

## THE ROLE OF THE BODY AND EXTENDED MEMORY SYSTEMS IN WORKING WITH TRAUMATIC MEMORIES

**Radostina Minina**

*Institute of Philosophy and Sociology  
Bulgarian Academy of Sciences*

13A Moskovska Str., 1000 Sofia, Bulgaria

[radost.minina@gmail.com](mailto:radost.minina@gmail.com)

---

**Abstract.** *In this article I present psychodrama therapy as a practical example of the combination of mental time travel theory from philosophy of memory and cognitive science and the extended mind from philosophy of mind. Theories of extended mind and distributed consciousness entail the idea of an extended identity. Following this positions the boundaries of the self are fluid, located somewhere around the body, the brain, the surrounding tools and artefacts the individual is using and the sociocultural structures in which he is situated. In this article I use neo-Lockean theories about personal identity which qualify memory and psychological connectedness as criteria for identity. The concept of extended personal identity is presented on two levels, on one hand as extended bodily identity, and on the other hand as extended memory and personal narrative. Extending memories (including repressed memories) through psychodrama method can affect the subjective perception of one's own personality and self in a specific way. It can be really useful in cases of post-traumatic stress disorder, and the results could be difficult to achieve by remembering alone through non-externally mediated recall. My view is that the psychodramatic stage is extended simulation in the process of remembering. I present examples of repressed childhood memories that are reconstructed on a psychodramatic stage due to the method's ability to work with kinesthetic memory. Consequently, I argue that the psychodramatic stage is extended and distributed memory simulation with the purpose to reconstruct repressed memories and reprocess them.*

**Keywords:** extended mind; memory; identity; psychodrama; simulation.

Funding/Financial Support

Young Scientists Program financed by Bulgarian Ministry of Education and Science (MES)

The article can be cited as follows:

**Minina, R.** (2022). The Role of the Body and Extended Memory Systems in Working with Traumatic Memories. *Psychological Research (in the Balkans)*, Volume 25, Number 3, 2022, 228-239. ISSN 0205-0617 (Print); ISSN 2367-9174 (Online). DOI: <https://doi.org/10.7546/PsyRB.2022.25.03.05>

© R. Minina, 2022

Received: *August 19, 2022*

Accepted: *November 25, 2022*

The author has read and approved the final manuscript.

## INTRODUCTION

There are a variety of concepts about the self in philosophy, psychology, and neuroscience. In this article, I will present those that are relevant to the extended self debate and address the question of how the relationship between the self, the body, and the environment is defined. For the purposes of this paper, I use the term identity in Erikson's model as a subjective sense of reinforcing sameness and continuity that is based on 'two simultaneous observations: the perception of one's own sameness and continuity of personal existence in time and space, and the perception of the fact that others accept this sameness and continuity...' (Erikson, 1996: 76).

The self and identity are terms I use to refer to a subject's own existence in the world in relation to other people and things. Although these terms are different and social psychologists find subtle differences between them based on the social meaning of identity, I will use them as synonyms. I accept that the self consists of internal, external, and socially perceived attributes that are shaped by a number of factors, including culture, time, and motivation. According to William James (1890/1983), the self is defined by the material, social and spiritual aspects of the subject, and the first-person perception of these aspects. This includes the minimal self (Gallagher, 2000; Blanke & Metzinger, 2009), the self according to Locke's memory criterion of personal identity, and the narrative self (Schechtman, 1996). I use the term personality in line with Locke's (1979) definition as having consciousness, the capacity for thinking and self-reflection.

As the idea of extended mind (Clark & Chalmers, 1998) entails various claims and experimental data which tries to answer the question whether the self follows the mind and consciousness in the extension. Consistent with the conceptions of self that I have previously outlined, I will present different views on the possibility of the extension of the body, the memory and the personal narrative as extended minimal self, extended memory,

and extended narrative. I will present Tulving's (1985) contemporary theory of memory as mental time travel and the psychodramatic method as a form of memory simulation. I will support my idea with short case studies from my practice.

## MINIMAL SELF, PERSONALITY AND PERSONAL NARRATIVE

The minimal self is understood as located in the brain and neuromuscular systems. It also includes the capacity for perception, proprioception and action. This aspect of the self is redefined by the functioning of the body. Its perspective is first-person and distinguished from the environment on the basis of body boundaries and bodily perceptions and experiences (Gallagher, 2000). The minimal self is defined by Gallagher as follows, "Phenomenologically, i.e. in terms of the way one experiences it as a self-consciousness that is the immediate subject of experience. It is not persistent in time. The minimal self depends on brain processes and the body and the environment, but one doesn't need to know or be aware of it to have an experience that is still considered self-experience." It is the minimal self that remains when "all non-essential characteristics are removed" and "is limited to what is accessible to immediate self-consciousness" (Gallagher, 2000: 15). Gallagher identifies two modalities of experience - (1) the perception of property and (2) the perception of agency. The former implies that the subject perceives the action as his or her own, and the latter that he or she is assumed to be the author of the relevant behavior and action (De Haan & De Bruin, 2009).

Personality and the self often overlap as concepts and are not infrequently used as synonyms, but for the purposes of this article I choose Locke's definition of personality, which is a broader concept than minimal self. According to Locke (1979), the personality possesses consciousness, can think and reason about oneself and the world, i.e., has the capacity for self-reflection, in contrast to the

minimal self, which is a pre-reflective embodied<sup>1</sup> experience. The discussion of personal identity also involves the question of under which conditions someone at moment t1 is the same person at moment t2. Locke's definition of personal identity states that a subject is identical with itself if it remains the same over time (Locke, J., 1979). A key point in Locke's concept is that personalities remain the same over time if they remember their past experiences and actions. Others, such as Olson (1997) focuses on the sameness of the body. Other distinction between the minimal self and personhood is that the first is not temporal, normally existing for only a few seconds, as long as the particular experience and perception lasts, the personality for Locke has duration in time, i.e. personality is the same if it remembers its past experience. Personhood is a category referring to both belonging and duration.

The narrative self is a richer concept than the minimal self and personality. For Schechtman (1996), a personal narrative is a subjective, affective personal history containing mostly accurate chronologically ordered facts about a series of related events and experiences that constitute the identity of the self and the personality. The personal narrative is constructed from autobiographical memories, i.e., the personal past organized in a narrative structure. What shapes the personality and distinguishes it from others is the unique autobiographical narrative (Schechtman, 1996). In order to know oneself better, one must focus on autobiographical memories and how they construct a unique narrative of one's past experiences and activities. The difference between personality in Locke's sense and the narrative self is that personality provides in-

sight into "what I am" while the narrative self provides clarity on "who I am." For Schechtman the self has a narrative structure.

### THE EXTENDED MIND THESIS

Another fundamental question about identity is how far the self extends and where others and the world begin. It became particularly relevant in the 1990s when Clark and Chalmers (1998) presented their extended mind thesis. By "extended" here is meant the integration of parts of the environment into the subject's cognitive systems that function as parts of consciousness and personality. Examples of such objects are notes, written calculations, diaries or computers. Generally it refers to objects that store information. The cognitive functions are realized by internal processes, which are embodied and interacting with environmental structures as cognitive artifacts. These can become reciprocally<sup>2</sup> integrated into the inner cognitive systems of their users and become literally part of their systems (Menary, 2010).

Clark and Chalmers illustrate their idea with the following thought experiment: Otto is a man with Alzheimer's disease who uses his notebook to get to the Museum of Modern Art. Inga remembers how to get there and uses the memories stored in her memory. The information in the notebook plays a similar functional role as biological memory. It is also a reliable tool, available when is needed. We also assume that the information in the notebook is reliable. The point here is that the notebook is not just an auxiliary tool, but is an integral part of Otto's overall memory system, reciprocally integrated into his information storage and retrieval system (Clark & Chalm-

<sup>1</sup> I refer the term embodied from embodied cognition theory which main concept is that that many features of cognition, whether human or otherwise, are shaped by aspects of an organism's entire body. Sensory and motor systems are seen as fundamentally integrated with cognitive processing. The cognitive features include high-level mental constructs (such as concepts and categories) and performance on various cognitive tasks (such as reasoning or judgment). The bodily aspects involve the motor system, the perceptual system, the bodily interactions with the environment (situatedness), and the assumptions about the world built into the organism's functional structure.

<sup>2</sup> By or from one to the other, in a way that involves equal exchange between the tool and the user

ers, 1998). For Otto, the notebook plays the same role as biological memory for Inga. Recorded information functions in the same way as the information that constitutes ordinary ongoing memories. Only their location is different. Not only the processes located in the agent's head are cognitive, external artifacts can also be attributed to the agent's cognitive system. The inclusion of external objects complements and increases its memory capacity. But this applies to other processes as well, not just memory. External artifacts extend the subject in order to increase its other cognitive capacities, which in their totality shape the cognitive character of the agent (Palermos, 2014). On the other hand, it is important to note that effective memory functioning is not simply the product of a single system, but involves the integration of different cognitive processes. Very often the ability to integrate the information to be reproduced, implies the presence of interaction between memory, executive functions and perception (Racheva & Totkova, 2018), so the extension of the memory has its influence over broad system of cognitive functioning. For Clark and Chalmers, external artifacts are not only included in, but are equal to internal processes. Clark and Chalmers take some parts of the environment as cognitive processes, like internal ones. In their concept, in cases of cognition, the human organism is connected to the external environment in such a way that the two create a causally couples cognitive system that guides behavior: 'Our thesis is that these kinds of connected processes can count as cognitive processes whether or not they are entirely in the head' (Clark, Chalmers, 1998: 7-8).

### EXTENDED SELF

Following Clark and Chalmers, some theorists have argued that extended mind implies an extended self (Anderson, 2008; Clark 2003, 2007a, b; Clowes, 2020; Hongladarom, 2016; Malafouris, 2008; Milojevic, 2020; Piredda & Candiotta, 2019).

The idea of the extended self in psychology has a long history. As I mentioned above, the philosopher and psychologist William

James (1890) divided personality into several structural parts: the experiential self, the social self, and the spiritual self. The empirical self consists of anything material that can be seen as belonging to the personality, the social self is how the subject is perceived by others and the spiritual self is what is closest to the basic subjective experience of the self. James is interested in the limits of the experiential self and argues that it is partly constituted by artifacts and other people. Artifacts and other people can become part of it because they generate emotional states in the agent, thereby suggesting a constitutive relation between the human being, his emotion and the environment. So, in James's view, external artifacts and other people are part of our experiential self as they evoke emotions (James, 1980).

The concept of an expanded self in philosophy, on the other hand, also has older roots and is not only associated with Clark and Chalmers or with the achievements of modern technology, but has been part of human culture and civilization since ancient times. Classic examples from phenomenology include a carpenter using a sledgehammer to create artefacts (Heidegger, 1962) and a blind man using a cane to sense the environment around him (Merleau-Ponty, 1965). These are absorbed into human bodily schema and become subpersonal representation of body size and location in space. Body schemas are flexible and can adapt to the changing biological body and to the tools and equipment for manipulation the environment. When a tool is incorporated into the body schema, it transforms our representations of space. The brain processes the idea of space in three ways: (1) personal space, which is the biological body, (2) peripersonal space, which is the space near the body, and (3) extra personal space, which is the space away from the body. Peripersonal space is where all physical interactions between the embodied agent and the environment take place (Serino, 2019). When we use tools, our personal and peripersonal space transforms. A classic example from neuroscience is the rubber hand illusion. During an experiment, a rubber hand is placed on a table

in front of a participant, and a biological hand is placed under the table. The biological and rubber hand are simultaneously touched with a paintbrush while the participant looks at the rubber hand. After a few minutes, an interesting effect is observed - the perception of the rubber hand replaces the real hand as the agent feels the hand as part of their biological body. This is accompanied by a sense of 'denial' of ownership of the biological hand (Heersmink, 2020). More contemporary examples include exoskeletons, artificial limbs, robotic arms controlled by brain-computer interfaces and objects in virtual reality. These technologies can also (in different degrees) be incorporated into the body schemas of their users, altering the perception of peripersonal space and leading to a sense of ownership (Schettler, Raja, & Anderson, 2019). To the extent that embodiment and peripersonal space are important to a sense of ownership over experience, embedded tools can be seen as extensions of our embodied self. This type of extension can be understood as a phenomenological extension of the minimal self.

What about the extension of a person? Contemporary research on the relationship between personal identity and extended mind (Wilson, Lenard, 2014) is based on what has been termed a neo-Lockean approach, taking autobiographical memory as a central criterion of identity. Experimental evidence suggests that Alzheimer's disease or other forms of dementia have a negative effect on the sense of identity of affected patients (Addis and Tippett 2004). Their assertions are supported by experiments with memory-augmentation devices. They also address the idea of transactive memory (shared memory between two or more agents) and memory involving external artifacts. Other people also play a role in recalling our personal past. An example of this is a longtime couples trying to remember the name of a show they saw on their honeymoon more than 40 years ago. Neither of them knows the name when asked separately, but as through dialogue with each other, they jointly construct the answer, thus generating a memory system that "knows" more than the individual members. Such socially distributed

memory systems are called "transactive memory" (Wegner, 1986). In such systems, there is cognitive interdependence among group members, with each agent relying on the others.

Heersmink (2017, 2018) in turn synthesizes the extended mind thesis with the narrative self. He argues that human autobiographical memory systems are inherently open to extension and rely on resources from the external environment. Particularly relevant are man-made objects or structures that intentionally or unintentionally help us remember our personal past (Heersmink, 2018; Heersmink & McCarroll, 2019; Turkle 2007). Examples include photographs, videos, postcards, concert tickets, diaries, books, artwork, trophies, inherited objects, and many others. Interaction with such objects activates cognitive processes that retrieve the content of personal memories into consciousness. These objects are integrated into our recall practices and help us retrieve our past in a more reliable and detailed way. In some cases, the autobiographical dependence on the object is so strong that we cannot remember the event without interacting with the object. An example of this is looking at pictures of events that happened deep in the past more than a few decades ago. The current trend is to self-trace life through self-recording and tracking technologies. These technologies are: wearable cameras, GPS trackers, Fitbits and other sensors that allow to create a sophisticated database of one's past, called a life diary. Lifelogs are paradigm cases of autobiographical memory technologies that are deeply integrated into the memory systems of their users (Bell & Gemmill, 2009). The material and social distribution of autobiographical memory systems has important implications for our personal narrative because autobiographical memories are its building blocks. Autobiographical memory systems are distributed simultaneously in our embodied brains, in environmental objects and structures, and in other personalities. The implication of this view is that our personal narrative depends on and is partially composed of a distributed network of ecological structures.

## POST-TRAUMATIC STRESS DISORDER

Post-traumatic stress disorder (PTSD) is a psychiatric disorder that can occur in people who have experienced or witnessed a traumatic event such as a natural disaster, serious accident, terrorist act, war/battle, rape, or who have been threatened with death, sexual violence, or serious injury. The body is able to detect emotional or physical danger through a brain mechanism called the Behavioral Inhibition System (BIS), located at the base of the brain in an area named the locus ceruleus (Comer, 1992). Upon detection of danger, the BIS alerts the body through an increased production of adrenaline and noradrenalin, chemical messengers called neurotransmitters. The neurotransmitters alert the sympathetic nervous system to immediately engage in a fight-or-flight response, which allows one to either physically defend oneself or flee from the scene of danger (Barlow, 2001). During traumatic experiences, however, the afflicted, such as a child, does not always have the opportunity to escape danger or the ability to defend oneself. According to Dayton the only way one survives inescapable trauma is by freezing: that is, closing off one's "inner responses by numbing or fleeing on the inside through disassociation" (Dayton (2005: 19). When freezing occurs, the body and mind endure great consequences. Traumatic memories are left unprocessed due to interrupted brain passages, thoughts and perceptions become distorted (Kipper, 1998), and the body remains overly attentive to superficial threats (Dayton, 2005). In addition, one may cognitively and emotionally reexperience the trauma. Because of the trauma's effect on the entire human system, the memories remain on the "sensorimotor level" (Kipper, 1998). Recall of the trauma, is not limited to cognitive perceptions (I remember him coming near me and there was no way to run.) but also includes body memories or sensory reactions (e.g., rapid breathing, sweating, shaking and trembling caused by fear). These sensory reactions are part of the frozen "fight or flight" response. In addition, because of the effects of trauma on thought processing, memories are often

distorted and a lack of clarity is observed. Patients with PTSD experience exaggerated fear toward cues that do not anticipate threat even in contexts completely different from the traumatic event. Critically, these cues can induce pathology and re-experiencing of the original traumatic episode. They act as reminders and make the person feel as if the traumatic event is happening again, with accompanying involuntary intrusive memories (flashbacks) and nightmares (Clark T. L. & Davis-Gage D., 2018).

Psychologists distinguish three necessary stages in the learning and memorization process: encoding, storage, and retrieval (Melton, 1963). Encoding is defined as the initial assimilation of information; storage refers to the retention of information over time; retrieval is the ability to access information when we need it. Under stress, the encoding process is affected, leading to overgeneralization and fearful emotion to a wide variety of cues that show only a vague resemblance to actual trauma cues (Morey et al., 2015).

Post-traumatic stress disorder affects an individual's personal identity and changes their overall lifestyle. A main point in narrative therapy is that the story a person tells about their life influences and the way they view their experiences has relevance to their overall well-being. When we frame our lives in a way that revolves around a traumatic experience, the accompanying feelings and stress caused by the event have affect us long after the traumatic event. In cases of post-traumatic stress disorder, stored information about the personal narrative can be very dangerous and affect the entire structure of the narrative (Vanaken et al., 2021).

If memory system extends, does this mean that memories caused by trauma can be reprocessed and the mental disorder healed as an intended practical consequence of the extended mind thesis. I argue that there is a therapeutic method that is useful for this purpose. Moreover, there is an approach that is able to "tap into" stored information and help reprocess it, which would make therapy more effective because it can operate with memories at the sensorimotor level or more precisely,

with impaired associative learning networks that cause intense fear responses to threatening stimuli (Foa & Kozak, 1986). Exposure to traumatic memories and recall in the safe therapeutic atmosphere modify this associative network and create new network associations that help patients overcome their maladaptive avoidance mechanisms and prevent intense fear responses.

### MENTAL TIME TRAVEL

According to the theory of mental time travel (Michaelian) - remembering is not a matter of encoding, consolidating, storing and retrieving discrete representations of individual memory episodes. It is rather a form of imaginative creation of a simulation of possible past events (Michaelian, 2017).

An important function of the episodic memory system is the construction of prospective memories, also known as episodic future-thinking (EFT). Through a phenomenon known as mental time travel (MTT; Tulving, 1985), we are not only able to experience ourselves in the past, but we are also able to experience ourselves in the future. Building upon MTT theory, Schacter and his colleagues (2007) put forth the Constructive Episodic Simulation Hypothesis, which posits that the cognitive processes of remembering the past and thinking about the future rely on similar underlying mechanisms, and both draw upon information stored in episodic memory. Episodic memory and EFT operate by binding the context of an experience to the experience itself for the construction and reconstruction of scenes (Schacter et al., 2007). Importantly, this theory suggests that EFT relies on the flexible recombination of information drawn from past experiences to construct novel future scenarios. While this scenario construction can be adaptive for processes such as planning and goal-attainment, clinically-relevant biases in AM may contribute to the onset and maintenance of various disorders, including PTSD (Hallford et al., 2018).

MTT is thought to serve several critical functions, including decision-making (Aupperle et al., 2011), problem-solving (Sud-

dendorf & Corballis, 1997), and goal-setting and implementation (Breedon et al., 2016). However, further research is needed to elucidate the relationship between PTSD and alterations in MTT (Rahman & Brown, 2021). The relevance of EFT and the construction of a future self in relation to psychopathology is converging. However, there is a growing body of research demonstrating this (Rahman & Brown, 2021).

The perspective associated with the self is related to a wide range of cognitive, affective, and behavioral processes. For example, we tend to evaluate ourselves in the present by comparing ourselves to the future self we hope to achieve (Bak, 2015). Related to this, neurocognitive findings have consistently linked PTSD to negative self-evaluations (Engelbrecht & Jobson, 2020).

### PSYCHODRAMA

Psychodrama was developed by Jacob L. Moreno. It includes elements of theatre. It often takes place on a stage or space that serves as a staging area where props can be used. Groups in psychodrama therapy are conducted by a licensed psychodramatist. A real-life situation, past situations (or internal mental processes) may be recreated on stage. Using theatre-based techniques, situations are acted out in the present "here and now". Participants then have the opportunity to evaluate their behavior, coping strategies, gain an understanding of how the past is influencing their present, and gain a deeper understanding of specific situations in their lives.

During psychodrama session, one of the group participants becomes the protagonist and focuses on a specific, personal, emotionally problematic situation that is presented on stage. Various scenarios can be acted out including for example, memories of specific events in the client's past, unexplained situations, inner conflicts, fantasies, dreams, preparation for future risky situations, or mental states. These scenes also represent approximate real-life situations or are external presentations of internal mental contents. The other members of the group are helpers and



support the protagonist by playing other significant roles in the scene or may intervene as a “mirror” who plays the role of the protagonist.

Each session begins with a warm-up phase. It is important to start the physical warm-up. A warm-up action, such as walking, activates the body’s kinesthetic

memory, preparing the participant for their deepest recordings. On the stage, along with body movements, the psychodrama therapist can maintain physical contact with the protagonist, which is expressed in moving together with the protagonist (e.g., walking on stage next to each other), “being together,” “feeling together,” and “doing/acting together.” This first contact represents the first relationship between mother and baby. The protagonist is thus in the protected environment necessary for self-disclosure. This means that he will warm up to activate memories and emotions (Clark & Davis-Gage, 2010).

The journey to memories in psychodramatic scenes can also take the form of retrieval from narrative memory, in which memories are recorded at the level of consciousness, in areas of the hindbrain and associative cortices. However, most of the time we observe protagonists retrieving memories they have repressed and seeing connections they never made. Rather, these are memories retrieved through the action/movement itself from the body’s memory. Because the most powerful memories are retrieved through stimuli such as smell and sound and are accompanied by strong emotions, psychodrama allows the senses to be “regressed,” to reach a state of catharsis in a way that activates the senses by means of establishing the memories in all their details. This is why Moreno describes the psychodramatic scene as a semi-hypnotic place. Recalling the trauma and bringing it to the stage allows the reactivation of the noradrenergic system, hypothalamus-pituitary-adrenal, neurohormonal gland systems, and many areas of the brain. These include the prefrontal cortex - associated with personality and higher cognitive functions, the amygdala - associated with memory and emotions, the hippocampus, the dorsal raphe nucleus and

the locus coeruleus. In addition, high levels of adrenaline and cortisol hormones secreted in the anterior cingulate gyrus and upper right temporal gyrus, which have been found to have high levels in the event of stress. These important encounters in the scenes also provide a certain level of anxiety and stress that appears to be necessary for lasting recovery.

It is not only the protagonist is influenced by the scene. The other members, who come to their own insights playing their roles or by watching the scene as part of the audience, thus warming to their own themes, sometimes experience intense affect and catharsis.

I will illustrate what I have described above with two examples from my private practice that give clearance about the effect of psychodramatic process and the way past events are played on stage. My research is no quantitatively exposed so my case study is limited. It’s purpose is for better understanding my idea.

### *Case 1*

C. had relationship problems. Whenever she was in a relationship, she experienced an inexplicable fear of the man next to her. Her intense feelings of fear and anger led to inappropriate behaviours and caused distress to both her and her partners. In a therapy session, she selects a group participant to act out this fear. The way she positioned the role of the fear provided information to the bystander about C’s hypothetical memory scenario. She was sitting on a chair and the fear figure (the participant playing the role of the fear) was placed in front of her in a typical pose. She suddenly remembered, as the dialogue and role reversal progressed, that the fear was actually a man. The man was her uncle who had sexually abused her when she was about 5 years old. The actor’s body posture was key to recalling a repressed event in C’s past. She recalled a rape episode and other details of the unfortunate event. During the psychodrama session, she became aware of where the cause of these reactions to men was rooted, and this helped her minimize the emotional effect of the trauma. In the sharing between the participants, C. received support from the group

and the other participants experienced the situation on stage, which gave them a deeper understanding of the event and recalled similar memory in one of the other participants, even though their situations was different, they shared common feelings and strategies to overcome the effect of trauma.

### Case 2

H. has an inexplicable fear of any kind of surgery. His doctor recommends routine surgery to remove a skin cyst. A mild and harmless intervention. However, the unexplained fear stiffens N. and he considers refusing, realizing the suffering and health risks this refusal will bring. During the monodrama session, he was asked when he first experienced such intense fear. He remembered his grandparents' house, the yard, summers in the country. He then recalled one particular episode when he fell to the ground while playing with friends. The wound was so deep that his pants became soaked with blood. His grandparents' house was about 20 minutes away. He felt really afraid until he got home. He thought he was dying. The psychodrama session allowed N. to become aware of the correlation between the memory of a specific event and the irrational refusal to the surgery. The scene helped by differentiating the current situation of fear of surgery and a childhood memory, allowing a different assessment of the current risks and more reasonable solution to the dilemma about the surgery.

### CONCLUSION

One of the findings of mental time travel theory is that if the system responsible for representing future events is also responsible for remembering past events. Memory for past events also have a flexible, simulation-based character. This general ability to generate and reflect on mental scenarios has been compared to a theater in the mind that depends on the cooperative operation of multiple component parts. Acting out a psychodramatic scene is a form of simulation. By simulation I mean imaginative constructions of hypothetical events and scenarios. Simulation involves

imaginatively placing oneself in a hypothetical scenario and exploring the possible outcomes. A psychodrama is a simulation of life events, the purpose of which is to construct and reconstruct events from the past, but not only. The scene can be used to construct future events, internal mental states and to experiment possible scenarios. The method is an example of extended mind, in which the group participants serve as protagonist's "tools" which give him possibility to recover memories of the past, reaching a depth he could not in the usual simulation of events "inside his head". To a certain extent, the given examples illustrate transactive memory in the sharing phase, insofar as the participants share experiences of the scene, so that they are able to recreate various individual details of the role-play and share their experiences, forming a complete picture of memory that could not be fully expressed by any of the participants. In psychodrama many material objects and artifacts are used - chairs, dolls, toys, animal toys, etc. They have their symbolic meaning for the protagonist, but they are also objects that can be used to signify various elements of the narrative that the protagonist could use to signify meaningful content. In monodrama, as a type of psychodramatic technique involving a participant and a therapist, these signifying objects can symbolize people and, through role reversal, serve as tools in the protagonist's dialogues with these people.

So I assume that psychodrama method is practical example of extended mind hypothesis, mental time travel theory which has impact on the sense of self and identity.

### REFERENCES

1. **Addis, D. R., Tippett, L. J.** (2004). Memory of myself: autobiographical memory and identity in Alzheimer's disease, *Memory* 12 (1): 56-74.
2. **Anderson, J.** (2008). Neuro-prosthetics, the extended mind, and respect for persons with disability. In M. Düwell, C. Rehmann-Sutter, & D. Mieth (Eds.). *The contingent nature of life: Bioethics and limits of human existence* (pp. 259-274). Heidelberg: Springer.
3. **Aupperle, R. L., Paulus, M. P.** Neural systems underlying approach and avoidance in anxiety disorder.

- ders. *Dialogues in Clinical Neuroscience*. 2010; 12: 305-319.
4. **Bak, W.** (2015). Possible selves: implications for psychotherapy. *Mental Health Addict.* 13, 650-658.
  5. **Barlow, D.** (2001). *Clinical handbook of psychological disorders: A step-by-step treatment manual*. New York: Guilford Press.
  6. **Breeden, P., Dere, D., Zlomuzica, A. and Dere, E.** (2016). The mental time travel continuum: on the architecture, capacity, versatility and extension of the mental bridge into the past and future. *Rev. Neurosci.* 27, 421-434.
  7. **Bell, G. M. & Gemmell, J.** (2009). *Total recall: How the e-memory revolution will change everything*. New York: Dutton.
  8. **Bilik, E.** (2019). NEURO PSYCHODRAMA - What is Happening in Our Brains in Psychodrama? Istanbul Psychodrama Institute / Istanbul International Zerka Moreno Institute 'Neurons and humans are social entities, cannot exist in isolation, and can only be understood in relationships with others' (Siegel).
  9. **Clark, A.** (2003). *Natural-born cyborgs: Minds, technologies, and the future of human intelligence*. Oxford: Oxford University Press.
  10. **Clark, A.** (2007a). Re-inventing ourselves: The plasticity of embodiment, sensing, and mind. *Journal of Philosophy and Medicine*, 32, 263-282.
  11. **Clark, A.** (2007b). Soft selves and ecological control. In D. Ross, Spurrett, H. Kincaid & G. Stephens (Eds.). *Distributed cognition and the will: Individual volition and social context* (pp. 101-122). Cambridge: MIT Press.
  12. **Clark, A. & Chalmers, D.** (1998). The extended mind. *Analysis*, 58, 10-23.
  13. **Clark, T. L., Davis-Gage, D.** (2018). Treating Trauma: Using Psychodrama in Groups - VISTAS articles and ACA Digests, *ACA Online Library*, Retrieve from [http://counselingoutfitters.com/vistas/vistas10/Article\\_59.pdf](http://counselingoutfitters.com/vistas/vistas10/Article_59.pdf)
  14. **Clowes, R. W.** (2020). The Internet extended person: Exoself or Doppelgänger? *Limite: Interdisciplinary Journal of Philosophy & Psychology*, 15(Article 22), 1-23.
  15. **Comer, R.** (1992). *Abnormal psychology* (5th ed.). New York: Worth Publishers.
  16. **Dayton, T.** (2005). The use of psychodrama in dealing with grief and addiction-related loss and trauma. *Journal of Group Psychotherapy, Psychodrama, and Sociometry*, 58 (1), 15-34.
  17. **Engelbrecht, A. and Jobson, L.** (2020). Self-concept, post-traumatic self-appraisals and post-traumatic psychological adjustment: what are the relationships? *Behav. Cogn. Psychother.* 48, 463-480. doi: 10.1017/S1352465820000156
  18. **Erikson, E.** (2013). *Identity, Youth, Crisis*. Sofia: Riva (in Bulgarian).
  19. **Foa, E. B. & Kozak, M. J.** (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin*, 99(1), 20-35.
  20. **Hallford, D. J., Austin, D. W., Takano, K. & Raes, F.** (2018). Psychopathology and episodic future thinking: A systematic review and meta-analysis of specificity and episodic detail. *Behaviour Research and Therapy*, 102, 42-51.
  21. **Heersmink, R.** (2020). Varieties of extended self. *Consciousness and Cognition* 85.
  22. **Heersmink, R.** (2017b). Extended mind and cognitive enhancement: Moral aspects of cognitive artifacts. *Phenomenology and the Cognitive Sciences*, 16, 17-32.
  23. **Heersmink, R.** (2017a). Distributed selves: Personal identity and extended memory systems. *Synthese*, 194, 3135-3151.
  24. **Heersmink, R.** (2018). The narrative self, distributed memory, and evocative objects. *Philosophical Studies*, 175, 1829-1849.
  25. **Heersmink, R. & McCarroll, C.** (2019). The best memories: Identity, narrative and objects. In T. Shanahan & P. Smart (Eds.). *Blade Runner 2049: A philosophical exploration*, 87-107, London: Routledge.
  26. **Heidegger, M.** (1962). *Being and time*. London: SCM.
  27. **Hongladarom, S.** (2016). *The online self: Externalism, friendship and games*. Dordrecht: Springer.
  28. **James, W.** (1890). *The principles of psychology*. New York: Dover.
  29. **Gallagher, S.** (2000). Philosophical conceptions of the self: implications for cognitive science. *Trends Cogn. Sci.* 4, 14-21
  30. **Kipper, D.** (1998). Psychodrama and trauma: Implications for future interventions of psychodramatic role-playing modalities. *International Journal of Action Methods*, 51, 113-121.
  31. **Locke, J.** (1979). The Clarendon Edition of the Works of John Locke: The Correspondence of John Locke: Vol. 5: Letters Nos. 1702-2198, E.S. de Beer (ed.), Oxford: Clarendon Press, 1976-1989.
  32. **Malafouris, L.** (2019). Understanding the effects of materiality on mental health. *BJPsych Bulletin*, 5, 195-200.
  33. **Melton, A. W.** (1963). Implications of short-term memory for a general theory of memory. *Journal of Verbal Learning and Verbal Behavior*, 2, 1-21.
  34. **Menary, R.** (Ed.). (2010). *The extended mind*. Cambridge: MIT Press.
  35. **Merleau-Ponty, M.** (1965). *Phenomenology of perception*. London: Routledge.
  36. **Michaelian, K.** (2016). *Mental Time Travel: Episodic Memory and Our Knowledge of the Personal Past* (1 edition). Cambridge, Massachusetts: The MIT Press.
  37. **Milojevic, M.** (2020). Extended mind, functionalism, and personal identity. *Synthese*, 197, 2143-2170.
  38. **Morey, R. A., Dunsmoor, J. E., Haswell, C. C., Brown, V. M., Vora, A.** (2015). Fear learning circuitry is biased toward generalization of fear associations in posttraumatic stress disorder. *Psychiatry* 5: e700. 10.1038/tp.2015.196 [PMC free article] [PubMed] [CrossRef] [Google Scholar]

39. **Olson, E. T.** (1997). *The Human Animal: Personal Identity Without Psychology*, New York: Oxford University Press.
40. **Palermos, S., O. Knowledge** and Cognitive Integration. In: *Synthese*. 191 (8), 2014.
41. **Patra, B. N., Sarkar, S.** (2013). Adjustment Disorder: Current Diagnostic Status. *Indian J Psychol Med.* Jan-Mar; 35(1): 4-9.
42. **Piredda, G. & Candioto, L.** (2019). The affectively extended self: A pragmatist approach. *Humane. Mente Journal of Philosophical Studies*, 36, 121-145.
43. **Rahman, N. Brown, A. D.** (2021). Mental Time Travel in Post-Traumatic Stress Disorder: Current Gaps and Future Directions, *Front. Psychol., Sec. Psychopathology*.
44. **Schacter, D. L., Addis, D. R. & Buckner, R. L.** (2007). Remembering the Past to Imagine the Future: The Prospective Brain. *Nature Reviews Neuroscience*, 8, 657-661.
45. **Racheva, R., Totkova, Z.** (2018). Kognitivni karakteristiki, svarzani s upravljenieto na motorni prevoznii sredstva Psihologichni izsledvania, tom 21, kn. 2, 195-209, ISSN 1311-4700 (in Bulgarian).
46. **Schechtman, M.** (1996). *The constitution of selves. Ithaca: Cornell University Press.*
47. **Schettler, A., Raja, V. & Anderson, M.** (2019). *The embodiment of objects: Review, analysis, and future directions. Frontiers in Neuroscience*, 13, 1332.
48. **Serino, A.** (2019). Peripersonal space (PPS) as a multisensory interface between the individual and the environment, defining the space of the self. *Neuroscience and Biobehavioral Reviews*, 99, 138-159.
49. **Suddendorf, T. & Corballis, M. C.** (1997). Mental time travel and the evolution of the human mind. *Genetic Social and General Psychology Monographs* 123(2): 133-167.
50. **Tulving, E.** (1985). Memory and consciousness. *Canadian Psychology / Psychologie canadienne*, 26(1), 1-12.
51. **Turkle, S.** (2007). *Evocative objects: Things we think with.* Cambridge: MIT Press.
52. **Vanaken L., Smeets T, Bijttebier P., Hermans D.** (2021). Keep Calm and Carry On: The Relations Between Narrative Coherence, Trauma, Social Support, Psychological Well-Being, and Cortisol Responses. *Front Psychol.* 2021; 12: 558044.
53. **Wegner, D.** (1986). Transactive memory: A contemporary analysis of the group mind. In B. Mullen, & G. Goethals (Eds.). *Theories of group behaviour*, 185-208. New York: Springer.
54. **Wilson, R. & Lenart, B.** (2014). Extended mind and identity. In J. Clausen, & N. Levy (Eds.). *Handbook of neuroethics*, 423-439. Dordrecht: Springer.

**RADOSTINA MININA** is Associate professor at Institute of Philosophy and Sociology at BAS. She is a master of Philosophy of Language and Consciousness and Child and Adolescence Psychology at Sofia University. She is licensed psychodrama therapist with a more than 7 years of experience.

*Institute of Philosophy and Sociology  
Bulgarian Academy of Sciences  
13A Moskovska Str., 1000 Sofia, Bulgaria  
radost.minina@gmail.com*

Copyright (c) 2022 Psychological Research (in the Balkans)



This work is licensed under a **Creative Commons Attribution 4.0 International License**.