems approach offers a holistic account of the potential long-term cognitive, affective, behavioural and spiritual benefits of sustained practice of mantra.

Moreover, PNECAM extends the domain of contemplative science by showing that Eastern philosophical traditions should not be regarded as in opposition to Western scientific studies, but rather as complementary. The framework presents a way to understand some of the ancient ideas of the mantra, chakras, and expanded consciousness in light of more modern discoveries, which include studies on neuroplasticity, endocrine regulation, and psychological adaptation. It sets forth an interdisciplinary platform that fosters collaboration between the fields of psychology, neuroscience, endocrinology, yoga studies, consciousness research and organisational behaviour.

Overall, there has been an important conceptual leap in suggesting the PNECAM framework, which brings together previously unconnected theoretical approaches into an integrated explanatory framework. It not only builds on existing theories of meditation but also offers a framework for further experimental testing of these claims using psychometric methods, neuroimaging studies, endocrine measures, and longitudinal studies of meditation interventions. Thus, the framework also plays a role in the theoretical evolution of contemplative

science and in its practical development of interdisciplinary research and studies of consciousness and holistic human development.

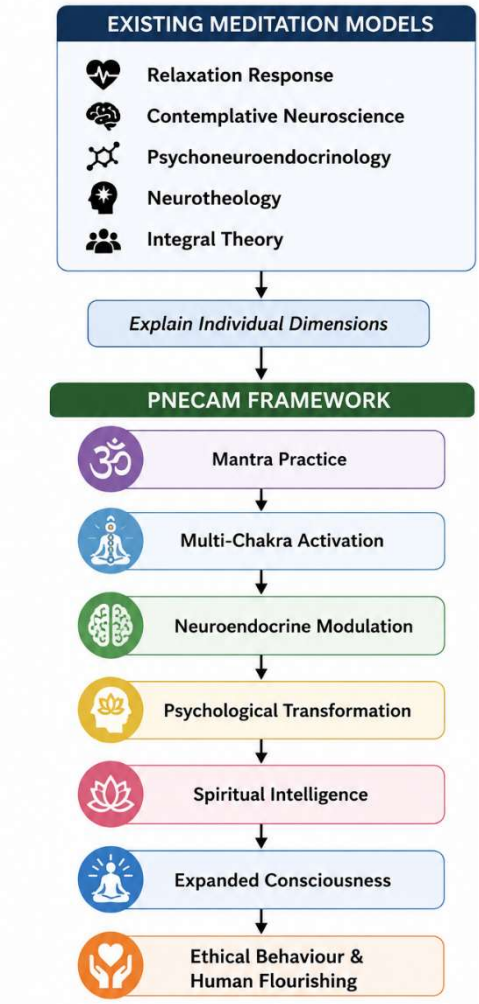

Figure 2: Comparative Positioning of the Proposed PNECAM Framework

4.3 Comparative Advantages of PNECAM

PNECAM offers a more comprehensive and holistic account of mediation-induced change than previous theories. The framework is not limited to reducing stress or enhancing neural activity, regulating endocrine processes, or enriching the spiritual experience, but instead helps to establish logical connections between psychological, neurological, endocrine, and spiritual aspects in a single conceptual model. Incorporating these interrelated processes allows PNECAM to present a more comprehensive view, better capturing the multi-dimensionality of mantra meditation and its impact on human development. The framework also illustrates the possibility of working together rather than in opposition of Eastern contemplative philosophies and Western scientific knowledge, in providing explanations for how mantra meditation works.

One of the other key strengths of PNECAM is its interdisciplinary nature. The framework establishes meaningful linkages between the fields of psychology, neuroscience, endocrinology, yoga studies, contemplative science, and consciousness research, and thus helps foster interdisciplinary collaboration. This holistic view allows scientists to study meditation on several levels at once, thereby gaining a more holistic insight into its cognitive, physiological, behavioural, and spiritual effects.

In addition, the structure offers a framework for future empirical studies. PNECAM proposes sequential relations between its key constructs, allowing researchers to study specific pathways through psychometric assessments, neuroimaging (EEG and fMRI), endocrine measures, behavioural measures, and longitudinal intervention studies. This systematic approach increases the testability of the proposed framework and gives us directions on how to validate the conceptual assumptions of the framework in various research settings and with various populations.

Table 4: Novel Contributions of the Proposed PNECAM Framework

Feature	Existing Models	Proposed PNECAM Framework
Integration of Eastern and Western knowledge	Partial	Comprehensive integration
Mantra as the initiating mechanism	Limited	Central construct
Multi-Chakra Activation Theory	Not addressed	Introduced as a novel concept
Neuroendocrine modulation	Independently studied	Integrated with mantra and consciousness
Spiritual Intelligence	Separate construct	Mediates transformation toward expanded consciousness
Expanded Consciousness	Philosophically or neurologically explained	Linked through a sequential conceptual process
Ethical Behaviour and Human Flourishing	Rarely included	Final developmental outcome

Overall, the comparative analysis shows the proposed PNECAM framework is an improvement over the current meditation theories by combining the two previously separated philosophical and scientific views into a unified conceptual model. PNECAM is different from previous models, which have been based on either a psychological or physiological set of outcomes, because it accounts for meditation as a multi-dimensional development process, in which the process of mantra practice is followed by multi-chakra activation, neuroendocrine modulation, psychological transformation, spiritual intelligence and expanded consciousness, all in one sequential process. The main theoretical result of the present inquiry is this interdisciplinary synthesis, which further grounds future empirical studies, evidence-based meditation practice, and interdisciplinary discourse on consciousness and whole-person development.

5. PRACTICAL APPLICATIONS OF THE PROPOSED FRAMEWORK

The proposed Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM) is more than a theory of how mantras can induce transformation; it also provides applications in the fields of health, psychology, education, organisational management and contemplative sciences. The framework combines Indian philosophy and modern scientific understanding, and offers a comprehensive approach to improving cognitive function, emotional health, ethical conduct, and spiritual growth. PNECAM considers Mantra Meditations to be a multidimensional intervention that affects both psychological and physiological results, as well as behavioural and spiritual results, not just a spiritual practice or a technique for stress reduction.

The interdisciplinary approach of the framework allows its implementation in a variety of professional and social situations. It provides the conceptual foundation for the development of evidence-based interventions to enhance mental health and emotional resilience, cognitive functioning, ethical decision-making, leadership development and human flourishing. The framework also promotes a multi-disciplinary approach to the promotion of holistic well-being, with the inter-disciplinary collaboration of psychologists, neuroscientists, healthcare professionals, yoga practitioners, educators, organisational leaders and consciousness researchers. PNECAM is therefore not only a model for theoretical research, but also a framework that can be used to inform future research, policy making, clinical practice, educational innovation and workplace wellness programs for sustainable human development.

5.1 Applications in Mental Health and Healthcare

The Psycho – Neuro – Endocrine Chakra Activation Model (PNECAM) provides a holistic perspective to achieve mental and emotional wellbeing, including psychological, physiological and spiritual aspects of wellbeing. In this context, mantra meditation could be used as an adjunct to standard therapeutic treatments, aiding in stress management, emotional regulation, resilience and psychological healing. The multi-chakra activation and neuroendocrine modulation in the conceptual processes of regular mantra practice can help to achieve autonomic equilibrium, the inhibition of stress hormone activity, better cognitive functioning and increased emotional stability. Therefore, it holds promise for preventive health, integrative medicine, psychotherapy, rehabilitation and community wellness programs.

The framework can also help health care providers design complementary interventions that can enhance general quality of life, psychological resilience, self-awareness, and emotional health. Practices involving mantra or structured meditation programs that are combined with evidence-based clinical care can be particularly beneficial for patients who are suffering from chronic stress, anxiety, burnout or emotional exhaustion. While not a substitute for traditional medical or psychological care, PNECAM takes an interdisciplinary approach that

enhances patient-centred care by combining contemplative practices with contemporary therapeutic interventions.

Furthermore, the framework fosters the cross-talk between psychologists, psychiatrists, doctors, yoga therapists, and wellness practitioners in creating interventions that are comprehensive and integrate mental and physical health. As knowledge regarding meditation advances, PNECAM can be used as a conceptual framework for designing integrative healthcare approaches that support prevention, recovery, long-term health, and holistic development of humans.

Table 5: Potential Applications of the PNECAM Framework Across Different Domains

Domain	Application	Expected Benefits
Clinical Psychology	Mantra-based psychological interventions	Reduced stress, anxiety, and emotional imbalance
Healthcare	Integrative wellness programmes	Improved mental health and quality of life
Education	Mindfulness and mantra-based learning	Better attention, concentration, and emotional intelligence
Yoga and Meditation	Personalised meditation protocols	Enhanced self-awareness and spiritual growth
Organizations	Workplace meditation programmes	Employee well-being and ethical work culture
Leadership Development	Spiritual intelligence training	Ethical leadership and better decision-making

5.2 Applications in Education, Yoga, and Organisational Development

The proposed Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM) is very relevant to educational institutions, yoga centres, and organisations that want to encourage all-round human development. The framework brings together the cognitive, emotional, physiological and spiritual aspects, offering practical support for designing interventions that can promote individual growth and institutional well-being.

In the educational field, mantra meditation can help improve students' attention, concentration, emotional intelligence, resilience, and self-regulation, thus allowing them to benefit from their studies and personal growth. Regular meditation practice can also enhance students' attention in the classroom, alleviate academic stress, and cultivate their ability to make decisions mindfully. Educational institutions can include a structured meditation curriculum in their programs to provide a healthier environment for learning, fostering the development of cognition, emotions, and ethical values.

It offers a systematic perspective on the possible conceptual impact of various mantra practices on various psycho-spiritual dimensions within the yogic and meditative practice, not just with regard to specific outcomes. This view is also useful for creating more individualised meditation techniques that take into account the psychological needs, emotional balance, spiritual desires, and general health and well-being of the individual. Yoga teachers and meditators can then create a structured yoga course that incorporates the use of breathing exercises, mantras, mindfulness, and self-reflection as ancillary elements to the whole process.

In the corporate environment, PNECAM can be utilised in employee well-being programs, leadership training, and corporate spirituality. Through self-awareness, compassion, ethical decision-making, emotional resilience and interpersonal effectiveness, the use of mantras could help to create healthy organisational cultures, enhance teamwork, engage employees and maintain sustainable leadership. The framework also emphasises the need to balance professional performance and psychological well-being, which will help organisations implement evidence-based contemplative practices that will benefit individual fulfilment and organisational effectiveness.

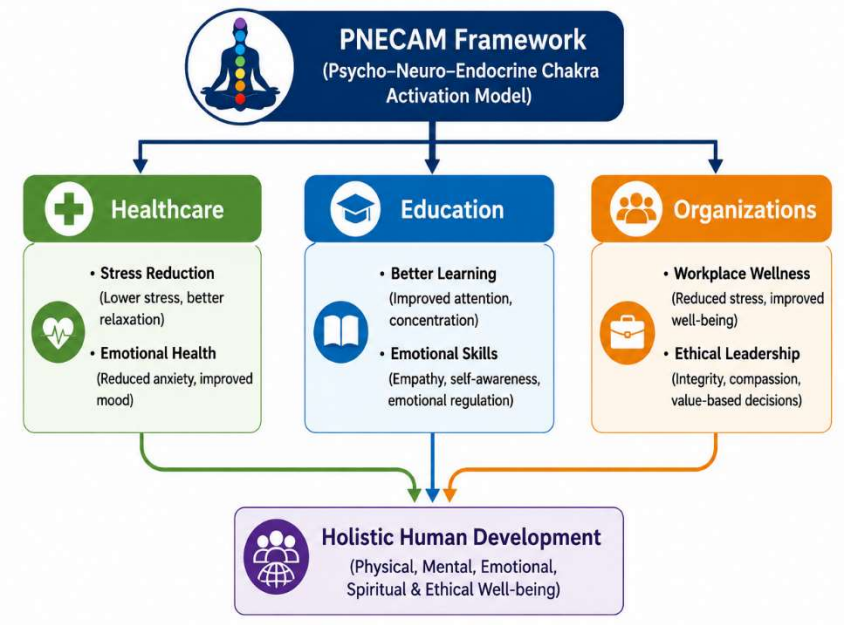

Figure 3: Practical Application Framework of the PNECAM Model PNECAM Framework

5.3 Framework for Future Research and Practice

The proposed framework offers a framework for future inter-disciplinary research combining concepts from mental science, neuroscience, endocrinology, yoga, and consciousness studies. Researchers can use EEG and fMRI neuroimaging, endocrine biomarkers such as cortisol and melatonin, psychometric scales, and longitudinal studies of interventions to explore the proposed relationships between the use of mantras, neuroendocrine modulation, spiritual intelligence, and expanded consciousness. Such studies will help to validate and enhance the conceptual linkages that have been suggested in the PNECAM framework.

On a practical level, health care specialists, psychologists, yoga practitioners, educators, and organisational leaders could use the framework to develop evidence-based meditation programs to promote cognitive function, emotional health, moral conduct, leadership, and spiritual development. The evidence continues to accumulate and PNECAM may prove to be a useful interdisciplinary model for cultivating the whole person and enhancing the integration of contemplative traditions and modern scientific inquiry.

Table 6: Stakeholders and Potential Implementation of the PNECAM Framework

Stakeholder	Implementation Strategy	Expected Outcome
Researchers	Neuroimaging, hormonal and psychological assessment	Validation of the conceptual model
Psychologists	Mantra-assisted therapeutic programmes	Improved emotional regulation
Yoga Practitioners	Chakra-oriented meditation sessions	Spiritual growth and self-awareness
Educational Institutions	Meditation-integrated curriculum	Better academic engagement and resilience
Healthcare Professionals	Complementary wellness interventions	Holistic patient care
Corporate Organizations	Workplace spirituality and meditation initiatives	Employee well-being, ethical culture, and productivity

In conclusion, the suggested PNECAM framework proves to be highly practical as it offers an interdisciplinary approach that connects the ancient contemplative tradition with modern scientific research, highlighting the relevance of both fields in addressing the issue of climate change. It has a wide range of applications in clinical practice, education, yoga, organisation development, and future scientific research, and it is a versatile model for supporting holistic human development.

6. DISCUSSION AND IMPLICATIONS

The proposed psycho-neuro-endocrine chakra activation model (PNECAM) is an interdisciplinary model that offers an explanation for the transformation of the human system through the use of mantra-based methods, which incorporates classical Indian philosophical knowledge with the emerging disciplines of psychology, neuroscience and psychoneuroendocrinology. PNECAM offers an expanded perspective on mantra practice,

moving beyond the traditional focus on stress reduction or cognitive enhancement, and instead viewing it as a four-stage process that culminates in consciousness expansion. PNECAM's approach to mantra practice is more expansive than any of the traditional models, and considers it a four-stage process that eventually leads to consciousness expansion. This work thus builds on previous meditation research and links Eastern contemplative practice to scientific research from a theoretical point of view. Most importantly, it illustrates how ancient philosophies and modern scientific theories can be used in tandem to comprehend the intricate nature of human consciousness and its all-round development.

6.1 Discussion of the Proposed Framework

The proposed framework proposes that the practice of mantra meditation is a multidimensional developmental process, which simultaneously affects the psychological, physiological and spiritual processes. PNECAM combines the old with the new, blending the traditional notions of chakras and consciousness with a more contemporary perspective on neuroplasticity and endocrine regulation, giving a fuller picture of the transformative effect of meditation.

The framework takes into account that enhanced emotional regulation, cognition and wellbeing can play a role in developing spiritual intelligence and expanded consciousness, unlike previous models which consider isolated outcomes. Therefore, the model is an important conceptual progress in contemplative science, because it allows explaining the process of meditation in a unified way.

PNECAM's unique feature is the sequential conceptual structure. The framework views psychological, neurological, endocrine and spiritual changes as interrelated and continuous stages in one's developmental process, rather than as separate phenomena. This systems approach helps to gain a clearer understanding of how continued mantra practice can, over time, affect several aspects of human functioning and eventually lead to an overall development of an individual.

6.2 Theoretical and Scientific Implications

There are several significant theoretical contributions in the study. For one, it connects the philosophy of the Indian tradition with the current scientific fields, showing that both views are not contradictory but complementary to each other. Second, it explains the Multi-Chakra Activation Theory which specifies that the individual mantras can have conceptual impact on many psycho-spiritual centers at once.

The framework promotes the interdisciplinary dialogue of neuroscience, psychology, endocrinology, contemplative science, and consciousness studies from a scientific perspective. It also serves as a conceptual underpinning for any future empirical testing with neuroimaging, hormonal, and psychometric measures.

In addition to the novelty of its theoretical approach, PNECAM also adds to the growing contemplative science movement by providing a platform for scholars to explore meditation from a unified, not compartmentalised, disciplinary lens. The framework, therefore, acts as a bridge between traditional philosophy and contemporary scientific practices and supports the creation of holistic theories of consciousness, well-being, and human flourishing.

Table 7: Major Theoretical Contributions of the PNECAM Framework

Aspect	Existing Perspective	Contribution of PNECAM
Meditation	Mainly stress reduction	Holistic psycho–neuro–endocrine transformation
Chakra Theory	Traditional spiritual concept	Integrated with neuroscience and endocrinology
Spiritual Intelligence	Independent psychological construct	Outcome of mantra-induced transformation
Consciousness	Philosophical or neuroscientific interpretation	Integrated East–West conceptual explanation
Human Development	Fragmented disciplinary models	Unified interdisciplinary framework

6.3 Implications for Psychology, Neuroscience, and Spiritual Practice

The proposed framework provides a psychological account of the potential benefits of the mantra practice on attention regulation, emotional control, resilience, self-awareness, and cognitive flexibility. It offers a conceptual foundation for the study of neural plasticity, brain connectivity, autonomic regulation, and endocrine changes during meditation in neuroscience.

This framework is also applicable to yoga and meditation practitioners as it suggests that the practice of mantras must be considered as a holistic developmental process, and not just a relaxation exercise. The proposed Multi-

Chakra Activation Theory also offers a fresh outlook in comprehending the effect of the different mantras on a number of psychological and spiritual dimensions at once.

Furthermore, the framework promotes more integration of contemplative practice and evidence-based psychological interventions. The integration of traditional meditation practices and modern scientific evaluation can facilitate the development of more holistic strategies for enhancing emotional health, resilience, compassion, and psychological development.

6.4 Practical and Organisational Implications

PNECAM has implications beyond the individual, with relevance to healthcare, education, organisational management, and leadership development. In the context of healthcare, mantra-based practices can be used alongside traditional stress management and emotional support techniques. Meditation programs can be incorporated into the educational environment to enhance students' focus, resilience and emotional intelligence. On an organisational level, the framework helps cultivate employee wellness, teamwork, compassion, emotional intelligence and ethical leadership as it applies to developing workplace spirituality programs. This means that PNECAM can play a role in promoting healthy organisational cultures and sustainable leadership practices.

The framework could be used to support the design of evidence-informed leadership development programs, focusing on self-awareness, ethical decision-making, emotional resilience and compassionate leadership. These applications can help create a culture of well-being and social responsibility, enhance employee engagement and organisational commitment, and create healthier workplace environments.

Table 8: Practical Implications of the PNECAM Framework

Application Area	Implementation	Expected Outcome
Clinical Psychology	Mantra-assisted therapy	Improved emotional regulation and resilience
Healthcare	Integrative wellness programmes	Reduced stress and better mental health
Education	Meditation-based learning	Enhanced concentration and emotional intelligence
Yoga & Meditation	Personalised mantra practices	Spiritual growth and self-awareness
Organizations	Workplace spirituality programmes	Ethical leadership and employee well-being
Research	EEG, fMRI and endocrine studies	Validation of the proposed framework

6.5 Future Research Directions

The suggested structure is largely theoretical and needs to be validated systematically through empirical studies. The proposed relationships should be assessed in future studies through interdisciplinary approaches by integrating neuroimaging [electroencephalography (EEG) and functional magnetic resonance imaging (fMRI)], endocrine measures [cortisol and melatonin], psychometric measures, and longitudinal intervention studies.

The proposed Multi-Chakra Activation Theory should be further investigated by determining the varying psychological, neurophysiological and endocrine responses to various mantras. Comparative studies across cultures, which would involve a variety of cultures and meditation traditions, would also assist in determining the generalizability of the framework.

Future studies may also examine the use of various traditions of mantras, various durations of meditation, various levels of practitioner experience and various cultures to see if the same psycho–neuro–endocrine mechanisms are operating in different cultures. This inter-disciplinary research will help to further develop the proposed PNECAM framework and the science of the interplay between the practice of mantras, consciousness, neuro-endocrine regulation, and holistic human development.

7.CONCLUSION

The Psycho–Neuro–Endocrine Chakra Activation Model (PNECAM) was proposed as an integrative East–West model that provides a pathway for explaining the effects of mantra meditation on multi-chakra activation, neuroendocrine modulation, psychological transformation, spiritual intelligence and expanded consciousness. The framework is a synthesis of Indian philosophy with current concepts from psychology, neuroscience, and psychoneuroendocrinology, providing a comprehensive understanding of human development associated with the practice of mantra. The study enriches the literature with the Multi-Chakra Activation Theory and places Spiritual Intelligence as an important bridge between the regulation of the neuroendocrine system and the expanded consciousness. Conceptual in nature, PNECAM will help provide a theoretical framework for future interdisciplinary research and has potential for application in healthcare, psychology, education, yoga, organisational behaviour and workplace spirituality. In general, the system deepens a discourse between Eastern contemplative wisdom and Western scientific thinking and offers a thorough account of consciousness and the process of human development generally.

The following suggestions are recommended based on this study:

1. Empirical Validation: The proposed PNECAM framework should be empirically validated with neuroimaging techniques, endocrine biomarkers, psychometric scales, and longitudinal study designs in future research.
2. Interdisciplinary Research: The level of cooperation and integration between researchers in the fields of neuroscience, psychology, endocrinology, yoga and consciousness studies is recommended to enhance scientific knowledge on mantra meditation.
3. Practical Implementation: The framework should be applied to health, education and organisational settings, creating evidence-based meditation programmes to improve wellbeing, resilience and ethical behaviours.
4. Cross-Cultural Studies: Comparative studies across different meditation traditions and cultural contexts are recommended to assess the wider applicability and efficacy of the proposed framework.

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