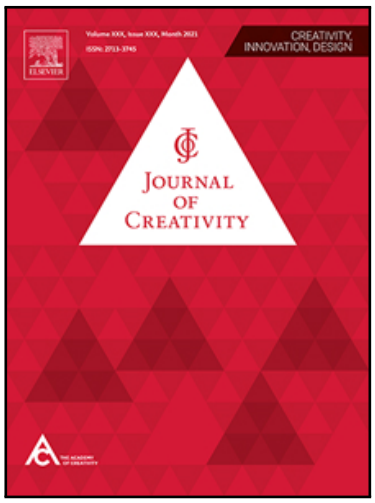

Transdisciplinary Theory of Creative Intuition

Marta Gómez-de-Gispert , Javier Peña Andrés

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Highlights

- A transdisciplinary framework is proposed to explain the origin, mechanism, and definition of creative intuition.
- The study integrates validated and emerging literature from neuroscience, biophysics, cognitive psychology, and education.
- A thematic analysis of 73 selected studies identifies seven key domains underlying intuitive knowledge.
- Creative intuition is conceptualised as a metacognitive skill involving coherent interaction between mind, heart, and information fields.
- A preliminary theoretical model is proposed to guide future empirical research on intuitive cognition.

Transdisciplinary Theory of Creative Intuition

Marta Gómez-de-Gispert [a, b, *] **, Javier Peña Andrés** [a]

[a] *Elisava Research, School of Design and Engineering of Barcelona (UVic-UCC), Barcelona, Spain.*

[b] *CIAUD, Research Centre for Architecture, Urbanism and Design, Faculty of Architecture of Lisbon, University of Lisbon, Lisbon, Portugal.*

Abstract

This article **develops** a transdisciplinary theoretical framework for understanding creative intuition by integrating insights from neuroscience, cognitive psychology, biophysics, and education. Drawing from both scientifically validated and emerging literature, it **proposed** that intuitive knowledge **arose** through the interaction between mind, heart, and informational fields—conceived as subtle energetic or physical systems. Based on an integrative literature review and a thematic analysis of 73 selected studies, five key thematic domains were **identified**. These **supported** a preliminary theoretical model that **enabled** the proposal of the origin, mechanism, and a functional definition of creative intuition. Within this framework, creative intuition **was conceived** as a trainable metacognitive skill that **enabled** access to patterns of information linked to a global consciousness, under the influence of either conscious or unconscious intention emitted by the individual. The model **was presented** as a conceptual hypothesis, open to empirical validation in future research.

Intuitive Knowledge - Biofield - **Information Fields –-Intuitive Cognition** - **Consciousness Studies**

*Corresponding author.

E-mail address: mgomezdegispert@gmail.com (M. Gomez-De-Gispert)

Introduction

Creativity and intuition, traditionally considered as separate mental faculties, in fact shared common cognitive, affective, and neurobiological foundations, especially in the context of idea generation, problem-solving, and decision-making (Dietrich, 2004; Jung & Haier, 2007). From the perspective of cognitive psychology, Runco (2007) defined creativity as the production of original and useful ideas, while Sternberg (2003) considered that it arose from the interaction between analytical, creative, and practical intelligence. Recent models highlighted spontaneity and cognitive disinhibition as relevant factors of creative thinking (Martindale, 2007; Sawyer, 2006).

The research of Bowers et al. (1990) and Sadler-Smith (2008) revealed that intuition preceded and facilitated creative insight, acting as an implicit mechanism that detected patterns prior to conscious processing. Cognitive neuroscience reinforced this connection by showing that the default mode network, associated with spontaneous thinking, was active in both intuitive and creative processes (Dietrich, 2004; Jung & Haier, 2007).

Contemporary contributions broadened this framework: Kovalenko and Zvonareva (2024) reported significant correlations between intuitive styles and imaginative creativity; Baldacchino et al. (2023) highlighted the importance of cognitive flexibility to alternate between intuition and analysis in business innovation, considering that the most effective decision-makers were cognitively versatile—that is, they possessed the ability to “shift cognitive gears” between intuition and analysis and to use both types of processing at high levels, which was key for new venture ideation and innovative action.

At this point, creative intuition emerged as a fundamental interpersonal competence for future generations of critical and creative thinkers (Sinclair et al., 2023; World Economic Forum, 2020). Nevertheless, the resources allocated to its development remained, at present, limited (Fellnhofer & Renold, 2023). Even so, its growing prominence began to influence diverse fields of knowledge, exerting an indirect yet significant impact on research originating from neuroscience, cardiology, physiology, biochemistry, bioelectricity, physics, psychology, organisational leadership, among others (Baldacchino et al., 2023; Edwards, 2017; Fellnhofer & Renold, 2023; Hardman, 2021; Sinclair et al., 2023; Zhang et al., 2023).

Despite the growing interdisciplinary interest, conceptual gaps and theoretical fragmentation persisted concerning the operational definition and underlying mechanism of creative intuition from a perspective in which it was considered relevant for human beings, within their creative domains, to comprehend the dimensionality that intuition may encompass. In particular, the potential link between intuitive processes and physical or energetic systems required to be addressed through a more rigorous empirical approach. Within this context, the present research proposes a preliminary theoretical model, of an exploratory and transdisciplinary nature, which integrates consolidated scientific literature as well as emerging and speculative contributions (identified in Supplementary Material 1). Its objective was to examine the possible interaction between creative intuition, physiological coherence, and physical information fields, acknowledging its epistemological limitations and proposing a conceptual framework susceptible to empirical validation in future studies.

Method

This study followed a transdisciplinary and exploratory approach, aimed to conceptualise the origin and mechanisms of creative intuition by integrating insights from neuroscience, biophysics, cognitive psychology, and education. It was a theoretical–conceptual work grounded in both scientifically validated and emerging literature.

To establish the theoretical background, an integrative literature review was conducted, appropriate for synthesising diverse perspectives and identifying theoretical gaps (Torraco, 2005; Snyder, 2019). Sources were selected from indexed databases (Scopus, Web of Science, PubMed) and were complemented by conceptual or non-indexed literature with strong explanatory relevance.

Inclusion criteria focused on studies addressing:

• Neurocognitive and biophysical aspects of intuition and creativity

• Emerging concepts such as the biofield or Zero-Point Field

• Non-indexed or indexed contributions with high theoretical value related to the main theme, which was intuition.

References were classified by epistemological status (scientifically validated vs. conceptual/emergent) and publication type (indexed vs. non-indexed) (see Supplementary Material 1).

Furthermore, to structure the theoretical background, guide the discussion, and develop a final model, a thematic analysis was conducted following Vaismoradi et al. (2013), integrating predefined categories with openness to emerging thematic patterns. The analysis considered the explicit content, conceptual orientation, and internal coherence of each study.

In summary, this work articulated five thematic categories, presented without hierarchy among them, which allowed structuring the hypothesis proposed (see Supplementary Material 2):

I. The biofield and biophoton emissions.

II. Synchronisation and coherence communication processes.

III. Energy fields and their relationship with consciousness: towards a transdisciplinary understanding of intuitive knowledge.

IV. Conscious intention as a modulator of intuitive processing.

V. Emerging themes in intuition and meditation research

These themes informed a preliminary theoretical model (Figure 1 / Supplementary Materials), proposing that creative intuition emerged from coherent interactions between mind, heart, and information fields. Conceptual and speculative sources were explicitly identified and critically evaluated, and the model was offered as a basis for future empirical validation.

Results: A theoretical background

This section presented the theoretical background based on the findings of the integrative literature review and the first four thematic categories derived from it. The fifth category, due to its emerging nature, was used to provide phenomenological and empirical support for the discussion.

The biofield and biophoton emissions

The concept of the morphogenetic field, introduced by Alexander Gurwitsch, proposed the existence of an informational field that would guide biological development, functioning as an organisational matrix of the embryo (Beloussov, 2008; Beloussov et al., 1997). This perspective was experimentally reinforced by Hans Driesch and Paul Weiss, who demonstrated that, even after partial removal of embryonic structures, development followed an organised pattern, suggesting holistic properties in regulatory mechanisms (Beloussov & Gordon, 2018; Jerman et al., 2009).

In the 1930s, Harold Saxton Burr observed electrical patterns associated with morphological development in salamander embryos, postulating that certain electrical gradients stored essential information regarding the form and function of tissues (Ronald & Matthews, 2007; Tyler, 2014). These early findings laid the foundation for the concept of bioelectric fields as determinants in biological organisation.

In parallel, from biophysics, the emission of biophotons—ultra-weak photons in the optical range—was described as naturally present in living organisms, linked to cellular oxidative processes (Bischof, 2008). The theory of biophotons, developed by Popp, was inspired by Gurwitsch's research on mitogenetic radiation. Biophotons were not merely by-products of metabolism; Popp

proposed that they fulfilled informational functions within living organisms, acting as triggering signals between parts of the organism or even between individuals. Thus, their relevance in the coherence of biophysical communication processes was emphasised (Yan, 2023).

In 1981, Popp and his student Martin Rattemeyer demonstrated that DNA was the principal source of biophoton emission. They postulated that DNA employed various frequencies to encode and transmit information, functioning as a feedback system that emitted coherent waves (Popp et al., 1984; Rattemeyer et al., 1981).

In 1992, and due to various discoveries and medical practices, the United States National Institutes of Health (NIH) introduced the term biofield to refer to a physical field, not necessarily electromagnetic, capable of surrounding and affecting living organisms (Barsotti et al., 2023). This conceptualisation favoured the development of biofield science, aimed at explaining homeodynamic processes from an energetic perspective and at providing a foundation for therapies based on field–organism interaction (Leskowitz, 2022; Rubik et al., 2002; Rubik et al., 2015).

Although studies confirmed the emission of ultra-weak light in human tissues, its interpretation as a bioinformation mechanism still requires additional experimental validation (Kobayashi et al., 2009). Therefore, the study of the biofield and biophotons remains an emerging, preliminary field, where experimental biophysical approaches coexist with speculative interpretations.

Synchronisation and coherence as communication processes

The phenomenon of synchronisation, initially documented by Huygens in 1656 through the observation of pendulums, was subsequently evidenced in multiple natural systems, both inanimate and biological; examples included the coordinated flashing of fireflies, flocks of birds, schools of fish, and the synchronised applause of audiences (Goldstone et al., 2024; Ho et al., 2024; Oud, 2006; Sun & Xiang, 2024). In living organisms, including the human species, synchronisation appeared, influencing body frequency. Examples included communication between organs (Rajan & Perrimon, 2011), brain synchronisation through visual stimulation (Riccardi et al., 2014),

menstrual cycles synchronised in women with positive mood states (Siddiqui et al., 2023), or the synchronisation of heart rate between individuals (Perez et al., 2021).

Physiological coherence, understood as the rhythmic harmonisation of different bodily systems, was studied in disciplines such as cardiology and neuroscience. The HeartMath Institute defined coherence as the degree of synchrony between cardiac, respiratory, and neural oscillations, linking it to states of psychophysiological well-being, emotional regulation, and even to the Global Energetic Field Environment (McCraty & Al Abdulgader, 2021; Perez et al., 2021; Sands, 2022). Within this framework, the heart stood out as the principal emitter of electromagnetic signals of the human body (Hammerschlag et al., 2015), detectable several centimetres from the body (Steinhoff et al., 2004).

In modern biology, vital processes were explained through the notion of information, conceived as a structured message that enabled intra- and intercellular communication (Shannon, 1948). This informational exchange was empirically demonstrated at multiple levels, from genetic encoding and hormone–receptor interactions to systemic homeostasis (Al Amir Dache & Thierry, 2023; Rajan & Perrimon, 2011; VanArsdale et al., 2020; Vu et al., 2022).

Beyond the molecular level, some studies proposed the possibility of biological communication based on frequencies or wavelengths, through which packets of information would be transmitted (Myakishev-Rempel et al., 2015; Prasad et al., 2020; Savelev et al., 2022). Nevertheless, although these studies explored electromagnetic emissions from living tissues, the hypothesis that such waves constituted a primary pathway of biological communication remained speculative and required further experimental validation.

This frequency-based approach had been supported in academic forums such as the International Conference on Macroscopic Quantum Coherence (Sassaroli et al., 1997), where the potential role of macroscopic quantum phenomena in biological systems was discussed. Despite its theoretical interest, quantum biology as a field remained under development (Arndt et al., 2009), with

experimental evidence limited to specific cases such as quantum tunnelling in enzymatic reactions (Kohen et al., 1999) and quantum coherence in photosynthesis (Engel et al., 2007).

In summary, the processes of synchronisation and coherence were empirically demonstrated phenomena across different biological levels, associated with mechanisms of information exchange and regulation, in which rhythmic patterns and electromagnetic signals actively participated in the functional organisation of living organisms. The potential contribution of quantum phenomena, although supported in specific contexts such as photosynthesis and certain enzymatic reactions, remains an emerging field and, for the time being, cannot be generalised to all biological processes.

Energy fields and their relationship with consciousness: towards a transdisciplinary understanding of intuitive knowledge.

From physics, it was recognised that most of the observable universe was composed of dark energy (70%) and dark matter (25%), while ordinary matter represented only about 5% (Das, 2016). Within this framework, the concept of zero-point energy (ZPE), formulated by Planck and later formalised by Einstein and Stern (Einstein & Stern, 1913; Mehra & Rechenberg, 1999), described a residual energy present even in the quantum vacuum. Some authors suggested that this fundamental energy field could function as an informational field, although this hypothesis remained speculative and lacked robust empirical validation (Cole & Puthoff, 1993; Haisch et al., 1994).

In the biological and cognitive domain, it was proposed that matter and energy interrelated at levels not conventionally explored, which inspired research into possible links between the zero-point field and neurobiological functions associated with conscious states (Das, 2016; Keppler, 2020, 2021). These studies, although at an early stage, suggested that living systems could interact with fundamental energy fields, contributing to the encoding and transmission of information (Hunt et al., 2023; Idris et al., 2021; Young et al., 2022).

From neuroscience, the activity of neural networks such as the Default Mode Network was linked to states of relaxation and spontaneous thinking, involved in processes such as creativity and intuitive

knowledge (Dietrich, 2004; Jung & Haier, 2007). In these states, the brain may have functioned as a system for accessing non-conscious information, facilitated by automatic, parallel, heuristic, and intuitive processes. Physiological signals were only generated when creativity, arising from these prior processes, reached consciousness and began to be processed rationally (Zhang et al., 2023). This result appeared to align with findings showing that the heart transmitted signals to the brain prior to the latter's processing of a stimulus, suggesting a non-local form of intuition, whereby the heartbeat preceded the brain's response by 1.3 seconds. This was interpreted as the heart functioning as an antenna for intuitive information (McCraty & Zayas, 2014).

In the educational and psychological domain, intuitive knowledge was interpreted as the result of automatic cognitive processes, facilitated by positive emotional states and focused attention techniques (Hardman, 2021; Tonetto & Tamminen, 2015). Concretely, as a result of his doctoral thesis, Hardman (2021) articulated the underlying principles that evoked creative intuition as follows: (1) an expanded state of consciousness, (2) a fluid and open mode of being, (3) a focus on the particular rather than the general, and (4) an act of fusion or identification that occurred through emotion or empathy. In this vein, Lucas and Mai (2022) added that it was understood as the result of moments of introspection, experienced unexpectedly and fortuitously—a sudden understanding, likely derived from subjective experiences.

Conscious intention as a modulator of intuitive processing.

At the cognitive level, various studies in affective neuroscience and psychophysiology demonstrated that conscious mental practices—such as focused attention and deliberate intention—could modulate patterns of cortical activation, as well as influence the regulation of the hypothalamic–pituitary–adrenal (HPA) axis and physiological responses such as heart rate and immune function (Black & Slavich, 2016; Davidson & McEwen, 2012). These practices acted as modulators of physiology through established neurological pathways. In this regard, although the work of Sapolsky et al. (2000) described in detail the impact of stress on the HPA axis and the

organism, it did not explicitly link such activity to intention or conscious attention as modulating factors.

Thayer and Lane (2009) provided complementary evidence through the neurovisceral integration model, which highlighted the role of autonomic control and the heart–brain interaction in physiological regulation, offering an integrative perspective on the influence of conscious mental activity on bodily processes. Granger causality analyses showed that cardiac rhythms influenced the brain more than vice versa across nearly all frequency bands (except gamma), suggesting a causal role of the heart in modulating neural activity (Sargent et al., 2024). Numerous findings suggested that heart–brain synchronisation facilitated mental and emotional stability, and that regular meditation practice could generate physiological synchrony between cardiac and neural behaviour (Anurag et al., 2023). At this point, mindfulness may have affected other mental processes such as consciousness, working memory, mind-wandering, and belief formation (Weder, 2022). Concurrently, it was understood that the heart, upon entering a state of coherence, could access intuitive intelligence and contribute to the elevation of consciousness (McCraty & Zayas, 2014).

Therefore, if focused attention and the voluntary direction of cognitive resources influenced the activation pattern of specific brain networks—such as the Default Mode Network (DMN) and the central executive system—whose interaction was associated with the generation of creative ideas and non-linear thinking (Dietrich, 2004; Fox & Beaty, 2019), conscious intention does not directly generate intuitions but rather establishes a mental state conducive to their emergence (Zhang et al., 2023), which requires training to enhance this metacognitive skill (Weder, 2022).

While there is still no direct empirical evidence of a connection with the zero-point field (ZPF), theoretical models and findings related to coherence and resonance point to the possibility of an energetic bridge between the heart, consciousness, and quantum fields in the surrounding environment.

Integrated discusion of results

The synchronization observed across various levels of reality—both animate and inanimate—pointed to the existence of complex communicative mechanisms operating beyond the scope of conventional biological models. This interpretation, which has gained traction in light of advances in biophysics and quantum physics, has been supported by recent studies (Oud, 2006; Goldstone et al., 2024; Sun & Xiang, 2024), where the transmission of information through frequencies, energy fields, or light packets has been proposed (Prasad et al., 2020; Savelev et al., 2022).

Particularly relevant is the finding that humans emit light in patterns that vary according to emotional states (Kobayashi et al., 2009), which has reinforced the hypothesis of a biophotonic communication dimension. These emissions, far from being incidental, may play a role in subtle interactions between organisms and their environments, as has been suggested by research on the human biofield (Hammerschlag et al., 2015; Muehsam et al., 2015).

Emerging studies have also proposed that these energetic interactions may constitute part of a dynamic information-processing system based on resonance, with possible connections between the Zero-Point Field and internal mental states (Young et al., 2022; Hunt et al., 2023). Within this framework, the brain–heart connection takes on renewed significance—not only as a neurophysiological pathway but also as an interface for accessing expanded states of consciousness (Thayer & Lane, 2009; Keppler, 2021).

The heart, identified by some researchers as a second brain due to its helical structure and integrated neurons (Buckberg, 2002; Stoyek et al., 2021), has also been linked to emotional regulation, creativity, and intuitive processes (Weder, 2022; Sargent et al., 2024). Phenomenological literature has consistently emphasized its central role in states of calm and deep meditation, from which intuitive knowledge may emerge (Rodríguez, 2024; Teerikangas & Välikangas, 2014; McCraty & Zayas, 2014).

Heart–brain coherence, therefore, may be understood not only as a physiological phenomenon but also as a key component in the development of consciousness and access to non-rational forms of knowing. This interpretation challenges traditional boundaries between body, mind, and

environment, opening fertile ground for exploring intuition as an emergent capacity deeply rooted in complex, though still poorly understood, neurophysiological processes.

Consequently, creative intuition can be defined as a trainable metacognitive ability that enables access to patterns of information linked to a global consciousness, influenced by both conscious and unconscious intention emitted by the individual.

As part of this discussion, Figure 1 / Supplementary Materials has been developed to represent the intrinsic origin of creative intuition, associated with a state referred to as “essential.” The figure illustrates the mechanism involved in the input–output dynamics mediating the interaction between brain, heart, and the Zero-Point Field (ZPF), as well as its subsequent manifestation. This visual representation has helped clarify the definition of creative intuition proposed in this integrative review, by articulating and synthesizing key scientific contributions that support the proposed theoretical model.

Two key interpretive axes are established: the horizontal axis indicates the degree of coherence required to sustain a synchronous state between the individual’s internal processes and external information fields; the vertical axis reflects the level of internal coherence needed to receive and process subtle informational inputs—those that give rise to intuitive knowledge. Together, these axes define a conceptual space from which creative intuition may emerge as an active and trainable function of consciousness, closely linked to resonance, intentionality, and systemic coherence.

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