

Exploring the Consciousness of Our Self



By Odeh Turjman

One of the last remaining problems in science is the riddle of consciousness.”

Neuroscientist Ramachandran

For most of my life, I have been a musician and music educator. I have composed music and songs for films, dance, and theatrical productions, and my work in music education has involved the development of music resources and of community programs that aim to make musical expression accessible to all. During the second Intifada, I worked with children traumatized by the Israeli military actions and realized the importance of music not only in self-expression but also as a therapeutic tool. A few years later, I contributed to the establishment of Al-Mada Association for Arts-Based Community Development, and one of its first programs was the launching of a music therapy center that has served hundreds of social workers, counselors, and teachers, and works with various social and age groups.

The benefits of music in psychology are well documented; however, little is known about its neural underpinnings, particularly as it pertains to certain disorders, such as schizophrenia, autism, and dissociative disorders that are generally associated with alterations or impairment of the sense of self.¹ The open questions regarding this relationship stirred my interest in neuroscience, especially in research on self-experience. Although great progress has been made in the identification of the neural systems that are implicated in the experience of self, there has so far been no breakthrough as to *how* these systems create this experience. My research quest lasted four years, and I developed a model that describes the mechanisms by which these systems give rise to and sustain the sense of self. These

findings were recently published in the *Journal of Consciousness Exploration and Research* in an article entitled “On the Role of Mirror Neurons in the Sense of Self.”ⁱⁱ

The catalyst for my embarking on this research was an experience during a state that resembles meditation in which I was unexpectedly confronted with the cessation of the inner self-voice that usually accompanies us during our waking and some of our sleeping hours. Along with it stopped what is experienced as thinking; moreover, I suddenly found myself in a state where I was still aware of myself, but without the usual sense of body, self, or life memories. Although this only lasted a short time, its impact was profound and irreversible. What used to be a continuous flow of self-consciousness has been continuously disrupted ever since. Importantly, I began to notice that whenever the inner self-voice was silent, I would see an image of my face projected in front of me giving me a moment-by-moment simulation of my facial gestures; as if I were looking in a mirror.

This mirror image reminded me of a concept from Eastern traditions that speaks of the Watcher who is

The Journal of Consciousness Exploration and Research (JCER) is an American journal in which scientists, philosophers, and other scholars publish their research results and express their views on the nature, origin, and mechanism of consciousness.

considered to be a formless self (or pure consciousness). He is associated with a teaching that identifies a True Self and juxtaposes it to the False Self. The True Self constitutes what remains when a yogi reaches a state of pure consciousness and temporarily loses all memory, thought, and emotions, the very qualities that make up the False Self, in my terminology called the thinking self – the aspects that “normally” make up our consciousness of self.

It was this experience that piqued my interest to find out if this biological mirror is mentioned in neurological literature, which in turn led to the research that resulted in my paper.



Consciousness is a by-product of two mental mirroring processes.

To briefly summarize its findings: Human self-experience is driven by two biological mirrors, referred to in neuroscience as the “mirror neuron systems.” The first system is an internal mirror that reflects one’s own facial gestures; we are generally not aware of it, as we are more tuned in to listening to our inner voice. This mental mirror developed in evolution as a uniquely human feature and in early man’s development provided the first means to enable nonverbal communication. Via subconscious visual feedback, individuals became able to imitate the facial gestures of others by matching the inner image (of self) with the outer image (of others). Similarly, infants, who naturally are not yet aware of their own faces, are able to adapt their facial expression and thus respond to and communicate with the face of their caretaker. Although the functional role of this self-face mirror is to enable facial imitation for communication, as a by-product, the very mirroring of the self-face creates a feeling of self-awareness and identity, the feature that separates us from the rest of nature.

The second system is a self-voice mirror engaged in the internal mirroring of the speech of others and thus facilitating the acquisition of language and enabling verbal communication. This mirror functions like an echo (in one’s own

Although Descartes asserted, “I think, therefore I am,” I am convinced that the experience of “I am” is prior to thinking and self-consciousness.

voice) of perceived sounds (made by others) that reaches the brain and is the only medium that can trigger the subsequent process of understanding. In the learning phase, the echo interacts with a large-scale brain network that forms connections between a sound and its meaning in a process that involves multisensory associations. Our understanding of a word is the result of the internal simulation (echo) of that word, which in turn stimulates the multisensory representation of a past event associated with this sound (the learning experiences). The whole process happens within about half a second (a long time in terms of neurological standards) even though we experience it as a *direct and immediate* process – this misinterpretation being a frequent source of misunderstandings and miscommunication. Whatever we hear has to go through our own internal process of reconstruction-of-meaning, which is entirely subjective. These two integrated systems (echo and large brain network) not only enable the development of language-based communication but also form what we experience as a thinking self.

What I am constructing is, by necessity, my meaning and not yours; I have no other choice.

The post-learning stage is a self-perpetuating process in which our sensory perceptions are processed and associated with their learned names. Literally everything we perceive is constantly being translated into the words and associated multisensory representations that form our memories. This is how we become conscious of our self and our surrounding. In evolution, this process developed in order to connect current perceptions with past experiences, making us more

We have two ways of self-experience: one generated by the mirroring of the self-face and the other by the self-voice.

knowledgeable. Through perception and the words we hear, we constantly add more details to our knowledge – a process most necessary to assure survival. This feature is unique to humans who thereby cannot only accumulate knowledge but also transfer it from generation to generation through language, whereas other species pass on knowledge in genetic ways (and limitedly through imitation).

By highlighting the role that the mirror systems play in self-experience, I hope to contribute to a better understanding of the disorders that involve either alterations or impairments in the sense of self. I am further interested in the question of how this knowledge can remove the burden from people who experience excessive self-criticism through their inner voice.

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ⁱ Although these disorders in general medical discourse are labeled as psychological in nature, I assert that they are neurological disorders, as has been suggested by recent research findings.

ⁱⁱ Available at jcer.com/index.php/jcj/article/download/550/571.

My advice is not to take it to heart if people say that they cannot understand you. Our brains are as different as our fingerprints, and we can never experience exactly the same reality.