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Review

EMOTIONAL CONTAMINATION IN THE CONTEXT OF CREATIVE PSYCHOPHARMACOTHERAPY

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SUMMARY

It is well known that emotions have always attracted the special attention of both laymen and scientists because life without emotions is unthinkable. Emotions prepare us for all life circumstances regardless of their qualities and intensities.

Reviewing the available literature, the authors described the phenomenon of emotional contamination and its importance in interpersonal relationships with a focus on "infecting" other people's emotions. Research has shown that individuals mimic facial expressions as well as other emotional reactions of others by emotional contamination in interaction with another person manifesting emotional behavior, and in such situations mimic model reactions, with the perception of their own reactions eliciting an appropriate emotional state.

They stressed the importance of patient's perceptions of the emotions of the physicians treating them and the caring attitude that is crucial to contributing to treatment outcomes in clinical practice. Specific expectations between the patient and his physician, when they meet and achieve a physician-patient relationship, reduce uncertainty, and play a useful and crucial role in healing. A caring emotional practitioner who can effectively connect with patients is a huge boon to health.

The connection of emotional contamination with creative psychopharmacotherapy and with several therapeutic options is especially described, determined in different ways either through narrative psychopharmacotherapy, through assertive and positive communication, creating a favorable and positive therapeutic relationship whereby a partnership is created, which together leads to the main goal, which is the successful treatment of the patient to the mutual satisfaction. It is useful for patients to have a doctor who spends more time with them and listens carefully and, with adequate emotions, strongly and effectively facilitates treatment. They conclude that emotional contamination is a phenomenon that happens every day in life, especially in specific situations, and that it is up to professionals to use this type of therapeutic opportunity and assistance in the right way to help their patients and be creative in a psychopharmacotherapeutic sense.

Key words: *emotions - emotional contamination - creative psychopharmacotherapy - the doctor-patient relationship*

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INTRODUCTION

Emotions have always attracted the special attention of both laymen and scientists. Life without emotions is absurd and imaginable. Emotions prepare us to stay or run away or do nothing whatsoever. Numerous studies on emotions have evolved over the past decades, most of them playing a role in explaining the origin of emotion, development, and theories of origin, as well as the role of emotions and empathy in interpersonal relationships (Farrow & Woodruff 2007).

Positive emotions

Everyone generally agrees that emotion, especially positive emotion, is beneficial and healing, and that such emotion and the influence it has are very important, whether it is related to patient care or the role that the doctor-patient has in the relationship. We can often hear our patients talking about the doctor who listened to them, encouraged them, and passed them their positive energy. Namely, this is a very complex process that includes, of course, the inevitable empathic relationship, knowledge, but largely the impact of emotional contamination, which in this case plays a significant, if not key role in the patient's health outcome. Medical education is increasingly introducing some of the previously stated settings into educational programs (Shapiro 2011). In our paper, we will show how people can be "infected" with other people's emotions and what impact this has on the doctor-patient relationship, and in that context, numerous questions arise as to how this can be used in creative psychopharmacotherapy. This phenomenon, which we will call "emotional contamination", takes place in several stages: decoding the emotions of the observed person, then synchronization/mimicry, and finally the perception of one's reactions and the corresponding emotional state related to it (Hatfield et al. 1994). We will also review and point out some of the principles of creative psychopharmacotherapy and how this can be used to modulate emotional contamination in the right direction, all with the goal of successful treatment.

Neurobiology and psychophysiology of emotion

The basic premise of emotion theory is that emotion is an automatically oriented system that has evolved to guide adaptive behavior. Emotion is a means of interpersonal communication, so it can be observed through interpersonal and intrapersonal states (Decety & Skelly 2014). It reflects an intersubjective induction process in which positive and negative emotions are divided (Decety & Mayer 2008). Emotion can also be viewed as naturally occurring with the development of the brain to create and maintain the social connections needed to survive, reproduce, and maintain the welfare of the species (Decety & Svetlova 2012). This includes the so-called component of affective sharing that supports the ability to be effectively aroused and "infected" by the intensity of other people's emotions. It is an empathic understanding of another person's emotional state. Given the complexity of the process itself, there is no single region of the brain that would be solely responsible for these abilities. The regions responsible for emotional intimacy are thought to be: the amygdala, the insula, and the anterior cingulate cortex (Decety & Cowell 2014). Mimicry of emotional behavior causes appropriate changes in the affective state of the observer, which can certainly have a significant health beneficial effect, if there is positive emotional contamination in the doctor-patient relationship, all in the context of creative psychopharmacotherapy observed from another angle.

Before you start reading this chapter, try to smile and try to keep smiling until you get to the end of the chapter! Proponents of the facial feedback hypothesis believe that if you do this, you should certainly like this chapter more than the previous one, and chances are you'll be in a better mood. Skeptics may not agree, but it won't cost you more than one smile to try to do this simple experiment that will convince you of the effectiveness of the proposed manipulation. In the continuation of the paper, we will try to explain the stated theses in more detail in the previous presentation.

Do facial expressions form an integral part of the emotional experience?

An affirmative answer to this question would imply that the presence of facial expressions systematically correlates with the corresponding emotional state, which has been shown in reality. For example, in one study (Ekman et al. 1980), participants were asked to watch short films of happy or sad content, after which they were asked to report their current feelings on an emotional scale. As might be expected, participants who watched entertaining films reported a significantly higher level of positive emotions than those who watched films with sad content. Similar results were replicated in studies using physiological indicators of facial expressions (Cacioppo et al. 1988, Cacioppo et al. 1986, Dimberg 1988). For example, Cacioppo and others (1986) asked participants to give effective estimates of positive and negative photographs by taking a parallel electromyogram (EMG) of the facial muscles corrugator supercilii and zygomaticus major involved in the genesis of frown expression versus smiling. As expected, viewing negative photographs caused higher EMG activity of the corrugator supercilii muscle, while viewing positive photographs caused higher EMG activity of the zygomaticus major muscle. Using cognitive emotion manipulation, Schwartz, and others (Brown & Schwartz 1980) also measured the EMG activity of facial muscles in participants who were supposed to imagine pleasant or uncomfortable situations. Mental simulation of positive content led to a more positive mood, causing significantly higher EMG activity of the zygomaticus major muscle and vice versa when it came to the mental simulation of negative events.

Do facial expressions modulate emotional reactions?

The modulation hypothesis starts with the assumption that facial feedback can affect the intensity of the current emotional reaction. For example, if a person is sad for some reason, a simultaneous frown should in that case heighten his feeling of sadness (compared to situations where proper expression is absent). On the other hand, suppression of appropriate expression as well as showing incongruent facial expression (e.g., showing a smile when a person is sad) should significantly alleviate the intensity of emotion or cause a qualitatively altered emotional state (Brown & Schwartz 1980).

More recently, the modulation hypothesis has received further confirmation in a series of clinical trials in which patients underwent treatment based on botox that is otherwise used to relieve expressive facial wrinkles. It is known that under normal conditions, the nervous system sends electrical impulses to a certain mimic muscle and causes its contraction. Botox, once injected into a particular muscle, induces temporary denervation by blocking the release of acetylcholine into the neuromuscular junction which consequently stops the secretion of the neurotransmitter (acetylcholine) into the synaptic space and thus prevents muscle contraction. Thus, guided by the basic postulates of the facial feedback hypothesis, researchers hypothesized that the relaxing properties of botox could also find adequate application in therapies for the treatment of various mood disorders (Davis et al. 2010, Finzi & Wasserman 2006, Lewis & Bowler 2009), Wollmer et al. 2012). In a pioneering study that first tested this possibility, Finzi and Wasserman (2006) treated chronically depressed patients by giving them an injection of botox in the area of facial glabellar wrinkles, causing

temporary paralysis of the corrugator supercilii muscles, which are necessary for the genesis of facial expressions such as anger, sadness, and fear. Eight weeks after treatment, the authors noted a significant improvement in nine out of 10 participants, who no longer showed standard symptoms of depression. If facial feedback plays a key role in the emergence of emotions then the mere contraction of the corresponding facial muscles should be sufficient to provoke an appropriate affective state.

THEORY OF EMOTIONAL CONTAMINATION

Emotional contamination occurs when people become "infected" with the affective state of others, that is, when they begin to feel the emotions experienced by another person with whom they are in direct or indirect interaction (Hatfield et al. 1994). This phenomenon takes place in three phases:

- mimicry/imitation,
- observation/feedback, and
- contamination.

Mimicry of emotional behavior

Consistent with the postulates of emotional contamination theory, numerous findings indicate that observers do mimic other people's reactions and movements, and research suggests that observing another person performing a certain behavior increases the likelihood of the same behavior being displayed to the observer; a phenomenon popularly called the Chameleon effect (Chartrand & Bargh 1999). It is important to emphasize that similar results were obtained in the conditions in which individuals were required to control their reactions.

The function of mimicry

Why do we imitate the behavior of others? One of the hypotheses generally accepted in the literature starts from the assumption that mimicry facilitates cooperation and increases empathy, and that it can thus play a significant role in improving the quality of interpersonal relationships (Hatfield et al. 1993, Neumann & Strack 2000).

Numerous studies have shown that mimicry can play a role in decoding other people's emotions. Given that emotional reactions function as a signaling system in communication with others, the correct and timely interpretation of emotional behavior can be of great importance for harmony in interpersonal relationships. For example, a person's sad expression gives us information that we have hurt them and that we should adjust our behavior by apologizing to them. In this case, the basic theoretical premise is that mimicking expressions and other forms of emotional behavior leads to emotional contamination, after which individuals use the current affective state as input to help them recognize and understand other people's emotions (Niedenthal et al. 2001).

Facial mimicry and emotional state, contamination

In addition to the fact that individuals automatically mimic the facial expressions of others, numerous findings indicate that facial mimicry causes corresponding changes in an emotional state which further confirms the theory of emotional contamination (Hess & Blairy 2001, Lishner et al. 2008, Wild et al. 2001). In a classic study by Lundqvist & Dimberg (1995), participants were asked to observe photographs with facial expressions of anger, joy, fear, sadness, and disgust while EMG activity in different areas of their face was continuously monitored. Consistent with earlier research (Dimberg 1982), individuals exhibited facial reactions that largely reflected the facial expressions of the models presented. More importantly, the same reactions were accompanied by appropriate responses to subjective self-expression of emotion. Thus, individuals not only mimic the emotional reactions of others but eventually become "infected" with the same emotions (Lundqvist & Dimberg 1995). In the following text, we will focus on some of the key factors that influence the mimicry of emotional behavior. Given the position of mimicry in the causal sequence of phenomena (mimicry that precedes feedback), we can assume that the same factors should indirectly modulate the intensity of emotional contamination itself.

Psychosocial factors that can affect mimicry

In addition to the physical characteristics of the context, the very nature of the relationship between the observer and the model can affect emotional mimicry. We may wonder if we equally imitate people who are close and dear to us and people to whom we have a certain effective distance. We can ask the same question for other factors that usually modulate the dynamics of interpersonal relationships and which we will present in more detail below.

Attitudes towards the model

Numerous findings suggest that the quantitative and qualitative properties of mimicry depend on the effective distance between the observer and the model. In one study illustrating this view (Herrera et al. 1998), participants initially filled in a scale of attitudes toward various external groups, after which they were asked to observe facial expressions of models that were prototype members of previously assessed groups. As might be expected, the results showed a significant correlation between attitudes and mimicry, where prejudices against certain ethnic groups were associated with weaker imitation of facial expressions of members of the same groups.

Desire for affiliation

In addition to attitudes, the presence of mimicry may also depend on a person's affiliative goals. In this context, it is expected that persons should be more inclined to imitate when interacting with persons with whom they wish to become close and vice versa when interacting with persons from whom they wish to distance themselves (Gump & Kulik 1997).

Social status (social power)

Imagine an interaction between two people of different status and different social power. What would happen if a person who is hierarchically highly ranked angrily looks at a person who is in a subordinate position? (Carr et al. 2014). In a situation where the model had a high social status, the person was presented as a doctor or senior staff in an international company. On the other hand, when it came to the low-status model, the person was presented as a worker in a restaurant or a supermarket. Appropriate reactions to the emotions shown were obtained: persons frowned much more when they watched angry than happy faces. However, an interaction between expression and model status was also obtained. Namely, the differences in frowning reactions to happy and angry faces were significant when the persons observed the high-status model, which was not the case for the low-status model. In general, we can say that the strength of the relationship between the observer and the model can modulate facial mimicry. Although the interpretations of the obtained results are not always the clearest, what should be remembered is that the power relations of the observer and the model the mimicry of emotional behavior (Carr et al. 2014).

The similarity between observer and model

Another factor that can affect mimicry is the level of similarity between the observer and the person who manifests emotional behavior. In this regard, previous research has shown that individuals decode facial expressions of members of the same ethnic, national, or regional group much better (Elfenbein & Ambady 2002). This can explain the situations in which we have patients who respond much better to therapists of the same language area and the same ethnic, cultural determinants, especially in people who, during the transition and globalization and migration, found themselves in a new country with all its peculiarities and even an online therapeutic process can be beneficial and therapeutically significant.

CREATIVE PSYCHOPHARMACOTHERAPY IN THE CONTEXT OF EMOTIONAL CONTAMINATION

Creative psychopharmacotherapy represents the art and practice of a learning organization within a transdisciplinary holistic, integrative, and personalized psychiatry (Senge 2006, Jakovljević 2007, 2008). It is based on creative thinking and a systematic strategy of information processing (Jakovljević 1995, 2005) integrating reason and intuition, as well as creating a favorable context of treatment and creative cooperation with patients and their families. Creative psychopharmacotherapy is a combination of rational psychopharmacotherapy and positive psychology through the development of a quality therapeutic relationship and a proactive positive attitude of patients in treatment. The goal of creative psychopharmacotherapy is to enable the patient to control his illness, be proactive, assertive, and to take control of his life in which there will be much more love, power, freedom, happiness, and meaning. The use of psychoactive drugs alone is not enough to complete therapeutic success for the patient to find a new self, reconstruct his script and create a new life story (Jakovljević 2016).

Narrative psychopharmacotherapy

Narrative psychopharmacotherapy is an important component of narrative psychiatry based on the idea that patients come for treatment not only with symptoms and a diagnosis of mental disorder, but also with sad, tragic, and desperate personal and family stories. Narrative psychopharmacotherapy combines methods of narrative reconstruction of life with the creative application of psychoactive drugs. It focuses on understanding the relationship between body, brain, mind/psyche, and well-being/health and stories about body, brain, mind/soul, well-being, and medicine. It is based on empathic connections with patients who live their lives in relationships and connections through the stories they create (Jakovljević 2016, 2021). The narration that accompanies psychopharmacotherapy can significantly affect the outcome of treatment, and the emotional contamination that occurs during this process is aimed at improving the outcome of treatment. A positive and creative story with a good doctor-patient relationship and a positive transfer of emotions is often the most effective remedy (Hasanović 2021).

Creating a therapeutic relationship: A man to a man is a medicine

When we talk about the doctor-patient relationship, it is inevitable to mention a quality therapeutic relationship which then has a beneficial effect on the patient and the outcome of treatment, as opposed to an anti-therapeutic relationship that has a negative effect on treatment (nocebo effect) or a third variant. When neither a positive nor negative effect is present. A quality therapeutic relationship is built through communication with the patient in which his needs and desires will be met and achieved: cognitive, behavioral, and also emotional effects, which is especially important to us here. Through therapeutic communication, we act

on the feelings, thoughts, and behavior of patients, and their experience of themselves and the world, disease, and health, directing them in a positive direction (Jakovljević 2016). Research has shown that a certain level of emotional exchange and adjustment is necessary for the professional quality of physicians (Gleichgerrcht & Decety 2014). Because doctors are exposed to high levels of negative emotions in stressful environments, they can and do indeed develop fatigue and pronounced emotional exhaustion (which can lead to poor quality medical care and increase the risk of error). Therefore, emotion regulation skills are very important for the doctor. History has recognized that physician-patient relationships have had an important therapeutic effect in addition to the effects of prescribed medications and other treatments (Di Blasi et al. 2001).

Assertive and positive communication

A favorable therapeutic relationship is created through assertive and positive communication. Assertive style is a preferred style of communication from cooperative communication positions. And such communication has salutogenic effects (Jakovljević 2016). With assertiveness, we achieve mutual satisfaction because everyone gets what they want. Assertiveness is the best way we can avoid conflicts or misunderstandings. Positive communication is one that contributes to the psychosocial development of persons, improving interpersonal relationships, and resolving various problems and conflict situations to mutual satisfaction with a salutogenic effect. Communication competence and subjective experience between the observer and the subject (e.g doctor-patient) can lead to experiencing different emotional states. Physician's emotional attention serves a cognitive understanding of a patient's emotions (Halpern 2012). Therefore, in the medical aspect of the affective component, it can be adjusted to a positive impact on the patient's health. It is a well-known fact, and this is shown by some research, that doctors who show empathy and emotional component have fewer complaints about inappropriate procedures and better satisfaction and respect of patients (Hubtigton & Kuhn 2003).

Partner relationship

When a patient is an active participant in the treatment, then we can say that a partnership or collaborative model of treatment has been created, which is based on creating a relationship of mutual respect and trust between doctor and patient, high autonomy and proactive role of the patient in their treatment, as well as in shaping a shared vision of therapeutic goals and personal recovery of patients. Everything takes place based on the principle of consensus, and therapeutic contract techniques are often used. In practice, sometimes when the patient is encouraged to autonomy, they often answer: "You are a doctor, you know what is best" and so they want to transfer all the responsibility to the doctor (Jakovljević 2016). Precisely because of such possibilities, creative psychopharmacotherapy and all its benefits are important. If we use it on the principles stated earlier, situations, when the patient in any way puts the doctor in an unenviable position, are reduced to a minimum and the positive outcome of the treatment is more likely to the mutual satisfaction.

CONCLUSIONS

In the first part of our paper, we saw that people can be "infected" with other people's emotions through the phenomenon of emotional contamination. In this regard, numerous studies have shown that individuals mimic facial expressions as well as other emotional reactions of others. Emotional contamination can occur only in interaction with another person who manifests emotional behavior and in such situations mimics the reactions of the model, with the perception of their own reactions causing an appropriate emotional state.

Although several factors influence the treatment of patients, their perception of the physician's emotions and caring attitude is crucial to contributing to patient outcomes in clinical practice. The beneficial effect of positive emotion and empathy on others can be explained by numerous theories. Specific expectations between the patient and their physician, when they meet and achieve a physician-patient relationship, reduce uncertainty and play a useful and crucial role in healing. A caring emotional practitioner who can effectively connect with patients is a huge boon to health.

In the second part, we dealt with emotional contamination and the connection with creative psychopharmacotherapy and several therapeutic options, where it can be influenced in different ways either through narrative psychopharmacotherapy, through assertive and positive communication, creating a favorable and positive therapeutic relationship which leads to the main goal, which is the successful treatment of the patient to mutual satisfaction. It is useful for patients to have a doctor who spends more time with them and listens carefully. Adequate emotion is just one of the elements that facilitate the effectiveness of treatment, but a very powerful one. While emotional contamination is a phenomenon that happens every day in life, especially in specific situations that we described earlier, it is up to us professionals to use this type of therapeutic opportunity and help in the right way to help our patients and be psychopharmacotherapeutic creative.

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Contribution of individual authors:

Jasmin Hamidović: conception and design of the manuscript, collecting data and literature searches, analyses and interpretation of literature, manuscript preparation and writing the paper; and gave final approval of the version to be submitted.

Mevludin Hasanović: made substantial contributions to conception and design, literature searches, participated in revising the manuscript and gave final approval of the version to be submitted.

Izet Pajević: made substantial contributions to conception and design, and interpretation of data, participated in revising the manuscript and gave final approval of the version to be submitted.

Lejla Dostović Hamidović: interpretation of data, participated in revising the manuscript and gave final approval of the version to be submitted.

Miro Jakovljević: made substantial contributions to conception and design, and interpretation of data, participated in revising the manuscript and gave final approval of the version to be submitted.

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