

ART ^ NEUROSCIENCES

SEED 12 - Neuroemotional Symphony

0. CONTACT DETAILS

0.1 Surname and first name

Neuroscience of Wellbeing Research Group: Ocaña Campos, Francisco Manuel; Samaniego Sancho, Daniela; Amores Carrera, Laura; Martín Monzón, Isabel; Durán García, Emilio.

0.2 Contact e-mail address: fmocana@us.es

0.3 Let us get to know you a little bit through your participation in websites, blogs, social networks, etc.

[Linkedin](#)

[Neuroscience of Wellbeing Research Group:](#)

[Fundación de Neurociencias](#)

<https://x.com/wellneurogroup>

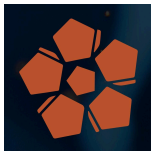
0.4 What is your background and in which institution do you work?

The contact author* has a degree in Biology, a PhD in Psychology, a PhD in the Department of Experimental Psychology at the University of Seville and Principal Investigator of the Neuroscience of Wellbeing Group. The rest of the team are Psychologists (3) and Educational Psychologists and members of the same research group.

*Francisco Manuel Ocaña Campos

0.5 Gender: Male

0.6 Age range: 31 – 60 years old (group)



1. ESSENTIAL DIMENSION

1.1 Seed name

Neuroemotional Symphony

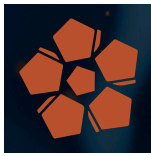
1.2 Seed summary

This seed explores the neurobiological and physiological mechanisms by which emotions, both positive and negative, affect brain activity and physical health. From the perspective of the neuroscience of well-being, the pathways by which positive emotions, such as gratitude, joy and calm, activate specific areas of the brain, such as the prefrontal cortex and the limbic system, favouring internal balance and self-regulation of the autonomic nervous system, are analysed. These emotions also promote patterns of physiological coherence, such as more stable heart rate variability (HRV), associated with greater resilience and ability to adapt to stress. On the other hand, negative emotions, such as anxiety, anger, and fear, generate hyperactivation of structures such as the amygdala and the hypothalamic-pituitary-adrenal (HPA) axis, which increases the release of cortisol and other stress hormones. This prolonged state of activation can alter biological rhythms, impact neuronal plasticity and favour the development of chronic conditions, such as cardiovascular diseases, insomnia and psychological disorders.

Through technologies such as mindfulness, biofeedback (HRV) and neurofeedback (EEG), it is possible to train emotional and physiological self-regulation. These techniques make it possible to visualise and modify in real time the brain and physiological (cardiac) patterns associated with emotions, facilitating synchronisation between mind and body. This approach not only fosters personal well-being, but also offers practical applications in work and educational settings, helping to mitigate the effects of chronic stress and promote a better quality of life.

The seed invites us to reflect on the transformative potential of neuroscience in emotional management and to create artistic representations that translate these processes into tangible and understandable forms for the general public, raising awareness of the importance of emotional balance in global well-being.

1.3 Metaphor. *Is there any metaphor that helps to explain this seed in a more intuitive way? An imaginative text can inspire as much as a poem.*



The brain, body, and emotions behave like a dance: each emotion marks a rhythm that influences the body. Harmony represents emotional calm, while abrupt or discordant movements reflect emotional chaos.

1.4 Keywords (separated by commas)

Emotion regulation, well-being, mindfulness, neuroplasticity, neurofeedback, biofeedback, coherence, brain activity.

1.5 Scientific field (general)

Neuroscience, Psychobiology.

1.6 Scientific subfield (specific)

Neuroscience of Wellbeing

1.7 Resources (File)

Figure 1: An example of heart rate variability during about a 2.5 minute time period during quiet rest. B. The same person's heart rate during resonance breathing during another 2.5 minute time period. Curr Opin Behav Sci. 2018 Feb;19:98–104. doi: 10.1016/j.cobeha.2017.12.017

Figure 2: How resonance breathing could lead to improved emotional well-being by stimulating functional connectivity of emotion regulation networks within the brain. Curr Opin Behav Sci. 2018 Feb;19:98–104.
doi: 10.1016/j.cobeha.2017.12.017

1.8 Resources (Links)

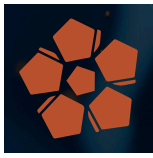
<https://hdl.handle.net/11441/166183>

2. ADDITIONAL DIMENSIONS

2.1 SYNAESTHETIC DIMENSION

This dimension seeks to associate certain sensory characteristics to the seed.

2.1.1 What colours does this seed suggest to you?



For this seed, the colours we suggest are as follows:

1. Intense and dark reds: these colours can represent negative emotions, such as anxiety, stress or emotional chaos, which are associated with the activation of brain areas related to fear and anguish. Darker shades of red can symbolise the intensity of these emotions.

2. Blues, greens and golds: these colours can evoke feelings of calm, well-being and harmony, associated with positive emotions such as gratitude, joy or serenity. Blue and green are often associated with calmness and emotional regulation, while gold can symbolise the inner balance and resilience that is achieved through practices such as mindfulness or HRV biofeedback.

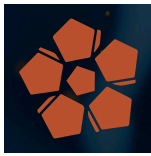
This colour palette conveys the duality between dissonant and harmonious emotions, reflecting the influence of emotional regulation on brain physiology and connectivity.

2.1.2 What sounds or music does this seed inspire you?

He would use sounds that reflect a contrast between emotions and the physiological rhythms that influence them. The HRV (heart rate variability) and neuroscience approach to wellness is focused on how the body and brain react to emotions through rhythmic oscillations. For this reason, I would use string and percussion instruments that alternate dissonances and soft melodies that reflect the changes between emotional harmony (related to calm and emotional regulation) and emotional chaos (such as anxiety or stress). Stringed instruments can evoke the softness of calm, while dissonant percussion can symbolise the irregularity of brain activity during stress.

You could also use natural sounds such as flowing water, the breeze of the wind or the waves of the sea. These are associated with more positive emotional states, as they are related to stress reduction, relaxation, and emotional stability. These sounds may resonate with breathing and heart rhythms during practices such as HRV biofeedback or resonance breathing, which help improve emotional well-being by synchronising the body and mind.

In short, music inspired by this seed could have a mix of elements that evoke the balance between emotions and physiology, using both soft and relaxing sounds and dissonances that symbolise the challenges of emotional regulation.



2.1.3 What aromas would you associate with this seed?

For this seed, the aromas that could be associated are the following:

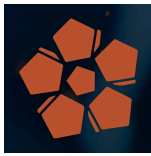
1. Intense aromas such as burnt wood, rotten, burnt horn. These types of scents evoke negative emotions. Strong, dark smells, such as burning wood, can symbolise tension and nervous system activation associated with overflowing emotions and anxiety.
2. Lavender or citrus: These scents are related to calm and well-being, reflecting emotional balance and self-regulation. Lavender is known for its relaxing and anti-stress effects, while citrus fruits, such as orange or lemon, provide freshness and vitality, being associated with serenity and improved mood during emotional regulation and biofeedback.

2.1.4 What flavours does this seed evoke in you?

For this seed, the flavours we suggest are:

1. Bitter and intense acidic tastes: These flavours can be associated with emotional chaos and stress. Bitter tastes, such as those of certain herbs or coffee, along with acidic ones, such as those of very intense citrus fruits, can symbolise feelings of imbalance or the activation of physiological responses during negative emotional states.
2. Sweet and mild flavours: these flavours are more connected to calm and emotional well-being. Sweet flavours, such as those of ripe fruit or honey, along with mild, comforting flavours, such as vanilla or chocolate, could symbolise emotional harmony and self-regulation of the nervous system. These flavours are pleasant and associated with relaxation, something that is sought to be achieved with practices such as mindfulness or HRV biofeedback.

These contrasts of flavours complement the sensory experience related to emotional regulation and mind-body balance.



2.2 EMOTIONAL DIMENSION

This dimension seeks to explore the personal meaning of the seed.

2.2.1 What was your motivation to dedicate yourself to this field of research? What personal reasons lead you to suggest this seed?

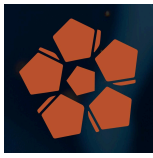
My motivation to pursue the neuroscience of well-being stems from a deep interest in understanding how scientific advances can improve people's quality of life. Through research in this field, I seek to develop accessible tools that help manage stress and emotions in an increasingly complex and anxious world. The neuroscience of well-being offers a unique perspective by integrating knowledge about the brain, body, and emotions, allowing for the design of evidence-based interventions that promote mental and physical balance. I am not only passionate about this area for its transformative potential, but also for its ability to make these benefits accessible to individuals and communities in need of support in their emotional well-being.

The personal reasons that lead me to suggest this seed are deeply related to my professional and personal commitment to improving people's well-being. Through my work as a principal investigator in the Neuroscience of Wellbeing group at the University of Seville, I have been able to experience first-hand how knowledge about the brain and physiological mechanisms underlying stress and emotions can transform the lives of individuals.

My interest in this seed stems from the conviction that neuroscience has the power to offer practical and accessible solutions to manage stress and emotions in an increasingly complex and challenging environment. In addition, my experience in the use of technologies such as biofeedback and neurofeedback has shown me that, by better understanding how our brain and body work, we can offer effective tools that help people achieve greater emotional balance and improve their quality of life. This approach not only reflects my passion for science, but also my personal desire to contribute to a society that is more aware of the impact of the mind and body on well-being, and to create interventions that truly help people live healthier and more harmoniously.

2.2.2 What metaphysical reflections does this seed provoke in you?

This seed invites me to reflect on the deep connection between mind, body, and environment, an interaction that goes beyond the physical and emotional. The neuroscience of well-being, in its integrative approach, suggests that internal balance is not just a matter of individual health, but a manifestation of our connection to the world around us. In this sense, it leads me to think about how



emotions and physiological processes are not isolated, but are a reflection of a larger dance between the brain, body, and environment.

From a metaphysical perspective, it invites me to consider how emotional and physical states affect and are affected by the energies and forces that connect us to the universe, from biological rhythms to the energetic patterns that arise from our interaction with others and with the space we inhabit. This seed also leads me to question how emotional self-regulation practices, such as mindfulness or biofeedback, can facilitate a deeper connection with our essential humanity, helping us to live more consciously and aligned with our inner selves.

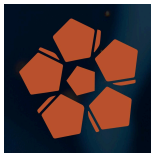
Finally, this reflection connects me to the idea that well-being is not just an individual state, but an ongoing process that reflects our ability to navigate between order and chaos, between the conscious and the unconscious, in order to achieve a balance that resonates with both our physiology and our perception of the world.

2.2.3 What ethical reflection or challenges would you associate with this seed?

One of the main ethical challenges that this seed poses to me is equitable access to advanced technologies such as neurofeedback. As these tools gain recognition for their ability to improve emotional self-regulation and well-being, it becomes urgent to ask ourselves how we can democratise their use so that they are not limited to a select group of people with greater resources.

Neurofeedback, due to its technical and specialised nature, can be perceived as an expensive and difficult to access tool, which poses the risk of deepening existing inequalities in mental health and well-being. This ethical challenge is amplified by considering that, while access to these technologies can be a catalyst for improving quality of life, it can also become a privilege for those with greater economic possibilities, leaving many out of their benefit.

From an ethical perspective, we must work to find solutions that allow these technologies to be accessible to a wider audience, regardless of their socioeconomic status. This could involve the development of more affordable devices, the integration of wearable technologies that can be used autonomously, or the design of training programs that train professionals to apply neurofeedback efficiently in various contexts, such as education or primary care.



It is critical to reflect on how science and technology can be inclusive tools, rather than being a factor that reinforces inequalities, ensuring that all individuals, regardless of their context, have the opportunity to benefit from advances in the neuroscience of well-being.

2.2.4 What aesthetic dimensions does this seed suggest to you?

This seed suggests to me a series of aesthetic dimensions that seek to capture the interaction between mind, body, and emotions, and how these are reflected in our physical and emotional experiences. On a visual level, the seed evokes an aesthetic that fuses fluidity and harmony with contrasts and dissonances, reflecting both calm and emotional chaos:

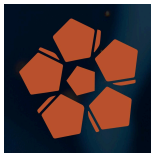
Fluid and organic textures: Inspired by the synergy between body and mind, soft and fluid textures can represent the constant flow of physiological variability (such as heart rhythms or breathing) and its relationship to emotional states. This could manifest in surfaces that change and evolve, symbolising self-regulation and emotional adaptation.

Light and shadow contrasts: Soft lights that dissipate into intense shadows can symbolise emotional ups and downs and the struggle to find balance. The soft light evokes calm and well-being, while the deep shadows represent emotional dissonance and stress, but also the opportunity for transformation that arises from chaos.

Colours that change gradually: Colours that transition from dark tones to lighter tones, such as a gradation from deep reds to calm blues and greens, could illustrate the transition from negative emotions to a state of greater balance and harmony. These chromatic changes could evoke the process of emotional regulation, showing how emotions can transform over time.

Fluid and synchronised movement: In the visual expression of this seed, elements that mimic the smooth and synchronised movement of the breath or pulse could be incorporated, in the form of constantly changing patterns that reflect physiological variability, such as oscillations or cyclical patterns. This would convey the intrinsic connection between physiological and emotional processes.

Natural elements: Motifs inspired by nature, such as organic patterns that mimic water waves or the structure of blood vessels, could symbolise the relationship between biological processes and emotional connection. These natural elements



would convey the idea that the body and mind are inseparable and influence each other in profound ways.

Together, these aesthetic dimensions not only seek to represent the science behind the neuroscience of well-being, but also to connect the viewer to the emotional and physiological experiences we all have, fostering greater understanding and awareness of the importance of emotional regulation for health and well-being.

2.3 PROCEDURAL DIMENSION

This dimension seeks to explore the scientific processes that are usually followed when investigating this topic.

2.3.1 Description of the research process

The process of researching the interaction between the body, brain, and emotions, especially as it pertains to heart rate variability (HRV) and brain activity, involves a series of detailed steps to explore how physiological and brain processes are intertwined in emotional regulation. We detail the main steps of the process:

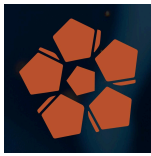
HRV measurement: Electrocardiogram (ECG) devices or wearable devices (such as smartwatches) are used to monitor heart rate variability, providing insight into autonomic nervous system balance and ability to self-regulate.

Brain activity measurement: Techniques such as quantitative EEG (qEEG) or fMRI are used to record and analyse brain activity. EEG allows changes in brain waves to be observed in real time, while fMRI allows us to assess how different brain regions are activated during emotional regulation.

Intervention: Techniques such as HRV biofeedback or neurofeedback can be applied. These interventions help participants improve their HRV by consciously modulating their breathing or providing feedback on their brain activity.

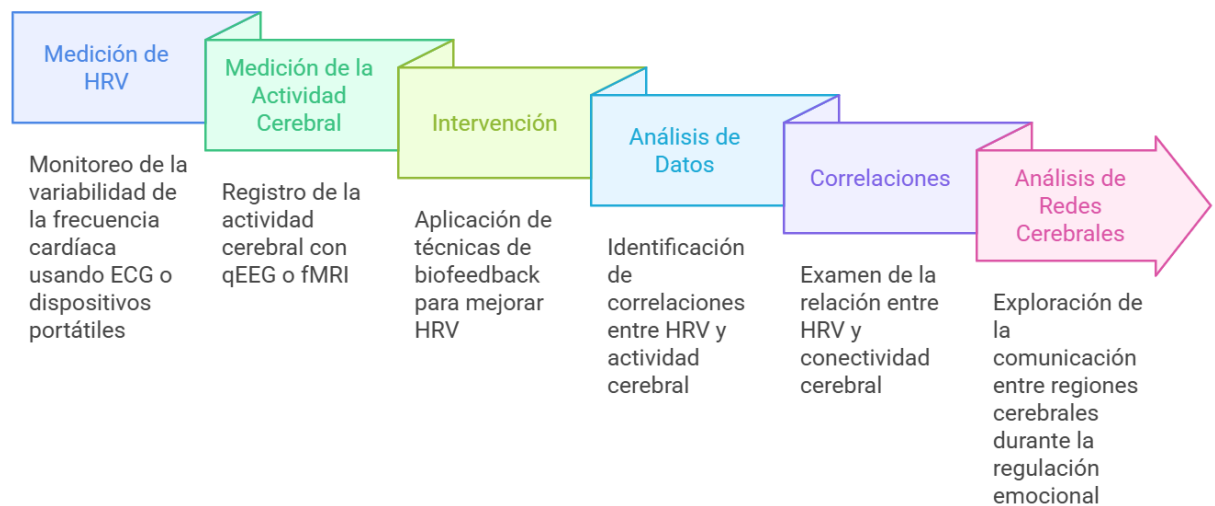
Data analysis: Data analysis seeks to identify significant relationships between physiological and brain variables.

Correlations between HRV and brain activity: Statistical analysis is used to examine the relationship between HRV levels and functional connectivity between key brain areas for emotional regulation.



Brain network analysis: Network analysis can be applied to identify how different brain regions communicate with each other during emotional regulation, and how HRV influences these interactions.

2.3.2 Research process diagram



2.3.3 Link to the descriptive video of the process

2.3.4 What tools are typically used in this field of research? Whether instruments, technologies, hardware or software.

[Biofeedback and neurofeedback equipment](#)

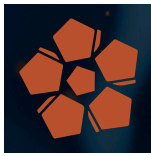
[Equipos de electroencefalografía](#)

[Functional magnetic resonance imaging](#)

[Specific brain activity analysis software, e.g. EEGLAB](#)

Artificial intelligence for data mining

m-health applications



3. PERSONAL SUGGESTIONS

Kinetic dimension: The interaction between body and brain in emotional regulation could be represented by fluid and oscillating movements, symbolising the oscillations of HRV and changes in brain activity. This movement could reflect the transition of emotional states, from chaos to calm, using techniques such as dance or interactive digital art, where the oscillations of shapes or figures in space change in response to emotional activity.

Light dimension: Light can be a powerful metaphor to represent brain connectivity and emotional regulation. Soft, enveloping light could symbolise calm and well-being, while more intense or strobe light could represent emotional dissonance or stress. One could imagine a work where the lights change in intensity and colour depending on the emotional activity and HRV, with an interactive approach that allows the viewer to experience the process of emotional self-regulation.

Sound dimension: Sounds, such as heartbeat, breathing, or natural sounds (water, wind), can be integrated to represent the physiological rhythms that underlie emotional regulation. Alternatively, dissonant sounds that are harmonised could reflect the emotional transition from anxiety to well-being. A sound installation could be created where sounds change based on the viewer's interactions with the environment, symbolising how awareness and control of emotions impact the emotional experience.

Temporal dimension: The work could incorporate the concept of real time, where participants can experience a visual or sound representation of their own emotional and physiological rhythms as they interact with the installation. For example, fluctuations in HRV could be represented in real time by a change in the visual and sound elements of the work, allowing viewers to observe how their emotional states evolve during the experience.

4. INVOLVEMENT OF THE SCIENTIST ON THE CREATIVE TEAM

4.1 What role would you like to have in the process of co-creating the SciArt work?

Participate punctually in the conceptual discussion and co-creation of the work.