

MIMIC MECHANISMS OF EMOTIONAL INTELLIGENCE FEEDBACK IN BRAIN PATHOLOGY

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Abstract. The attempt of the generalized research analysis of a phenomenon of a facial expression in various fields of psychology and natural sciences is presented in article. In the current work is new approach to a mimicry research - as manifestations of an information hub of feedback in the system of emotional reaction and emotional intelligence reveals. On the basis of earlier conducted author's researches it is shown that by consideration of basic emotions in a uniform matrix by means of specially developed analytical device it is possible to carry out quantitative and quality assessment of a condition of the psychoemotional sphere as well as to define possibilities of emotional intelligence in the course of communication and information processing in a situation of emotional pressure. The mimicry of the person is considered as a unique psychophysiological and sociocultural phenomenon because by mimic manifestations it is possible to keep track of cognitive style of the individual, and on visual perception - feature of sensory perception. The dialectics of rhizomorphous unity cognitive and sensual consists in this phenomenon. According to researches of authors, the repayment of emotions and expressional accents which are signs of affective thinking, deception is connected with mimicry, etc. historically scientific interest in mimicry is connected with a research of emotions, establishment on it of a mental state. The fundamental direction gained the applied development focused on problems of communication, "body language". At the same time mimicry - the unique phenomenon reflecting sensual from a cognitive component in unity of the psychomotor act.

Matrix approach on the basis of which it was developed mathapparatus for assessment of balance and tension of basic emotions was applied to quantitative assessment of data. The offered method allows monitoring change of conditions of system in time microintervals corresponding to the initial stage of expansion of emotion. We established quantitative distinctions by criteria of stability of a matrix of basic emotions and also qualitative - prevalence of various forms of restriction of their feedback. The received results accord also with the principle of nonlinear determination of the mental phenomena approving a possibility of system to get not one, but a set of the steady states, in our case connected with reorganization of a matrix of basic emotions. Comparison of results of the quantitative and qualitative analysis showed three forms of self-control. The phenomenon of a facial expression in many respects more available to a research of psychoemotional blocks and the system organization of emotions remain unclaimed so far and its studying represents the theoretical and practical importance for psychology.

Keywords emotional intelligence; emotional reaction system effector; matrix of basic emotions; feedback; block, mimicry.

1 INTRODUCTION. The mimicry of the person is a unique psychophysiological and sociocultural phenomenon. In its expression the emotional condition of the person, his character and features of sensory perception is expressed. The last opens, for example, on the basis of oculomotor measurements in Andreyeva I.N. research [1]. The facial expression, in return, transfers a consciousness stream - signals of the endured thoughts and desires. Thus, mimic stereotypes are congruent to cognitive schemes of visual perception of the opponent. It turns out that on mimic manifestations it is possible to keep track of cognitive style of the individual, and on visual perception - feature of sensory perception. Such is *dialectics of rhizomorphous unity cognitive and sensual. Effect of an emotional resonance* (Simonov, 1973, Barabanshchikov V. A., 2016), connected with nonverbal communication, supplements perception [2]. Observing at the same time estimates and feels an emotional message of the communicant through own body. *Perceived becomes felt*: mimic patterns of the opponent are reproduced on the face of the observer, transferring his state. Due to such interrelation of cognitive and sensual *the empathy* as perception of mood of other person works. However nonverbal signals belong not only to communication: they accompany thoughts, feelings and actions of the individual. Moreover, the micromovements of the person reflect both an emotional and general somatic state.

The Soviet psychologist V.S. Deryabin (1943) even before opening of function of the advancing reflection (Anokhin, 1961) and probabilistic forecasting (Simonov, 1973) noted that emotions contact images and events, imprinting them is reflex. *The anticipation* - ability to make assessment of development of the situation before its understanding that it was investigated by Ivanova E. is so shown. Page [3]. It is the anticipation *mechanism* in the conditions of deficiency of information and time for incentives; it is associative connected with last experience. *Sensory perception* works quicker than cognitive assessment: signs apprehended earlier reproduce all events. Later K. Izard will allocate the relevant structure, a so-called affective and cognitive complex, and in cognitive approach the system of modules (Fodor, 1984, Meyer, 1985). [4] Also alternative educations, however, also without identification of the mechanism will be offered. All above described phenomena belong to manifestations of emotional intelligence.

According to Volov V.V., the repayment of emotions and expressional accents which are signs of affective thinking, deception, etc. [5 is connected with a mimicry; 6]. Emotions with characteristic expressions and mimic wrinkles stiffen in "masks" of habitual moods over time. Such "speaking faces" are described in literary works, and in life meet at people of mature age.

The appeal to a mimicry as to subject to scientific research arose in natural sciences. I. Lafater presented classification of an expression of the person in "The essay about physiognomics" (1783) that it was also mentioned in Mefodeva M.A. researches. [7; 8], Hovanskoy E. of page [9], and Belentsova [10]. In the 19th century of a mimicry I. Engel, Ch. Bell, T. Piderit, G. Dyushenn, P. Grasiolo, V. Vundt researched. In medicine attention to mimicry appeared at a dawn of formation of psychiatry. Doctors determined a condition of the patient, falsification of mental disorders, and «a madness mask" by nonverbal manifestations (Eskirol). The diagnostic importance of mimic changes in somatic medicine was noted by Hippocrates, E. Krepelin, I.L. Sikorsky, I.P. Kowalewski, etc. Thus, historically scientific interest in mimicry is connected with a research of emotions, establishment on it of a mental state. As a result initially fundamental direction gained the applied development focused on problems of communication, "body language". At the same time mimicry - the unique phenomenon reflecting sensual from a cognitive component in unity of the psychomotor act.

2 METHODS. The mimic device has the complex anatomy-physiological organization. The person contacts analyzers, and the speed of reaction of muscular system of the person is comparable to the speed of emergence of emotions. It is no wonder that interest in the face of researchers in the field of neurophysiology, psychophysiology, neurology and other clinical directions in the solution of the questions connected with identification of mechanisms of brain and mental violations only increases. In the 1970th M.N. Rusalova investigates by means of a miography of the person ability of any management of emotions [10]. E.S. Hovanskaya applies a method to determination of specifics of emotional violations at damages of a brain. [9] Researches of mimicry are conducted by T.A. Dobrokhotova and N.N. Bragina for identification of mental violations at defeat of hemispheres. In works of these scientists psychophysiological bases of emotions on the basis of miography measurements of the person were expanded.

To this direction A. Dittmann, P. Ackman, U. Frizen, S. Tomkins, K. Izard, A.A. Bodalev, G. Shvartts, V.A. Labunskaya made the contribution. From the different parties these scientists developed a *hypothesis of the return facial communication* according to which the mimicry realizes emotion feedback. Still Darwin noted regulatory function of expressive behavior: the expression strengthens emotion, and control suppresses. Carrying on James-Lang's tradition about the corporal nature of emotions, S. Tomkins, E. Gelgorn and K. Izard develop the idea that the mimic complex is a basis of experiences, exerting strong motivational impact.

Unfortunately, in this approach the mimicry is literally regarded as a communicative code that makes related these representations with the "body language" direction. In communication the regulatory expediency of mimicry is not indisputable, involuntary expression of feelings finds to the opponent hidden. The visceral theory underlines *regulatory influence of mimic reactions* to a brain blood-groove (P. Adelman, R. Zajonc, 1989). Pilot studies partly confirmed a hypothesis: facial muscles through a blood-groove influence temperature of a brain and change experiences. However and here the literal interpretation of emotion as linear consequence of physiological changes, leaving a question without answer is offered: what its appointment? It turns out that the emotion through a body reports in feelings about itself. For what? If it is about the alarm system about change of a state, then emotions in general are excessive.

Thus, as classical concepts about realization of emotion through corporal feelings, and its modern versions, do not open the stated feedback mechanism, its expediency and a role of mimicry in it. By means of a tool research of the person disclosure of regulatory function of emotions is possible. However it will demand cardinaly new approach and understanding of mimicry as universal mechanism of emotional intelligence. One of the first V.A. Labunskaya asks about a facial expression as a form of manifestation external "I". The emotion and its expression are regarded by the author as "an existence form" of the mental phenomena. In the real work the provision that the emotion adapts mentality for reactions of an organism moves forward, indirectly bringing into accord its state to conditions of the changing reality. This statement was considered in D. Golman's work. [11]. The mimic pattern as the psychophysiological bridge reflects this process: in it as an acceptor of result of action the state is coded and its result in the form of experience is coordinated (Volov, 2014). Means, on the basis of monitoring of the return facial communication assessment of a state and disclosure of mechanisms of self-control of emotions is possible. It concerns *the basic emotions* having instinctive bases and congenital mimic patterns.

Conditions of a depression, dysphonia, phobias connected with the whole range of mental disorders confirms a fundamental role of basic emotions once again: in their strengthening, distortion, restriction pathology, loss of mental stability is shown. All this allows considering them as the interconnected elements of a uniform matrix of mental self-organization.

Studying of feedback as general link of two functional systems - mental self-organization and self-control of an organism - opens a way to a research of psychosomatic and somatic-psychologic processes. At the same time the understanding of the mimic device as effector of systems means the analysis of its work in line with transformation of their state and a signal of its result. In last works we described methods of the qualitative and quantitative analysis of mimic reactions at experience of basic emotions. By means of EMG-measurements the quality of reaction (decoding) was registered, verification with a standard was made later. On the basis of the principle of symmetry the orthogonal table for measurement of *a matrix* with assessment of tension and stability was made. Emotions were broken into couples by the principle of polarity and activity/passivity: fear anger, grief joy, and surprise disgust.

The experiment models process of expansion of emotion. In the first test the examinee represents the situations connected with emotions, in the second perceives faces in the photo, hardly them expressing. In the course of tests the electromagnetic activity exon is registered. According to frequency and amplitude characteristics of test of one order also correspond to natural experience that allows considering them as an analog of the return afferentation.

The mimic device works as an information hub: the first test *conditionally* corresponds efferent (a change signal), the second - to afferent synthesis of an effector (a signal of change). Such approach is admissible by consideration of mimic reactions

as the signals coding a condition of system. Comparison of tests allowed revealing *chiral effect*: mirror display of the first test in the second for each assignment [4]. Reflection of a standard speaks about the correct work of the return facial communication (a), and repetition of distorted and incomplete (b), as well as antagonistic reactions (c) - about its restriction. At the last effects which are divided into *blocking and isolation* examinees note difficulties with emotions. The block is shown in restriction of an efferent link of an effector. Restrictions of an afferent link correspond to isolation. The emotion is not experienced, but is expressed.

3 RESULTS AND DISCUSSION

Matrix approach on the basis of which it was developed mathapparatus for assessment of balance and tension of basic emotions was applied to quantitative assessment of data. The offered method allows monitoring change of conditions of system in time microintervals corresponding to the initial stage of expansion of emotion. Application of this method in addition confirms interrelation of basic emotions. Quantitative distinctions by criteria of stability of a matrix of basic emotions and also qualitative - prevalence of various forms of restriction of their feedback are established. The received results accord also with *the principle of nonlinear determination* of the mental phenomena approving a possibility of system to get not one, but a set of the steady states, in our case connected with reorganization of a matrix of basic emotions. About the principle of nonlinear determination L.S. Greenberg (The theory of psychotherapy) wrote in the work. [12]

Comparison of results of the quantitative and qualitative analysis showed three forms of self-control. *First form*: restriction of feedback of an effector at the level of an efferent and afferent link. *Second form*: imposing of a pattern of one emotion on another. *The third form* is defined by a ratio of the first two mechanisms in a matrix of orthogonal and not orthogonal emotions among themselves and is expressed in its symmetry, or asymmetry at the expense of what stability, or, on the contrary, disposal of excess stability is reached.

Work of an afferent link of feedback of emotion is reflected in a signal of result, promoting reorganization of a matrix and by that to change of a state. In turn restriction of an efferent link leads to its change due to distortion of the pattern coding it. Mimic changes in process of emotional reaction reflect work of feedback of system. Signals from bodies are flown down in a uniform stream - the afferent synthesis generating an impulse to transformation of system. In P.K. Anokhin's theory it corresponds to the phenomenon connected with an acceptor of result of action, realizing feedback. It is about the so-called *corporal feeling* including emotional tone, mood and health of the person, reflected in the person. Thus, the mimicry expresses a somatic condition of the individual and also the emotional status and experiences connected with its relation to the events.

Specially organized monitoring of facial reactions at experience and perception of emotions showed work of an efferent and afferent link of the mimic device as *effector* of emotional reaction.

4 SUMMARY

In the real work the problem of distortion of mimic patterns is considered within the solution of a question of *blocking and imposing of emotions*. According to some researchers basic emotions are capable not only to mix up, but also to break each other (Ostony, Turner, 1990). Moreover, Izard notes that energy of one affect can be transferred to another. However in the sphere of pilot studies of similar mechanisms it was not still revealed. At the same time it in many respects opens a way for identification of system self-organization of mentality on material of researches of mimicry.

5 CONCLUSIONS

The phenomenon of a facial expression in many respects more available to a research of psychoemotional blocks and the system organization of emotions remain unclaimed so far. Methodological difficulties in definition of the return facial communication of the mimic device as feedback of an effector of the emotional reaction making bases of emotional intelligence are the reasons of such situation. Feedback in psychological structure of emotion is presented by a set of the states coded in mimic patterns which updating at the same time performs function of probabilistic forecasting, participates in implementation of communicative function, creates conditions for maintenance of mental stability in response to the changing conditions.

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