

THE NEUROSCIENCE OF STORY: THE ROLE OF STORYTELLING IN PSYCHOTHERAPY



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Abstract

One of the more interesting discoveries in neuroscience in recent years is the impact that the use of non-directive forms of communication, including stories and metaphors, has on our brain. In this article, we will review the most important literature of recent research in this area, and address both the benefits and risks of the new knowledge gained from these discoveries.

Keywords: storytelling, brain impact, oxytocin, hormones, positive psychotherapy

Introduction

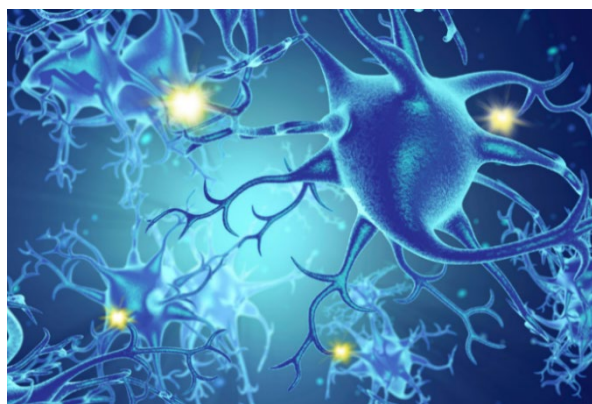
The important role of stories in our lives has been known for centuries. In a library dating back to antiquity, an inscription was discovered above one of the bookshelves: "Medicine for the soul." (Molichka, 2022).

Professor Nossrat Peseschkian, the founder of PPT, repeated after Ferdinand Sauerbruch that a doctor who tells his patients good stories needs to use half as much anesthetic. Thanks to his involvement, stories and metaphors have become one of the most recognizable tools of Positive and Transcultural Psychotherapy.

Storytelling has many functions in the psychotherapy process: a) facilitates access to content that is inaccessible at a conscious level

b) acts as a mediator between the patient and the therapist, allowing resistance and defense mechanisms to be overcome c) prolongs the effect of content discovered during psychotherapy sessions d) serves as a vehicle for traditions e) acts as an intermediary between cultures f) triggers the imagination and enables controlled regression

g) enables a change of perspective and an alternative view of the world (Peseschkian, 2016).



Discussion

As we mentioned earlier, the therapeutic role of stories has been known for centuries. Initially addressed in philosophical considerations, it was transferred to therapists' offices at the beginning of the last century and has been successfully used in numerous therapeutic approaches ever since. Below, we will take a look at how stories - both those conveyed verbally and visually in the form of fairy tales and films - affect the brain and the overall functioning of body and mind.

3. 1. Using the stories affects the functioning of the endocrine system and consequently social relations

Research conducted by scientists from the University of Michigan proves that watching certain types of movies makes our body react in such a way as if we were in the very center of events, and not just participating in them as observers. For example, watching romantic comedies together causes our body's progesterone levels to rise and a greater need for intimacy with our partner. Watching action movies, on the other hand, raises testosterone and adrenaline levels (University of Michigan, 2004).

One of the neuroscientists, Dr. Paul Zak, spent a lot of time researching how stories affect increased secretion of oxytocin and then, how it influences social interactions. He considers [...] oxytocin the neurologic substrate for the Golden Rule: "If you treat me well, in most cases my brain will synthesize oxytocin and this will motivate me to treat you well in return." However, his research also yielded another surprising result. The release of oxytocin occurs not only as a result of direct social interactions but also as a result of observing a story in which we feel a bond with the characters and feeling caring for him. Then increased levels of oxytocin predispose us to pro-social behavior (Zak, 2015).

3. 2. Stories can stimulate the occurrence of specific emotions and behaviours

Observing or even imagining the behavior of other people causes a group of nerve cells located in the motor cortex of the frontal lobe and in the parietal cortex, called mirror neurons, to be activated. They are responsible for the ability to empathize and imitate the behavior of another person, even if this behavior takes place only in the realm of fantasy.

Stories therefore have great power in a therapeutic context - they are able to arouse specific emotions and encourage desired behavior. For example, sharing with a client a story in which the characters found a solution to their problems will inspire hope and unlock new coping strategies (Ramachandran, 2012).

2.1. Using stories helps to activate the whole potential of our brain and the integration of new knowledge within old neural circuits

The possibility of harnessing the full potential of the human brain has been at the center of

researchers' attention for decades. This task is made difficult by the fact that the brain consists of two hemispheres and each of them plays a separate role in everyday human functioning. The left side of the brain is responsible for creating, receiving and processing linguistic information and for reading comprehension. The right hemisphere of our brain is responsible for creativity and imagination.

The data contained in the stories stimulate the left hemisphere, while the references to fantasies and imaginations, i.e. the form of the message, are responsible for the simultaneous activation of the right hemisphere. Simultaneous activation of both hemispheres of the brain is an extremely desirable phenomenon in the process of change - it enables the increase of natural brain activity and creates a connection between the information presented and the already-existing knowledge (Siegel, Brayson 2012).

Referring to the terms used in PPT, using the stories and metaphors can be an effective tool in working with conflicts, when old knowledge has ceased to fulfil its role and has become unadaptable to new circumstances of life. In this understanding the story can be both - a source of new knowledge and a way to integrate the content that the client brought to the beginning of therapy with newly-acquired knowledge and coping strategies.

3. 4. Stories help us to remember what is important

One of the evolutionarily significant functions of our brain that enables us to survive is to give special meaning to information that is characterized by emotions.

Events from our lives, characterized by strong emotions, are recorded in the emotional brain - especially in its subcaudal and limbic parts, creating a mental model of how the world works and what we could expect in the future. This information is stored at an unconscious level, creating an implicit emotional memory and predisposing us to specific thoughts, feelings and behaviors (Ecker et al., 2017).

Skilful use of stories, especially those that are emotionally charged, can therefore have a positive impact on the creation of a new mental model of the functioning of the client's world in which we can develop the skills, capacities or behavior necessary from the point of view of the goal of therapy.

New knowledge conveyed through stories is therefore not only better remembered, but also permanently stored and saved for a long time in our store of experiences.

However, one more important fact should be emphasized. The content of the story and the emotional effect it evokes are also important.

Chun-Ting Hsu and colleagues, in a study on the effects of reading fragments from the world-renowned Harry Potter book series, found that in a study group tasked with reading a passage that contained descriptions of supernatural events, activation of the amygdala, in the bilateral inferior frontal gyri, bilateral inferior parietal lobules, left fusiform gyrus, and left amygdala was greater than in the control group (Hsu, 2015).

Translating into therapeutic work, stories containing elements of surprise and novelty require greater activity in the bilateral inferior frontal gyrus, possibly reflecting greater demand for cognitive processing due to violations of knowledge about the world. In practice, this means that the more surprising the story is, the more it contradicts the client's current knowledge – the greater the likelihood that it will lead to permanent changes in the client's current mental model.

Conclusions

To summarize, the last decades have brought many new discoveries in the field of neuroscience, also in the area of studying the impact of stories on the functioning of the brain and the biological dimension of man. The conclusions of these discoveries clearly indicate that the use of stories has a significant impact on human functioning. Skillful use of this therapeutic tool is an invaluable method in working with conflicts, shaping new behaviors, removing old, non-adaptive knowledge and replacing it with new. On the other hand, it is important to emphasize the fact that this knowledge, when in the wrong hands, can become

a tool for manipulation and negative influence. It is therefore our responsibility as therapists to use the above knowledge in accordance with the ethics of the profession and the aims of therapy.

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