PSYCHOLOGY IN RUSSIA: STATE OF THE ART

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Editorial

The current issue of "Psychology in Russia: State of the Art" provides diverse papers on theory and methodology, social psychology and such multidisciplinary topics as cognitive psychology, psychophysiology and clinical psychology.

The Theory and Methodology section deals with three topics. Firstly, purely methodological complex issues are discussed in the works by Aleksandr M. Chernorizov, Aleksandr G. Asmolov and Eugeniya D. Schechter as well as Irina A. Mironenko and Pavel S. Sorokin. Aleksandr M. Chernorizov and his collaborators apply the frame of postnonclassical methodology to interdisciplinary research creating the linkage between neuroscience and cultural psychology and shifting the research focus "*from physiological psychology to psychological physiology*". Irina A. Mironenko and Pavel S. Sorokin analyze perennial problems and the contemporary methodological crisis through the lens of culture in psychology.

Secondly, two research groups present their applied elaborations of methodological issues. Galina Ya. Menshikova, Yury P. Zinchenko, Artem I. Kovalev and Larisa A. Shaigerova suggest the ways for application of virtual reality technologies in social research from the postnonclassical methodology's standpoint. Maria M. Danina, Natalya V. Kiselnikova, Eugeniya A. Kuminskaya, Elena V. Lavrova and Svetlana V. Markova describe theoretical approaches to using films as a means to increase the communication efficiency for those involved in theeducational process.

Finally, Anastasia E. Vorobieva and Anastasia A. Akbarova provide an analysis and perspectives of studying the basic and special types of self-determination according to A.L. Zhuravlev and A.B. Kupreichenko's concept, thus making noteworthy Russian developments available to international readers.

The Psychophysiology and Cognitive Psychology section presents a range of empirical studies. Maria S. Kovyazina, Nikita A. Khokhlov and Natalia V. Morozova investigated the connection of hemispheric activity in the field of audioverbal perception and the progressive lateralization of speech and motor processes. Oksana S. Saakyan performed an electrophysiological analysis of the cognitive component of social creativity in young males and females with different individual characteristics. Ludmila A. Verbitskaya, Sergey B. Malykh, Yury P. Zinchenko and Tatyana N. Tikhomirova outlined cognitive predictors of success in learning Rus-

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sian in native-speaker students in the contexts of taking the Basic State Exam (9th grade) and the Unified State Exam (11th grade). The works have both scientific and practical significance since the Unified Exams are still an emerging educational practice in Russia.

The "Clinical psychology" section contains articles on various clinical issues. Marina A. Kholodnaya and Andrey A. Emelin investigated the resource function of conceptual and metacognitive abilities in adolescents with different forms of dysontogenesis. Olga G. Lopukhova and Elena V. Kashshapova researched the peculiarities of fear of childbirth in pregnant women and related external and internal factors. Helena A. Petrova, Olga O. Zavarzina, Irina P. Kytianova and Roman V. Kozyakov outlined social and personal factors of stable remission for people with drug addictions in various rehabilitation programs including *12 Steps*, state and religious (orthodox) rehabilitation centers.

The Social Psychology section is represented with articles on youths in a range of social contexts. Olga V. Kruzhkova, Irina V. Vorobyeva, Tatyana I. Bruner and Marina S. Krivoshchekova figured out the differences in the value sphere of native and newcomer youth in their subjective assessment of a megacity environment. Vladimir S. Sobkin and Tatyana A. Lykova investigated the sociometric status of Theatre College students and its relation to their personal characteristics and educational activities.

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THEORY AND METHODOLOGY

From physiological psychology to psychological physiology: Postnonclassical approach to ethnocultural phenomena

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In modern science, along with the "classic" and "non-classical" approach to solving fundamental and applied problems, there is an actively developing "postnonclassical" research paradigm. This renovation of general scientific methodology has been accompanied by the emergence of new experimental technologies and new scientific research directions based on them. "Social psychophysiology" is one such direction. It is formed within the frame of postnonclassical methodology at the intersection of neuroscience and psychology. This work is devoted to the analytical review of the methods, achievements and prospects of contemporary social neuroscience and social psychophysiology studying brain structures that are specifically related to the implementation of social forms of behavior and intercultural communication. Physiological studies of brain activity during social interaction processes, which are simulated using virtual reality environments, are analyzed, and the physiological approach to the study of the brain mechanisms associated with social perception, social cognition and social behavior is used. Along with the analysis of psychophysiological studies of the mechanisms of social perception and social cognition, we discuss the theories of "Brain Reading" and "Theory of Mind" and the underlying data concerning "Gnostic neurons recognition of persons and recognition of emotional facial expressions", "mirror neurons", "emotional resonance" and "cognitive resonance". Particular emphasis is placed on the discussion of a fundamentally new trend in the study of the relationship between the brain and culture (i.e., "cultural neuroscience"). Related to this connection, the following topics are raised: physiological mechanisms protecting the "individual distance" in communication between members of a personified community, psychophysiological approaches to the study of cross-cultural differences, physiological mechanisms of social classification (particularly the formation of attitudes toward representatives of various social groups and toward the content of socially oriented information), and psychophysiological approaches to the study of processes of social classification in the field of intercultural relations (racial perception, stereotypes and prejudices).

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Keywords: Keywords: postnonclassical approach, psychological physiology, cultural neuroscience, virtual reality, brain activity, ethnocultural identity, intercultural and interethnic attitudes, cross-cultural differences

Postnonclassical paradigm in brain science as a substrate of the psyche: Social neuroscience and social psychophysiology

In the 1850s physiological psychology became a key trend in the development of psychology as a true science; it was associated with the names of Wilhelm Wundt, Hermann von Helmholtz and Johannes Müller. This development is both historical and contemporary, in terms of the researchers who, following the logic of I.M. Sechenov, tried to reduce the mechanisms of mind functioning and development to its physiological mechanisms (in the broadest sense). An alternative position was expressed by L.S. Vygotsky (and others); this line of thinking was groundbreaking. In his diaries from the 1920s and 1930s, Vygotsky concisely formulated an analysis of cultural, psychological and physiological phenomena, from physiological psychology to psychological physiology. In various guises, this study of the relationship between cultural, psychological and physiological realities is expressed in the research of N.E. Vvedensky, A.A. Ukhtomsky and N. A. Bernshtein, E.N. Sokolov, P.K. Anohin, A.R. Luria and I.M. Feigenberg. The following ideas serve as postnonclassical and non-classical paradigms of the methodology of the XXI century: parabiosis by N.E. Vvedensky, functional organ and dominant by A.A. Ukhtomsky, the problem of forming the body by N.A. Bernstein, the neuronal stimulus model by E.N. Sokolov, concepts of the functional system by P.K. Anohin, the systematic localization of mental functions by A.R. Luria and probabilistic forecasting of brain activity by I.M. Feigenberg.

This article attempts to define the problem field of psychological physiology through the prism of non-classical and postnonclassical ideals of rationality (M.K. Mamardashvili, V.S. Stepin, MS Guseltseva). When examining problems with the relationship between the brain, mind and culture, the authors used nonclassical psychological physiology to defend the postulate of irreducibility of the laws of development of culture and mind to the physiological mechanisms of their implementation, as well as the methodological failure of any attempts to solve the Cartesian psychophysiological problem using different correlation techniques (even the most sophisticated) to bond the spaces in the Euclidean style instead of Riemannian or Lobachevskian styles. The development of modern science is characterized by a radical update of the conceptual framework. In addition to the "classic" and "non-classical" approach to solving fundamental and applied problems, there is an actively developing "postnonclassical" research paradigm (Mezzich, Zinchenko, Krasnov, Pervichko, Kulygina, 2013; Pervichko, Zinchenko, 2014; Zinchenko, Pervichko, 2012 a, b; Zinchenko, Pervichko, 2013). The introduction of the postnonclassical approach to science is accompanied by a reconsideration of not only the general scientific but also a concrete scientific methodology. The latter is expressed in the renewal of an ontological model of the research subject and, consequently, in the development of new experimental technologies and new scientific directions based on them.

Modern neurosciences and psychophysiology are not removed from the process of conceptual renovation. The rapid development of non-invasive imaging techniques in brain activity in the 1990s (e.g., functional magnetic resonance imaging, fMRI and positron emission tomography, PET) revealed to scientists new possibilities for studying the brain mechanisms underlying cognitive processes (perception, thinking, consciousness), social cognition and social behavior. Therefore, the last 10 years have resulted in a rapid formation of new interdisciplinary research areas at the intersection of neuroscience and social science (social psychology and behavioral economics in particular); these new research areas are called "social neuroscience" and "social psychophysiology" (Lieberman, 2007; Adolphs, 2009, 2010; Amodio, 2010). The process of "conceptual adjustment" led to the formation of new scientific communities and laboratories, (academic) periodicals and educational programs. Since 2006, two specialized journals have been published, "Social Cognitive and Affective Neuroscience" (SCAN) and "Social Neuroscience". There is also a scientific society "Society for Social Neuroscience", and fundamental monographs and tutorials have been published (Blascovich, 2000; Blascovich, Mendes, 2010).

Psychophysiology has undergone significant changes related to the change of scientific paradigms, which have transformed it from a so-called "classic" (Wund-tian) psychophysiology into the modern science of the neural mechanisms of mental processes and states. Modern psychophysiology focuses not only on neurons and neural networks (macro-objects) but also separate organelles, molecular and genetic mechanisms of neural cells.

To signify this new level of research in modern psychophysiology, in 2006, Prof. Richard Magin proposed the term "nanoneuronics" (Akay, 2006). The knowledge domain (ontology) of modern psychophysiology is developing in "depth" (neurons), as well as increasing in "width" (different fields of psychology). There are actively forming fields of new competencies. Closely related innovative research areas, such as "cognitive psychophysiology" and "social psychophysiology", occupy prominent places among these new competencies. It is believed that human personality is created by conditions of life and upbringing. However, environment and culture are not the only influences. Social behavior has an evolutionary background, a real genetic basis that is created by (natural) selection and rooted in the instinctive behaviors of animals. The investigation of the biological foundation of social behavior, which is not always visible under the layers of culture, has not declined in importance; it is a task for researchers representing many scientific fields, including ethology, animal psychology, psychogenetics, evolutionary biology, evolutionary psychology, ethnography, and sociobiology (Asmolov, et al., 2013 2014; Dawkins, 2014; Wilson, 2015; Wilson, 1976). Brain structures associated with the service of social behavior and intercultural communication are studied within the framework of social neurosciences and social psychophysiology (Lorenz, 1998; Palmer, Palmer, 2003; Asmolov et al., 2013, 2014; Schechter, Chernorizov 2011; Falikman, Cole, 2014; Martin, Wiggs, Weisberg, 1997; Blascovich, 2000; Blascovich et al., 2010; Wangbing et al., 2011). In particular, the following brain mechanisms studied:

- social cognition (social, emotional and cultural intelligence);
- verbal and non-verbal (emotions, gestures) communication, including cross-cultural studies;
- ritualized behavior;
- aggression and altruism;
- social hierarchy;
- protection of " individual distance" in communication;
- dysfunction of social dialogue (social phobia, schizophrenia, autism).

These are complex studies that fully correspond to the spirit of modern psychophysiology, which is associated with a union of different scientific fields gathered around a common core, "a vector of cognition" (cognition of 'Man').

Psychophysiological investigation of the biological foundations of human social behavior is based on the analysis of the evolution of social relations in the communities of living organisms, according to the following scheme: systems in inanimate nature (living systems of community and anonymous communities), family groups and sexual dimorphism (personified communities) (Schechter, Chernorizov 2011; Asmolov et al., 2013, 2014). This approach allows the unification of various aspects of biological based investigations of social behavior within a single scheme of evolutionary development, and it emphasizes those fields that fall into the sphere of (competence of) social psychophysiology. The mechanisms underlying brain function may explain some of the features of human social behavior and also serve as a model for the organization of social relations in society (Bekhtereva, 1994).

Psychophysiological studies of brain activity in the processes of social interaction, simulated using virtual reality environments

Some of the most popular areas of social psychophysiology are studies of the specific features of brain activity in a virtual reality (VR) environment, models of the processes of ethnic cultural identity and formation of inter-ethnic and inter-confessional attitudes, behavior of "(virtual) avatars", and the development of communication skills with partners belonging to different cultures or ethnic groups. These studies investigate crucial aspects of the problem of security in the modern world (Zinchenko, 2011; Zinchenko, Zotova, 2014), in terms of terrorism (Zinchenko, Shaigerova, Shilko, 2011; Chaiguerova, Soldatova, 2013; Soldatova, Shaigerova, Shlyapnikov, 2008) extreme situations (Soldatova, Zinchenko, Shaigerova, 2011), extremism (Zinchenko, 2014), social instability (Dontsov, Perelygina, 2013), xenophobia (Soldatova, Nestik, Shaigerova, 2011), inter-ethnic and cross-cultural interaction (Pöppel, Bao, 2011), and migration and adaptation of immigrants in the host society (Soldatova, Shaigerova, 2002, 2015).

Combining VR systems with online brain activity registration has opened opportunities to objectively measure the intensity of the "immersion effect" of humans into VR, the so-called presence effect. Particularly promising is the use of modern non-invasive brain activity imaging methods, such as electroencephalography (EEG), magnetoencephalography (MEG), positron emission tomography

(PET) and functional magnetic resonance imaging (fMRI) (Wiederhold, Rizzo, 2005; Baumgartner et al., 2008). Thus, in their experiments with children (6-11 years) and adults (21-43 years), Baumgartner et al. (2008) used fMRI to reveal the brain correlates of subjective reality, such as the "feeling of immersion into the virtual space" ("effect of presence", "being there", "presence"). Using two types of virtual environment that cause a strong (high Presence) and weak (low Presence) sense of immersion in VR, the authors found that the critical factor in determining the ability of children (and adults) to experience the "presence effect" is the activity of two homologous brain regions in the dorsolateral prefrontal cortex of the right and left hemispheres (right DLPFC and left DLPFC, respectively). Through fMRI analysis of brain activity, it was revealed that there is a negative correlation between activity in the right DLPFC and left DLPFC and intensity of the subjective sense of VR immersion, which the test subjects rated on a subjective 5-point scale. More intense brain activity in the right and left DLPFC correlated with a weaker experience of presence (Baumgartner et al., 2008). Thus, the right DLPFC influences the experience of the "presence effect" by controlling the flow of visual information processed in the posterior parietal brain regions, which are responsible for assessing the perceptions of one's own body (or its part) in outer spaces. However, the left DLPFC influences the quality and intensity of the experience of presence by connecting with the medial prefrontal cortex, which is involved in regulating selfreflection activity and "introversively directed streams of consciousness" (Baumgartner et al., 2008). Interestingly, children 6-11 years of age generally have a more pronounced capacity for rapid and deep immersion in virtual reality than adults. According to the Baumgartner et al. (2008), this fact can be logically explained by the long ripening patterns of the prefrontal cortex during postnatal development. A number of studies investigating the presence effect, which is related to experiencing the illusion of movement through the virtual maze (illusion of vection) and the "out-of-body" phenomenon in VR, have revealed the brain mechanisms of coordination among the proprioceptive, visual and vestibular systems in the process of perceiving one's own body (Costantini, Haggard, 2007; Ehrsson, 2007, 2009), as well as space and spatial orientation (Keshavarz, Berti, 2014; Men'shikova et al., 2014; Zhang et al., 2014). Works devoted to the virtual 'out-of-body' phenomenon have raised the question of the role that multimodal stimulation plays in the formation of subjective perceptions of "physical self" (the body) and, more extensively, the mechanisms of "self-reflection" and "self-consciousness".

The ability of a person to immerse deeply into the virtual environment is extensively used in new forms of therapy that are based on virtual exposure methods (Muhlberger, Pauli, 2011). The basic idea of this trend is the use of virtual environment as an instrumental framework for behavioral therapy to treat fears, phobias, post-traumatic disorders, drug addiction and stress-related diseases (Selisskaya et al., 2004; Hoffman, 2004; Voiskunsky, Menshikova, 2008; Ignatiev et al., 2009). Psychophysiology methods are widely used for such psychotherapy sessions and to evaluate their efficiency (Hoffman 2004; Cornwell et al., 2006; Galatenko et al., 2012; Lobacheva et al., 2013).

Objective psychophysiological control of effect of presence is crucially important for modelling and studying (n virtual environments) complex social phenomena, such as inter-ethnic relationships.

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Psychophysiological approaches to the study of social cognition and social behavior

Psychophysiological studies of the mechanisms of social perception ("Brain Reading", "Theory of Mind"): gnostic neurons of facial recognition and recognition of emotional facial expressions, mirror neurons, emotional resonance, cognitive resonance

In the last 10 years, there has been an independent scientific movement formed in neuroscience and psychophysiology. This deals with the study of brain mechanisms of social interactions (Hari, 2002; Shen, Liu, Yuan, 2011). As mentioned above, there are academic periodicals, monographs and tutorials devoted to the problems of social neuroscience ("SCAN"; "J. of Social Neuroscience", "J. of Cognitive Neuroscience", "J. Human Brain Mapping", "J. Culture and Brain").

Social dialogue and the biological uniqueness of individuals are necessary but insufficient signs of personification in the community. Another prerequisite is the presence of "inter-individual" relationships, that is, the relationships between an individual and other members of community as separate persons, with their own appearances and their own "inner worlds". This type of psychophysiological personification first appears in primates, and it develops maximally in humans, who may sophisticatedly perceive and evaluate the inner worlds of others as being different from their own worlds. In the process of communication, the evaluation of the psychological state of a partner is based on a variety of information about the individual, including his physical identity, the nature of movements of the limbs and body (postures, gestures), facial expressions, specific features of vocalization. These information processes are united in the so-called category "social cognition" or "social perception (intelligence)". In the evolutionary course of personalized communities, specialized mechanisms form in the nervous system of social animals, which maintain the social perception and selectively react to social stimuli. Modern physiological and neuropsychological studies define several types of such socially oriented neural mechanisms. Some are localized in the central nervous system and are associated with specific social signals: 1) acoustic signaling complexes (speech in humans), 2) gestures and poses, and 3) emotional facial expressions. Other mechanisms are localized in the peripheral nervous system and are associated with specialization of the autonomic nervous system for supporting social behavior (Blascovich, 2000). To express emotions in non-verbal communication, higher mammals use mimetic muscles, a special system of facial muscles formed in the process of evolution. These skin muscles perform a variety of functions in animals, from controlling the movements of whiskers and ears to forming various acoustic signals and emotional facial expressions. According to Charles Darwin, facial muscle movements and some ritualized movements of the extremities (or even of the whole body) can be regarded as an alphabet of this language of emotions, a type of emotional gesture. Due to the importance of mimetic muscles for human behavior, the motor cortex area responsible for the management of facial muscles is even larger than the zone responsible for regulating hand movements. According to some researchers, there are some "basic" emotions that are identified directly through facial expression and that can be regarded as social signals in the channel of non-verbal (emotional) communication (Izard, 1980; Ekman, 2010). The existence

of such incentive emotional signals of communication implies the presence of special mechanisms of their generation and recognition in the nervous system. Indeed, modern neurophysiological studies of brain of primates and humans indicate the existence of specialized neural mechanisms of facial and emotion recognition in the temporal cortex and amygdala (Jankowski, Takahashi, 2014). Neurons responsible for emotional facial expressions in the amygdala may be included in the system of regulating social relationships, which are naturally violated when the structure is damaged. For example, dominance dramatically changes in a hierarchically organized community of monkeys (Pribram, 1975). The results of psychophysiological studies of social perception have been confirmed through clinical observations. Thus, in the case of a bilateral lesion in the occipitotemporal cortex, a person develops the so-called neurological syndrome of facial agnosia (prosopagnosia): the inability to identify both familiar and unfamiliar faces in combination with the totally undamaged condition of all other cognitive brain functions. A characteristic feature of this syndrome is that together with the loss of ability to recognize specific individuals, patients continue to perceive their emotional expression appropriately, although impersonally (i.e., as "someone cries," "someone is laughing", "someone feels sad").

In 1937, G. Klüver and P. Bucy described a symptom of behavioral disorders in higher mammals following the bilateral lesions of the temporal anterior lobe (Klüver-Bucy syndrome). The syndrome includes several major symptoms, such as excessive caution and groundless anxiety, hyperorality (investigating objects by inserting them into the mouth), and hypersexuality (the distortion of emotions or diminished emotional affect, a feeling of being violated, distorted perception of the emotional meaning of signals).

Later, it was discovered that emotional changes, in the case of Klüver-Bucy syndrome, are associated with damage to the amygdala and that this type of distortion can vary greatly in different animals. Thus, cats become extremely aggressive after the destruction of the amygdala (untamed, similar to monkeys). In this manner, the clinical data validate the psychophysiological data about the leading role of temporal cortex neurons in perceiving (recognition) faces and neurons of the amygdala (i.e., in the perception of emotional facial expressions). Gnostic facial neurons, "neuron-detectors of a person" and "neuron-detectors of emotional facial expressions", are components of the neurophysiological system, which integrates information about other individuals, the so-called "Who" system. The "Who" system developed in phylogeny aimed to perform an important task to make it possible for individuals to interpret all kinds of information (including their psychological states) about other individuals, ultimately to determine their dispositions and intentions. The brain mechanisms used to identify individuals and their facial expressions are basic processes of social cognition, and damage to these mechanisms can lead to the destruction of the entire system of social adaptation.

At the end of the XX century, Italian researchers from the University of Parma (Universita' degli Studi di Parma) conducted neurophysiological experiments with macaques, and they discovered so-called mirror neurons (MNs) in the lower part of the frontal cortex (area F5 - analogue n. 44 in humans) (Gallese et al., 1996). MNs activated when the monkey was performing certain actions and when the monkey supervised the same actions being performed by the experimenter. MNs

proved to be selective. Each group reacted strictly to a certain action, and they did not react when the action was even slightly different. These findings strengthened the impression that MNs were mirroring: their action was as if the brain of the monkeys learned ("read") the brain of the experimenter, its external manifestations and physical actions.

With the use of fMRI, PET, MEG and EEG, several independent research groups found that some regions in the cerebral cortex in humans are activated when the individual performs certain actions and when he simply looks or imagines how these actions are performed by someone else. It has been shown that, in addition to the premotor cortex and inferior parietal gyrus, MNs are also found in the cingulate gyrus, somatosensory cortex and insula (Blakemore et al., 2005; Liepelt et al., 2009). The discovery of MN makes it possible to offer a simple explanation to the question of why we, in some cases, can understand the actions of others so quickly and easily. It is assumed that when we see another person move, in our brains, the same neurons are activated that work when we perform similar actions alone. Therefore, we actually feel what the other person is doing, and we can predict the continuation of his actions and goal without making any complex logical calculations. The discovery of MNs was the beginning of a new direction in neuroscience and psychophysiology: "Brain Reading" or "Theory of Mind". Data obtained within its framework showed the participation of the brain in the organization of social interaction (learning communication skills, predict the behavior of the communication partner), processes of emotional empathy and evolution of communication systems (from the poses and gestures - to speech) (Baars, Gage, 2010; Rizzolatti, Sinigaglia, 2008 - English, Oxford Press, 2006 Italian, Rafaello Cortina). There is experimental evidence indicating that MN distortion might be one cause of infantile autism (Ramachandran, 2014). In particular, this hypothesis explains some autistic features, such as the desire to fence oneself off from the outside world and avoid social contacts, difficulties in understanding and simulating actions and emotions of others and insensitivity to the feelings of others.

One of the most pressing issues for social psychophysiology and cognitive sciences is specific activity of the brain in terms of direct social contact (joint activities, communication): Is there such activity? If so, what are its mechanisms? In attempts to answer this question, the T.V. Chernigovskaya group proposed an original multidisciplinary approach based on a combination of methods of neurophysiology, psychology and linguistics (Chernigovskaya, 2007). Researchers studied the electroencephalograms (EEG) of two test subjects who participated in jointly solving cognitive tasks (involving visual-spatial orientation) under conditions of active social interaction (discussion). The hypothesis was that joint social actions involve simultaneous activity of certain communication partners in the brain.

The authors demonstrated that during solving cognitive problems in the situation of social interaction, the following activities were observed between the test subjects: (1) synchronization of electrical activity in the parietal area of the left hemisphere and (2) general changes in the frontal interhemispheric asymmetry EEG, which is typical for emotional support of communication. These data clarify the assumption widely discussed in the literature that the structures responsible for social communication are the prefrontal cortex, temporal lobe and temporoparietal junction. Note that the maximum temporal coupling in thee EEGs of partners during the communication process was achieved during the period when the process of solving problems (social interaction) was the most efficient. The authors associated the dominance in the EEG synchronization in the parietal region of the left hemisphere to the formation of the "general focus of attention in the system" during the interaction process, including between the partners themselves, through problem solving and the communication environment. Data from brain activity synchronization, together with data from the psychological and linguistic analysis of interactions between partners in the process of solving problems, allowed the authors to formulate the concept of a new psychophysiological phenomenon: cognitive resonance. This phenomenon is a specific complement to another phenomenon that is extremely important for social contacts: the phenomenon of emotional resonance, associated with the establishment of emotional interaction (alignment) of partners in communication.

Psychophysiological mechanisms of protecting "personal distance" in communication between members of the personified community

It is obvious that individuals need to live together (communication). However, why is it that sometimes, we poorly tolerate the constant presence of even our nearest and dearest loved ones, and, moreover, interference in our internal world? Why is there a "repulsive force" that makes each of us available and "open to others" only to a certain extent? Where does this need for "maintaining individual distance" come from? To help us understand the origin of the need for "maintaining individual distance", we may make a comparison between human societies and biological communities, where gregarious life is not combined with an individual maintaining his distance. The spontaneous strive for individual autonomy combined with the need for living together/cohabitation/joint residence is not typical for all species. It is notably absent in the communities of insects; bees inside a hive feel comfortable with one another physically (i.e., touching). No fear of contact is observed among fish as well. A fish shoal forms a solid mass. In rat families, animals are always ready for close physical contact, inalterably friendly. What unites these communities? Insects, fish, and rats have no personality. All individuals are similar and recognize one another based on key features that are common for all members of the group (i.e., based on the principle of "friend-or-foe"). In contrast to this kind of impersonal (anonymous) groups, the full-featured community of humans is personified, and every member of a community has his own unique "set of key attributes" (individuality). The measure of individual distance can be expressed in terms of a distance between individuals, which allows one to protect himself efficiently in case of being attacked by a partner. Neurophysiological studies conducted on monkeys showed the involvement of mirror neurons in the mechanisms of purposeful behavior and, in particular, the specific activity to preserve individual distance (Thill, Svensson, Ziemke, 2011).

Territorial behavior is partly retained in humans. For example, there is an involuntary irritation that we feel when standing in line in a crowded space, or an individual feels discomfort when being alone. Animals also experience the physical "I", including one's own body, one's own territory, and sometimes one's close relatives, the carriers of common genes. The instinctive need to keep all of this is manifested in the innate reflex of freedom. This term was introduced by I.P. Pavlov when he observed dogs who were unable to develop a new skill because of the strong exaltation: they constantly struggled against a leash because they could not stand captivity. People also have the reflex of freedom, but it manifests not only in response to the physical restraint but also to the mental infringement of "I". Methods of protection (keeping) "individual distance" are reactions of demonstrative aggression (anger), real aggression (attack) and selective behavior (fear). The defensive reactions are not the only means of protecting one's individuality; another method of expression and "self-protection from enslavement" is creative activity (Brodsky, 1987).

The following questions, related to preserving individual distance (personal space), remain open for investigation. 1) At which level of the animal world appears the need to preserve individual distance? 2) Why, in some cases (even among close relatives), is the desire to protect distance present, but in other cases (even with strangers), it is not? 3) Are there cross-cultural differences in efforts to preserve individual distance, and if so, what are the mechanisms of these differences?

Psychophysiological approaches to the study of cross-cultural differences

New directions in research of the relationship between the brain and culture, "cultural neuroscience"

Currently, the question of connection between social relations and neurobiology is not unusual or irrelevant to fundamental science. In modern neuroscience and psychophysiology, at the intersection of psychology, neuroscience, cultural anthropology and genetics, new types of research are gaining momentum: experimental studies of the connection between the brain and economy (neuroeconomics), the brain and politics (biopolitics), the brain and art (neuroesthetics) and, more generally, between the brain and human culture (cultural neuroscience) (Falikman, Cole, 2014; Zhou, Cacioppo, 2010; Kitayama, Uskul, 2011; LeClair, Janusonis, Kim, 2014). In light of these new lines of research, there are studies of the connection between brain plasticity and the acquisition of different forms of cultural experience and studies of physiological determinants of cognitive processes in different cultures (Millar et al., 2013; Kelkar, Hough, Fang, 2013). Ideas about existence of the brain structures that are substrates of social functions, internalized in the evolution and ontogeny, are naturally combined with the ideas of social neuroscience and social psychophysiology.

Brain and processes of social categorization

A mainstream neurocognitive and psychophysiological study of cultural phenomena is the investigation of the mechanisms of "social categorization", the perception of the social environment in the form of the categories of group membership and position in the social structure, which is associated with certain behavioral expectations (Contreras, Banaji, Mitchell, 2011). Modern social psychophysiology data provided evidence of specialization of the brain in relation to the processes of social categorization as an important factor in the evolution of Homo sapiens (Kinzler, Spelke, 2007).

The brain and social perception: attitudes towards different social groups and socially oriented information

There is evidence (EEG, fMRI, PET) of a statistically significant difference in the reactions of the human brain in the perception of different social groups: representatives of their own and of a "foreign" social group (Rilling, et al., 2008; Volz, Kessler, von Gramon, 2009; Vrticka et al. 2009; Van Bavel, Packer, Cunningham, 2008), carriers of different political views (Knutson et al., 2006; Rule et al., 2010; Falk, Spunt, Lieberman, 2011), representatives of different age groups (Leibenluft et al., 2004; Hoehl, et al., 2010), representatives of different sexes (Freeman et al., 2010). In these and many other studies, it was found that the perception of various social categories involves the same areas of the brain, which made it possible to formulate the hypothesis of an elementary universal mechanism in the brain providing representation of the social world (Shkurko, 2012).

Cross-cultural differences in the mechanisms of social cognition are also demonstrated in the works devoted to the study of cultural differences of perceiving social information (Ng et al., 2010; Harada, Chiao, 2010). Important discoveries were made in the field of perception of other people among representatives of collectivist cultures and individualistic cultures. In particular, it was found that in collectivist cultures (conventionally, Eastern cultures), the perception of close relatives or friends activated areas of the brain associated with the perception of their own "I". This finding can be interpreted as a consequence of including "dear and near people" (friends and relatives) into the self-concept. Such an effect is absent in individualistic cultures (conventionally, Western cultures). The fact that the differences between cultures are reflected in the specific activity of the brain confirms the need for further development of psychophysiological methods with the purpose of using them in cross-cultural and inter-cultural studies.

Psychophysiological approaches to the study of processes of social categorization in the field of international relations: racial perception, stereotypes and prejudices

In social neuroscience, when dealing with the processes of social categorization, maximal attention is given to the study of racial perception, stereotypes and prejudices (Ito, Bartholow, 2009; Dickter, Bartholow, 2007; Knutson, et al., 2007). Most research in this area is performed in the United States due to its practical importance in that country. Thus, the first pioneering research has revealed the role of the amygdala, usually associated with a reaction to emotionally significant stimuli, in the perception of people of another race (Hart et al., 2000; Phelps et al., 2000). Research of Cunningham and colleagues (Cunningham et al., 2004) demonstrated the importance of neuroscience research for understanding the cognitive processes involved in the perception of individuals of one's own and other races: fast (30 ms) activation of the amygdala in response to unconscious demonstration of people of other races was absent when the stimulus exposure time exceeded the threshold of conscious perception (0.5 s), which can be interpreted as a consequence of the suppression of the automatic stereotyped response by controlled processes. The differential response of the human brain to the exposure of representatives of an individual's race and/or ethnic group during the performance of different experimental tasks, from passive perception to imitation and meaningful judgments (Golby et

al., 2001; Richeson, et al., 2003; Lieberman et al., 2005; Adams et al., 2009; Bruneau, Saxe, 2010; Xu et al., 2009; Cheon et al., 2011; Losin et al., 2012), indicates that racial (ethnic) categorization is deeply rooted in the architecture of social cognition, possibly confirming the hypothesis of racial categorization as epiphenomenon of evolutionary formed mechanisms of recognition of coalitions (Kurzban, Cosmides, 2001).

However, already beginning to gain momentum is research on the neurophysiological basis of social cognition; there appears to be serious methodological problems. Thus, according to the classical neurophysiology and modern neuroscience, narrow brain specialization is not confirmed, even for the basic physiological (e.g., breathing) and psychological (attention, memory, emotions, speech, perception) processes. Considering socially loaded categories, such specialization is reliably captured only in the case of the perception/identification of faces (temporal cortex and adjacent amygdala). The task of finding brain correlates (patterns of brain activity) for multiple valued stimuli categories, such as "marital status", "political affiliation" or "social hierarchy", appears, from the point of view of the experimenter-neurophysiologist, to be an ill-posed problem for which there is no unique solution. In this sense, what is the fundamental difference between proposed research projects and an older project by F. Gall, which investigated the localization (in the brain) of such personality traits as "independence," "amor patriae" and so on? The proposed method of meta-analysis (analysis of the data obtained by different authors within the framework of socially oriented neurophysiological research) in this area has accumulated too little statistically significant material, and it has been contaminated by "noisy" differences in terms of specific experiments (Van Overwalle, 2009). Meta-analysis in the field of modern neuroscience and psychophysiology references works performed, as a rule, using fMRI and PET. First, the analysis of tomograms is a type of statistical analysis, with limitations to the accuracy and reliability of data on the localization of brain activity patterns. Second, fMRI and PET are unable to determine the type of physiological processes (arousal/inhibition) occurring in the activated areas, and they do not allow functioning areas to be detected with low energy requirements. This implies a possible situation: all activated zones (pixels/voxels of tomograms) are areas inhibited by the brain as those which disturb analysis of social categories, and areas which are actually associated with this analyses consume less energy, so that the methods are not able to detect them (due to space-time thresholds). fMRI and PET raise serious claims of physiological, technical and (mainly) methodological issues, the consideration of which would be extremely fruitful in planning research (including meta-analysis) in the field of social neuroscience (for review, see: Logothesis, 2008; Figley, Stroman, 2011).

Conclusion

Social behavior has an evolutionary background and a real genetic basis; it is also created by selection and is rooted in the instinctive behavior of animals.

Research of biological foundation of social behavior engages representatives of sciences such as ethology, animal psychology, psychogenetics, evolutionary biology, evolutionary psychology, ethnography, and sociobiology.

In the last 10 years, there has been rapid development of new interdisciplinary areas of research at the intersection of neuroscience and social sciences (social psychology and behavioral economics), social neuroscience and social psychophysiology. Within the framework of social neuroscience and social psychophysiology, brain structures associated with conducting social behavior and interpersonal communication have been studied. The approaches and methods used in social psychophysiology and neuroscience allow researchers to come close to understanding the evolutionary biological origins of the fundamental phenomena underlying social behavior, such as social perception, social cognition, social categorization and cross-cultural differences.

"Historical and evolutionary synthesis: the paradigm of diversity in the biological, social and mental systems." The purpose of this program is to (1) investigate the justification that diversity, specialization and symbiosis are universal phenomena that characterize many aspects of life; (2) analyze the role of mental diversity in the development of the biological, social and mental systems; and (3) analyze the causes of the unpredictability in the outcomes of evolutionary leaps in biological and social systems and objectively prove the laws of preadaptation (i.e., provide answers to future challenges in unexpected situations.

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Theoretical and empirical approaches to using films as a means to increase communication efficiency

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The theoretical framework of this analytic study is based on studies in the field of film perception. Films are considered as a communicative system that is encrypted in an ordered series of shots, and decoding proceeds during perception. The shots are the elements of a cinematic message that must be "read" by viewer. The objective of this work is to analyze the existing theoretical approaches to using films in psychotherapy and education. An original approach to film therapy that is based on teaching clients to use new communicative sets and psychotherapeutic patterns through watching films is presented. The article specifies the main emphasized points in theories of film therapy and education. It considers the specifics of film therapy in the process of increasing the effectiveness of communication. It discusses the advantages and limitations of the proposed method. The contemporary forms of film therapy and the formats of cinema clubs are criticized. The theoretical assumptions and empirical research that could be used as a basis for a method of developing effective communication by means of films are discussed. Our studies demonstrate that the usage of film therapy must include an educational stage for more effective and stable results. This means teaching viewers how to recognize certain psychotherapeutic and communicative patterns in the material of films, to practice the skill of finding as many examples as possible for each pattern and to transfer the acquired schemes of analyzing and recognizing patterns into one's own life circumstances. The four stages of the film therapeutic process as well as the effects that are achieved at each stage are described in detail. In conclusion, the conditions under which the usage of the film therapy method would be the most effective are observed. Various properties of client groups and psychotherapeutic scenarios for using the method of active film therapy are described.

Keywords: film therapy, films, psychotherapy, communication system, effective communication

Introduction

The perception of films is a process that includes a direct viewer's perception as well as the imaginative perception of its authors in its structure, and it can be said that it is a complicated informational, or, to be more exact, communicative, system. The communicative nature of films can be easily seen in the following example. When we look out of the window of a moving train, we never think of joining the views that we see into one logical chain. If we first see children playing and then cars crashing or young people having fun, we will not join the images into cause-and-effect or any other logical or artistically meaningful sets, unless we want to artificially create a text such as "This is life" based on the visual input that we have received. In the same way, looking out of the window, we will never ask ourselves: "What are these mountains for?" However, in discussing a film, such questions would be quite appropriate (Lotman, 1973).

In films, we can single out the elements and the means of the connection of images in a message that is realized in a communicative system (Voroshilova, 2007; Yanovsky, 2008). Shots are such elements of a moving picture. Looking at such images in respect of transmitting information, we can say that a moving picture is a certain sign system that is encrypted in an ordered series of shots and aimed at a decoding process of perception. The apparatus for deciphering dynamic screen images is formed quite slowly. However, as soon as this apparatus has been created in its most elementary form, it continues to develop under the influence of imaginative perception throughout a person's life (Zhinkin, 1978).

Film language

The basis of film text is not taught specially. There are no special institutes or rules for mastering this form of communication, as it is not the easiest and most evident means of satisfying human communicational requirements. The elementary forms of film expression are acquired spontaneously and intuitively, and they are rarely self-reflected. Even in specialized educational organizations, the teaching of film language does not have a systematic character: students learn the separate aspects of montage theory, film psychology and other approaches, with no conceptualization. Ultimately, students achieve a high professional level based on their own extensive experience of viewing and working with film material.

The deliberate use of films as the means of increasing communication efficiency is quite a new and scarcely studied notion (Bondarenko, 2000). In the modern world, it is done mostly in the context of film therapy, which achieves changes in a client's communication by solving personality problems and working with communicative mindsets (Korablina, 2001; Pleskachevskaya, 2001; Ulus, 2003). Film therapy requires a special understanding as a separate style of practical work, and it needs to be used competently and in a balanced way to achieve its maximal advantageous and well-controlled effects.

The first and the main film therapy restriction is connected with the psychological evolution of the subject. In case a person is not able to react analytically or verbally to the film material that is shown, the range of means that are available with which to treat him can be very narrow (Carroll, 2008). Moreover, experimental work has shown that all people do not resonate with film characters with the same ease. This creates another restriction that is based on the personality of the viewer, influenced by personal qualities such as emotional capability, empathy, or sensitivity (Kvasova, 1993).

Thus, on one hand, we have a viewer who cannot analyze a film but can "feel" it, and the developing effect in this case is minimal. On the other hand, we can have a viewer with a good understanding of the creative product that can remain absolutely indifferent to what is happening on the screen (Coplan, 2006). If we do not take special steps to increase the effect of working with such viewers, it is unlikely that we will be able to achieve positive results in psychotherapy or education through the means of films. During our investigation into this problem, we have found no special recommendations on this topic except for general advice such as "develop the lacking components of film perception."

Despite the vast range of film material that is available, very few films can boast a high developing potential (Wooder, 2008). Yet few films can fully correspond to a client's individuality or reflect a client's life situation. A psychotherapist should be aware of the films that he can target that correspond with the needs of his clients. Otherwise he will be obliged to trust a film guide (or a film collection) that was created by other specialists that most are likely based on other methodologies that lack the formal proof that a film is safe and corresponds to a specific client (Solomon, 1995). Firstly, the practice of film therapy Russian and western psychotherapy tends to use films that are consonant with the problems of persons or groups. These films are selected on the belief that the chosen films contain material that can be facilitate solving such problems. Secondly, such films are generally chosen intuitively, based on the personal and professional experience of the psychotherapist (Pleskachevskaya, 1998; Solomon, 2001; Ulus, 2003; Wooder, 2008). Such approaches in determining psychotherapist and client interactions can scarcely be considered to be well-grounded.

The unobviousness of the process of transition from film to reality is a significant restriction that is widely seen in various formats of film therapy. In other words, there are two types of extremes. In the first case, the psychotherapeutic communication is based on the film, to some extent disengaging the client from his own life and problems, making him think about the fate of distant or non-existent characters. In the second case, the film is only a pretext for discussing the client's problem, that is, the experience and philosophy of the characters and the author are almost disregarded. Thus, the client does not transcend the limits of his individual perception of the situation.

The client's dependency on the psychotherapist in psychotherapy appears to be the result of the low-grade presence of an educational component in such work. This phenomenon is characterized by the fact that the client demonstrates high or significant results within the work process, but in independent life he is not able to apply his new experience that was acquired in psychotherapy (Hill & Knox, 2009, Meltzoff & Kornreich, 2007). This leads to repeated visits to the specialist over a long period of time, sometimes with additional sessions, not to mention the difficulties that are associated with overcoming the end of the psychotherapy. We believe that these shortcomings could be avoided if we disclosed the methods that are used by the psychotherapist in his work and teach these methods to clients. In this way of the client can reproduce the psychotherapeutic effect in his everyday life.

Theoretical groundings

The Laboratory of Scientific Basis of Psychotherapy and Counselling Psychology of the Psychological Institute of the Russian Academy of Education has conducted extensive research that is devoted to the area of practical psychology that is known as film therapy. For many years, this approach has been applied in family speech and language therapy — including work with stuttering youth and adults (Karpova, Danina, Kiselnikova & Shuvikov, 2011). We tried to find the theoretical grounds for this method and to disclose the mechanisms for reaching the psychotherapeutic effect by watching films. The purpose of our previous research was to determine the factors that contribute to the healing effect of certain films when they are presented to groups of stuttering patients. For this purpose we used a pragmatic approach, considering different forms of psychotherapeutic communication as instruments to subjects to reach certain emotional, cognitive or behavioral changes. These changes are considered in terms of their *psychotherapeutic effect* in the study. Over 20 classical psychotherapeutic approaches were used in this case (APA Dictionary of Clinical Psychology, app. 2013). These approaches included gestalt therapy, logotherapy, psychodrama, cognitive therapy, IPT, and SFBT.

Traditionally the psychotherapeutic effect in psychotherapeutic communication is achieved by including special techniques that provide for the evolution of a client's communicative abilities (Brammer, Abrego & Shostrom, 1993). In spite of the existing differences between the theories and methodologies of different psychotherapeutic schools, many of the techniques that are used in practice have similar effects, identical algorithms and general meaning content. For example, the technique reframing (in family system therapy, NLP, in the work of Virginia Satir, Milton Ericson), the technique positive redefinition of symptom (in the strategic psychotherapy of G. Nardone), and the technique emphasis on humor (in provocative therapy) cause similar effects. These approaches frame scenes from another point of view so that the client feels relieved or is able to better handle a challenging situation. Thus, such techniques can be united into one group. We have named such groups of psychotherapeutic techniques that are united by these properties *psychotherapeutic patterns.* The survey results of a large number of experts have given us a closed list of such patterns that form the basis of our future work (Danina & Kiselnikova, 2012).

Our research was based on the supposition that a film message may contain psychotherapeutic patterns that were added by the authors (consciously or unconsciously). These patterns can appear in characters' speech as well as in actions (for example, they can demonstrate cognitive restructuring or positive self-talk or context reframing). The more patterns that a film contains, the higher its healing value and the greater its psychotherapeutic potential will be.

We have established the aim of identifying general universal patterns in films as a means of influencing audiences and to harness the potential of films to facilitate the desired changes of clients. To achieve this, we have used the closed list of psychotherapeutic patterns to analyze several films, marking their presence with the help of a specially designed method. As a result, we have made a so-called **psychotherapeutic profile** for each film, that is, a record of the psychotherapeutic patterns that are contained in the film material, including such aspects as their intensity and frequency of use. We assume that such a profile reflects the *psychotherapeutic potential* of the film, that is, how strong the psychotherapeutic effect of each film can be.

By incorporating the effects of psychotherapeutic patterns of classical verbal psychotherapy, we could easily create a model effect of a film on an audience. This method allows us to predict personal changes that could result from an individual who watches a certain film. In our research, these models were tested experimentally: we have proved that the predicted effect does take place, although the viewers are barely conscious of it. The tests were run in in such a way that the subjects did not know the evaluation criteria (the so-called projective methods) that served as the main indications of the changes.

Method description

We have obtained evidence of the fact that watching films can have a certain predicted influence, but we have also noted that the intensity level of such an effect differed greatly among the test subjects (Danina & Kiselnikova, 2012). In our study, we observed a significant difference in the results that were obtained using standardized questionnaires (questionnaire SAN (Doskin et al.), Test "Rigidity" (N.D. Levites)), as well as techniques that require subjective scaling (Osgood's Semantic differential, adapted to the subject of speech and speech problems; a modified self-esteem scale (T. Dembo-S.Ya. Rubinshteyn, modification M. Danina) and projective techniques - drawing tests and film reviews by our subjects. For example, a significant difference was found in the results of the diagnostics before and after watching the films, but on verbal questionnaires and output scale, it was not demonstrated. Projective drawings "Me and my speech" (for stutterers) and "I am among the people" were significantly different from the parameters: a) increasing the size of the self-figure (not less than 1.5 times — 60% of the test), b) increasing size of human figures (not less than 1.5 times – 70% of subjects), c) magnification of the self-figure (not less than 1.5 times -100% of subjects), d) increasing the image details of people (new components, additional elements — 70% of subjects), d) an increase in the number of figures of people in the picture (more than 1 additional person -70% of subjects) e) imaging contact with the outside world (the addition of more than 1 item - 70% of subjects), g) centering patterns (a visible shift to the center of the sheet -60% of subjects). According to the parameters of the analysis of the projective tests obtained data that suggest ego strengthening, a focus on social relations and decentration, as well as the identification of the current moment.

The dynamics of positive-thinking patterns were tested by a content analysis of film reviews. The similarity of the film and the review patterns was statistically significant (Kolmogorov-Smirnov test). A week later, a complex re-test revealed no significant differences between the results before watching the film and after re-collecting the data. We could also come to the conclusion that such changes were hardly understood and lasted only for a short period of time (i.e., they soon faded).

Based on the results, we decided to develop a film therapeutic system in such a way that the effect achieved as the result of watching a film could be controlled, understood, and last as long as possible. Teaching viewers to understand the contents of the film that were the richest in the psychotherapeutic sense became the key to such results. We have adapted the names of the psychotherapeutic patterns for a non-professional audience, determining the main principles on which the education would be based and developing a special course so that the speech and language therapy group members could attend on a part-time basis.

We consider the possibility of "overriding" clients' defense mechanisms to be of the utmost importance at the beginning stages of the therapeutic process, to be the main virtue of film therapy. On the one hand, our approach emphasizes an educational target instead of a healing one. On the other hand, the group discusses the communicative problems of the film characters, and not their personal ones. This approach gives the viewer the opportunity to analyze the characters from outside, to form a critical observer's position, and to disclose his own attitude to the situation with no fear of being blamed. A gradual, smooth transfer from analyzing the film material to personal life material creates an atmosphere for the process of safe correction and rehabilitation and decreases anxiety and resistance to psychotherapeutic action.

In addition to the obvious effects that are supported by the experimental research that has already been conducted, we wish to address the additional positive changes that become possible due to the active role of the film therapeutic group members. These positive changes include the disclosure of personal creative potential, the symbolic transfer of the film script writer and director's position to the position of being the script writer and director of one's own life.

The ability to use dramatic films as well as popular, animated and feature films as well as films of different genres makes the film therapy method attractive for working with clients who are not interested in direct psychotherapeutic work.

Our method of film therapy takes participants through four main stages. The stages are conditional: you can miss some of them and pay more attention to the others. The full active film therapy cycle is mostly appropriate for working with groups of clients with similar social positions that are joined by a shared problem that requires intensive work as well as a significant amount of time and resources.

In the following section we will review the work stages more closely.

1st Stage — Introduction

This stage aims to change the usual (intellectual) experience of watching films as entertainment and to create the possibility of viewing films as a therapeutic element. This stage is introductory to the work in general. We cannot say that this aspect offers much by itself; but the main idea is to get a client interested, to increase the client's motivation to work for self-improvement and to solve the problem. Interestingly, many film clubs stop at this stage and do not move ahead towards solving the problem. However, we cannot deny the fact that the first changes in a viewer's life can occur at this stage.

First of all, the very fact that a film is seen as the film "about you" and "about your situation" may initiate the process of self-analysis and understanding. Sometimes this is enough for psychologically developed clients to start acting and changing. Secondly, if the work is done in groups, all of the classic mechanisms of group dynamics, which depend very little on the psychotherapist, are engaged, and the work content begins. Thirdly, if a psychotherapist manages to convince the client of the efficiency of the suggested method, the anticipation of positive effects from the future work increases. This provides for a serious growth of placebo effect in the general effect of group work.

This stage includes watching films that are specially chosen with free commenting through writing. The films are chosen in accordance with the group specifics: either with a focus on the stated problem or oriented to social factors. In any case, the film choosing process should be base not on intuitive mechanisms, as it stated above, but on the method of film analysis we are suggesting, which is described in detail below. The analysis can be detailed and include a psychotherapeutic prediction of the results of viewing. It can also be superficial, determining the general "applicability" of the film for working with a given problem (or topic). The group leader decides upon the extent of analysis based on many factors, from time and resources that he has at this stage of the process to the expectations that he sets in connection with achieving a certain psychotherapeutic effect.

At this stage, we can logically expect the following effects:

- 1. Emotional "contamination": Some viewers are sensitive to what they see on the screen, and they are easily "contaminated" by emotions that have been set by the authors, displayed by the actors and strengthened by the cinematography. This means that a person in a bad mood (not to be confused with clinical depression) may feel better after watching a happy and light film; a viewer with "accumulated" feelings that cannot be expressed may feel calmer after crying over a touching scene; an uncertain client may feel the desire to act, inspired by a brave and active character. The emotional contamination does not solve the problem by itself, but it has the effect of making changes easier and creates some "ground" for successful psychotherapy.
- 2. Understanding the client's problem: This is also a more preparatory effect than the psychotherapeutic one. However, if a client realizes the problem, he will be able to find the best-suiting means of solving it and achieve greater independence from the psychotherapy. This can be compared to a mechanical engineer and a broken device: unlike an ordinary user, he is able to manage and repair it as he wishes.
- 3. Understanding one's own abilities connected with the resolution of problems: Most often, the films at the first stage of film therapy contain characters' attempts to solve their problems, that is, the viewers are presented with possibilities to overcome their own difficulties. A client may not use the approach from the film in future, but widening his understanding of possible ways out of the current situation creates a supportive environment for further searching.
- 4. Creating motivation for self-improvement and trust for the suggested method: This effect is achieved mostly through the competent introduction of the method by the psychotherapist, his ability to create a trusting relationship, to explain the essence of the work that is being offered, and to formulate

the main results that can be expected. The film itself plays a supplementary role, demonstrating the ultimate aim of the psychotherapy through vivid screen images.

- 5. Self-revealing in the comments about the film: The uniqueness of film therapy is in its capacity to create a safe environment for education and free discussion about the characters and happenings in the films without focusing on the personal feelings of the viewer. However, the material that is provided by every member (through comments on the film or piece that is watched) is identified indirectly by the psychotherapist as the content of individual feelings, irrational thoughts, systems of a person's relationship with the world and himself.
- 6. Raising new common topics of discussion with the psychologist (pedagogue): As we have already indicated, the unique value of film therapy is in its ability to have an indirect psychotherapeutic impact on the viewer by bringing new topics that are connected with the client's problem but do not oblige him to open up in front of a specialist in the typical communication context of "Client" and "Psychotherapist." Therefore, a psychotherapist is able to manage a client's internal state and the psychotherapeutic process in general, speaking on a seemingly different, external level from the client reality.
- 7. Indirect communication with the film characters: Broadening the outlook, de-centration, ability to integrate various people's experience these are the undeniable results of dialogue communication. The same effects can be reached indirectly, mediated by the film. The communication of a film's characters, how they express their thoughts or behave in certain ways, can demonstrate different ways in which they may view their own situation.

2nd Stage — Education

The name of this stage speaks for itself. Its main aim is to teach clients how to recognize psychotherapeutic patterns in the material of the suggested films. What does this mean? Let us have a closer look. So, as stated above, a psychotherapeutic pattern is a group of psychotherapeutic procedures and techniques that are linked by a similar psychotherapeutic effect. This means that there is a certain universal mind procedure, which, as a result of its translation from the psychotherapist's words to the client's psychic world, brings some changes to his inner world or behavior.

This is what constitutes verbal psychotherapy, in which a new experience is born out of the communication between two people and leads to solving patients' problems. We believe that the processes at the very least automate the psychotherapeutic process and at best help the psychotherapist to effectively facilitate the resolution of a client's problems and help the client to experience a positive change are formed in during psychotherapeutic training.

Assuming that it is true that such universal mind processes are mastered directly or indirectly in the course of the professional training of a psychotherapist, perhaps we can teach clients psychotherapy with the intention of making "self-psychotherapists," that is, to provide them with a special, psychotherapeutic thinking style? To be honest, this idea is not new. Indeed, it runs through cognitive psychotherapy, is present in behavioral psychotherapy, and has found partial reflection in psychoanalysis. Our method of bringing this idea into a client's life experience is different only in the fact that we do not limit ourselves to one concept of the individual or psychological problem model. On the contrary, we have accumulated the means that are used by many different practices as part of our approach.

Thus, we have decided to teach the viewer to recognize in films the universal mind processes that are actually psychotherapeutic patterns. The idea is that, one way or another, any psychotherapy works on the idea of analogy and natural psychic processes. The difference between "life as it is" and "life under the psychotherapy gunpoint" is only in the fact that the psychotherapist consciously and deliberately models the client's mechanisms that are naturally used by the people who are faced with a certain problem. So, if psychotherapy is a model of effective, but natural human life, then psychotherapeutic methods are also natural, true-life ways of solving problems.

This means that such approaches can easily be found by film authors intuitively or based on their life experience. Of course, the antitherapeutic models that are often seen in films and created especially to increase the dramatic effect of the film, its emotionality and depth, have their own impact. However, teaching clients to recognize psychotherapeutic patterns in films minimizes the influence of such negative models and increases the safety of viewers when they watch such films.

Thus, we accept that psychotherapeutic patterns are a human reality, and consequently, this reality is reflected in films. Now we only need to teach the viewer to "see" it. This is what we do at the second, educational stage of our work. To achieve this, all of the film therapy members must go through the following stages:

- 1. Getting to know a detailed list of psychotherapeutic patterns, describing their criteria with the corresponding examples.
- 2. Practicing the skill of finding as many examples as possible for each pattern.
- 3. Watching short-length films or cartoons that contain no more than five main patterns, during which each member of the group conducts an individual analysis. The analysis is completed by the group as a whole.
- 4. Watching various film materials that contain psychotherapeutic patterns, working at home.

Effects: De-centration, mastering psychotherapeutic thinking skills, creating prerequisites for self-therapy.

3rd Stage — Summary

Aim: To transfer the acquired schemes of analysis and to recognize the psychotherapeutic patterns in one's own life circumstances.

Content: To transfer the schemes of psychotherapeutic thinking into the life of group members, which provokes several discoveries and solutions of problems through the methods that were learned at the previous stage.

Effects: To form an autotherapeutic system that can be reproduced and applied to any situation.

4th Stage — Conclusion

Aim: To make and view the group's own film that is shot on the basis of the psychotherapeutic patterns that were learned and which allows them to share the problem-solving experience with future film therapy members.

Content: To choose the psychotherapeutic patterns, contribute to the psychotherapeutic effect, choose and shoot the situations that translate the psychotherapeutic patterns, develop the plot and edit the film.

Effects: The accumulation and consolidation of the knowledge and skills that were learned by the members, the prolongation of the therapeutic effect.

Conclusion

Thus, the system of film therapy that we created based on teaching clients new communicative sets and psychotherapeutic patterns through watching films is a new and promising method of psychotherapy.

The results of our research suggest that watching films has significant therapeutic benefits for certain issues or types of clients. Thus, based on the collected data, we found that watching films as a part of therapy significantly decreases clients' defensiveness and resistance toward therapy. It gives clients' the opportunity to discuss their problems from perspective of outsiders and allows them to analyze the situations and behaviors that they experience and become less guarded in discussions. This approach seems to be especially helpful as a part of group therapy. The results of self-reports and projective tests shows a significant difference in the measures of self-esteem, attitude toward self and positive thinking patterns before and after watching films.

Traditional film therapy uses ways of bringing the emotional impact of films through the general mechanisms of contagion and empathy, but, as the experience of our studies in this field shows, the effect of films achieved solely by the impressions of viewing, is impermanent and can rarely be transmitted to the wider life context of a person (Danina, Kiselnikova, 2011, 2012). A lack of an expressive educational component can be considered to be a significant problem for using films in psychotherapy. A client's autonomy from the psychotherapeutic process, acquiring basic communication skills and an understanding of the principles of transforming one's own difficult situations, including new problems that are not singled out in the course of the therapy, will by all means be one of results of effective development. This appears to be the major challenge in classical film therapy. Moreover, very often the plot of the film is built on the non-constructive communicative behavior of characters. That is the reason for adding the educational and summarizing stages to the therapeutic process — it is supposed to prolong the effects of treatment and make them more sustainable. Additionally, it solves the problem of clients' dependence on the psychotherapy.

Based on our research and practical work experience, we recommend using the method of active film therapy in the following circumstances:

- supporting group social rehabilitation and therapy;
- clients with apparent psychological defense mechanisms;

- weakly shaped client requirements (such as general tasks of self-development, life quality improvement);
- psychological work with clients that do not have a psychotherapeutic request (for example, teenage groups and/or school classes).

Limitations

Of course, the suggested method has a number of significant restrictions. One of the most important of which is its "bulkiness": you need to spend from a month to half a year to go through the whole education cycle. Not all categories of clients have that much time to spare for psychotherapy. Moreover, there are psychotherapy and rehabilitation issues that can be resolved in a shorter period of time with other means used by different psychotherapeutic schools. Thus, the film therapy method cannot be considered to be effective for certain types of client problems from the viewpoint of economy criteria, judging by time parameters. We should also note that the complete experience of the active film therapy course by members of a film therapy group requires the participation of a specialist in the film sphere at the final stage (developing the scenario and film editing). In this context we can guarantee that the film that is created by the group members will possess high psychotherapeutic potential not only from the point of view the presence of a healing context but also as a beneficial experience for viewers. This condition also makes the film therapy method uneconomical based on the human and technical resources that are required.

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Culture in psychology: Perennial problems and the contemporary methodological crisis

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This article begins by discussing the origins of the methodological crisis in psychology. In the literature the idea of a permanent methodological crisis in psychology, lasting since the 1890s, dominates. We contest this view and argue that the contemporary methodological problems in psychology should be considered within the context of the novel and larger crisis challenging all socio-humanitarian knowledge in the face of the transformations in social reality in recent decades. The nature of these transformations and their implications for the theory and methodology of the socio-humanitarian sciences are analyzed by drawing on the sociological literature, which is more sensitive to changes in social life than is psychology.

Prominent sociologists argue that the "old" theories and interpretations of the "social" are no longer relevant in the new, highly complex, and globally unstable reality; this new reality has largely transformed the dimensions of human beings' existence. Meanwhile psychology still tends to comprehend the universal nature of the human. This position undermines the relevance of both psychology's theoretical models and the practical implications derived from these methodological assumptions.

We argue for revision of the perennial psychological problem of the biology-culture interaction in human nature. To resolve the contemporary methodological crisis in psychology, a shift is needed from theories of universal and immutable human nature to the idea of the human as an infinitely changing creature. Because culture is, primarily, the ability to change, wherein the speed and extent of changes are unique for humans, distinguishing them from other living beings.

Keywords: methodological crisis, general crisis of socio-humanitarian sciences, crisis in sociology, social reality, social transformations, biosocial problem, human nature

Introduction

Increasing dissatisfaction since the turn of the century with the methods and the corresponding theoretical thinking in psychology can be observed in international science (for example, Adair & Vohra, 2003; Essex & Smythe, 1999; Goertzen, 2008;

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Grace, 2001; Koltsova, 2007; Mazilov, 2006; Michell, 2003; Mironenko, 2007, 2008; Schwarz, 2009; Toomela, 2007; Valsiner, 2010; Yurevich, 1999, 2005; Zhdan, 2007; Zittoun, Gillespie, & Cornish, 2009).

Common complaints about mainstream methodology are: fragments rather than wholes and relationships are analyzed; simple trait differences rather than complex psychological types are studied; data are not systematically related to complex theory; there is more concern with the accumulation of facts than with general theory (Toomela, 2007).

Indeed, quantitative calculations of separate parameters without necessary interpretations, on the one hand, and blurred qualitative descriptions of particulars without generalizations, on the other hand, both of which are dominant in modern mainstream research, contribute to imbuing psychological science with a growing inventory of scattered facts that do not lead to genuine understanding of human personality and essential qualities of humans. As a result we find a decrease in the prestige of psychological science, which manifests itself in methodological selfassessment of its status as a crisis as well as in a general decline in its value in public consciousness.

Understanding the origins of the current situation and identifying the causes of the crisis in contemporary psychology are necessary for finding a way out, just as treatment is impossible without a diagnosis and a remedy must address not only the symptoms but the causes of a disease.

Is it still the same old crisis?

What are the origins of the actual crisis in psychology? In the literature the idea of a permanent methodological crisis in psychology, lasting since the 1890s, dominates. As has been noted many times (Veresov 2010; Yurevich 1999, 2005; and others), assessments of methodological crises in psychology given by William James, Karl Bühler, Lev Vygotsky, and others, do not differ much from modern assessments.

Should we accept this view? Should we consider that, in psychological science for more than a century of its development, there were no changes radical enough to revise its general condition? New schools appeared; the norms and ideals of science changed in the course of the transformation of classical science into nonclassical and post-non-classical science; psychology became a mass profession, which significantly changed the ratio of academic to applied research and the structure of the professional community. Can it still be the *same* crisis in psychology? It hardly seems possible.

Moreover, the discourse of the renowned crisis of the late 19th century to the first third of the 20th century was and still is focused on the problem of the disunity of psychological science, on the lack of mutual understanding and constructive cooperation by theoretical schools (Hyman & Sturm, 2008; Koltsova, 2007; Mazilov, 2006; Yurevich, 1999, 2005, 2009; Zhdan, 2007). The key idea of the "old crisis" discourse was that various schools and traditions in psychology lack cohesion and integrative efforts. As a result there is hardly any concept or theory that is accepted and understood in the same way by everybody in the scientific community. Psychological academia is scattered and disunited, and this condition stops it from progressing further. Epistemological problems, although discussed, were and
are considered by most authors in the context of this disunity and are understood explicitly or implicitly as spawned by it.

However, we believe that there is every reason to assume that disunity is no longer a problem for mainstream scientific psychology and that the crisis of competing theories has largely been overcome (Mandler, 2011). We assume that this development was a natural consequence of the fact that in the second half of the 20th century in developed countries psychology became a mass profession in a globalizing world that required the development of common standards for professional practice and education (Mironenko, 2008). The contemporary discourse of the crisis includes discussion of epistemological problems as well as did discourse about the old crisis, and these problems are largely the same, but the factor causing the aggravation of these problems is no longer the disunity of great schools in psychology.

From time to time, a discourse on a crisis arises in the literature that gives grounds for the idea of a permanent, on-going crisis. However, we believe that regarding periods of that discourse arousal as different crises is more meaningful and constructive than the idea of one, continuing crisis. This change allows us to pass on from discussing perennial, intractable ontological problems of psychology to finding ways to overcome contemporary problems.

The temporal and spatial scope of the crisis

We fully agree with the assessment of the current state of psychological science as a crisis, but we think that the current crisis (a) does not cover the entire period of the 20th century and (b) at present is not limited to psychology; its roots should be sought in an area not limited to the history of psychological science.

We assert that it was not until the late 1980s that the first signs of the contemporary crisis appeared and that complaints about the mainstream methodology started to be constantly discussed in the literature. The word *crisis* along with *psychology* has appeared fifty times in the titles of publications on psychology listed in Scopus since 1966. Of these, 21 are not about the methodological crisis in psychology (they refer to crisis and trauma psychology, for example). The resulting 29 publications, which dwell on the methodological crisis in psychology, are distributed evenly, 1 or 2 each year beginning in 1987. However, from 1966 to 1987 there is not a single article on this crisis. Since 1987 papers on the methodological crisis in psychology have appeared regularly. We consider the main manifestation of this crisis to be the fact that this discourse has formed in the literature. Thus, we'll proceed below to discover the causes of the contemporary crisis. We start with the assumption that the crisis occurred in the last decades of the 20th century.

Another important issue is that we assume that currently we are witnessing a general crisis in human and social sciences, including psychology. Therefore we believe that the analysis of the causes and manifestations of the current crisis in psychology can benefit if it is not limited to the history of methodological thinking in psychology and psychological studies in the 20th century.

The general crisis in the social sciences has been clearly discussed in the literature since the late 1980s (Auerbach, 2006; Batygin, 2004; Oak, 2007). However, this discourse has not yet received sufficient attention from psychologists. We believe that considering the actual crisis of psychology as part of a general crisis of social sciences and humanities will allow us to reveal the nature of the crisis and to separate the factors generating the crisis from the perennial problems and contradictions in psychology (between applied and academic science, for example).

In the social and humanitarian disciplines, perhaps the most striking manifestations of the crisis we encounter today are in sociological science. Like psychology, in the last decades sociology has been experiencing complaints about its conditions, which have often been characterized as critical. Through the 1990s and across the millennium years, repeated concerns were expressed about the discipline's decline (Cole, 2001; Turner & Turner, 1990). The discourse of crisis in sociology has significantly intensified since 2007 as a result of the works of Back (2012), Crompton (2008), Gane (2011), McKie & Ryan (2012), Savage & Burrows (2007), Webber (2009), and others. Between January 2007 and November 2013 the word "crisis" along with "sociology" appeared 27 times in the titles of publications on social sciences listed in Scopus.

The causes and determinants of the contemporary crisis in sociological discourse

In general, the frame of crisis discourse in sociology has much in common with debates in psychology. Both sciences are full of complaints about empirical, theoretical, and practical issues, and in recent decades the tension of the debates has increased significantly.

Is it just a coincidence that two sciences whose subject domains overlap are experiencing separate crises at the same time? That seems highly unlikely. We argue that contemporary crises in the two sciences not only proceed in a similar manner but have common origins and common causes. Let us consider the analysis of the crisis in sociology; perhaps we will find ideas that help us to see anew the crisis in our own science and to discover its causes.

The causes and determinants of the current crisis constitute a major part of the crisis discussions in the sociological literature. There are several approaches to explaining the contemporary crisis in sociology:

- 1) The "traditional" explanation in terms of "old diseases"
- 2) The "institutional" explanation in terms of current bureaucratic organization and the institutional arrangement of sociological science
- 3) The "historical" explanation in terms of radical changes in social life that challenge sociological research with new realities

Although the first two explanations are to a large extent similar to explanations for the crisis in psychology, the third one seems not to be so common and deserves our close attention.

The historical explanation focuses on changes in social, economic, political, and cultural realities that produce new structures and institutions and therefore constitute a major challenge to sociology to cope with these transformations with adequate methodological tools. Changes in theory arise from the clash between the changing structures of scientists' reality and preexisting theories. The discourse on radical social changes constitutes a significant part of contemporary sociological debates on global social change and the related methodological challenge, which contemporary sociology still fails to meet.

According to the theories of Beck (2000), Giddens (2007), Lash (2009), Urry (2000), and others, we are living in a world that is dramatically different from the one assessed in earlier sociological theories, which are now unsuitable for the analysis of the new social reality. It is suggested that contemporary sociology is confronted with "a newly coordinated reality, one that is open, processual, non-linear and constantly on the move" (Adkins and Lury, 2009, p. 16). Lash argues that in the 21st century we are facing a "social reality of global flows, mobilities, and uncertainties" (2009, p. 185). In these conditions the classical approach of social theory — centering on the question "How is society possible?" — becomes irrelevant because it presupposes a conception of society as a real social phenomenon. For Lash, "It is no longer a question of finding the conditions of security of the social but being attentive to and describing this uncertainty" (p. 185).

Beck calls for a new type of sociological imagination that is needed for understanding the contemporary shape of global society. For Beck (2000), a "second modernity" emerged in the late 20th century. This phenomenon necessitates the embrace of otherness and a cosmopolitan vision for sociology. He argues that sociological analysis must move beyond the notion of a territorially bounded society because of the impact of mobility, globalization, and interdependence on social formations. It seems that it is no longer a question of finding the stable characteristics of the "social" but rather being attentive to the uncertainty that undermines the usual modes of thinking about society.

As for the challenge of the applied value of sociology, should we be surprised that academic science, which has failed to grasp reality because of the lack of adequate tools, is less useful for practice than applied research, which is less theoretically coherent but more responsive? It is plausible to suggest that if sociologists could enter the public discourse with a convincing and consistent vision of the social world and have a proper methodological toolbox to offer, they would become an essential part of society's development.

As we have seen, in sociology the idea that the cause of the crisis is a radical change of the very subject of science is discussed. The fact that in psychology such ideas are hardly conceived of may be the result of psychology's still being oriented mainly to comprehending the universal nature of the human. Meanwhile the time has come to realize that it is no longer a question of finding the stable characteristics of "the human" but rather being attentive to the uncertainty that undermines the usual modes of thinking about "the human.

Comprehension of culture in psychology the contemporary crisis

The contemporary crisis in psychology is due to changes in social reality, the scale and speed of which the old concepts cannot comprehend. As has repeatedly been noted in the literature (Castro & Lafuente, 2007; Marsella, 2012; Moghaddam, 1987; Rose, 2008), 20th-century mainstream psychology developed on the basis, first, of

assessments of the personality of a human belonging to contemporary Western culture and, second, psychological practices of culturing traits sought after in Western culture — These psychological characteristics acquired the status of universality in mainstream psychology, as exemplified by the concept of "universal human values." Because it took a Western native for a human in general, mainstream psychology is dominated by an implicit tendency to blur boundaries between human culture and human nature and to perceive both as basically static. Culture is regarded here as a kind of superstructure on the foundation of biology, and the unity of nature and culture in humans is considered as somewhat indivisible and forever given and specified. Within the context of this mythology, addressing the issue of the biological bases of psychological features is perceived as reductionism, and defining differences between animal and human, as a plea for cruelty to animals.

Such a metaphysical approach does not fit the reality of the contemporary, transforming multicultural world. The unity of nature and culture in humans is based not only on affinities but also on contradictions, and these contradictions account for the dialectics of change and development, both cultural and biological. Rose (2013) rightly notes that human sciences today have to rethink their relation to biology, as the successful development of biology in the 21st century has opened the possibility to consider it not as a limitation and fatal predetermination but rather as an opportunity and potential for development. Still more necessary for human sciences today is to rethink their relation to culture. A shift is needed from fixation on static concepts and implicit theories of immutable human nature to the idea of humans as infinitely changing creatures because culture is, primarily, the ability to change, the speed and extent of changes being unique for humans among other living beings.

Definitely, humans are animals. However, they are different from other animals because they have culture and the ability to adapt socioculturally. Such adaptations are the most rapid and radical in nature; they include not only adaptation to the environment but also the possibility of changing the environment and oneself. Contemporary cultural psychology attaches great importance to language acquisition and practices and pays a great deal of attention to the early stages of human language and conscience development and to mechanisms that provide entrance into the culture for an infant. However, (*it's not a result, it's a paradox. Искажен смысл.* Не в результате, а вопреки выше сказанному ок) we can find hardly any attempts to answer the question What is the difference between the communication processes in which the human baby and the animal cub are involved with their mothers? Moreover, in oral discussions, this question is usually perceived as irrelevant and inappropriate and as one for which there can be no clear, intelligible answer.

Meanwhile, some answers have been suggested (Mironenko, 2009). The signals that animals use in communication are comprehensible to all representatives of the species, while human languages are different (Leontiev, 1965/1981; Porshnev, 1974). Human language is fit for one task in addition to message transmission: withholding information from outsiders. In places of the compact residence of different cultures, such as the Caucasus, many languages exist in a small area. As a result, cultures do not mix; they retain their individual identity. Signals of human language are conditional and culturally specified; their connection to reality is me-

diated by culture. This is an essential feature of human language that distinguishes it from the "language" of animals from the first moments of life.

Another basic difference is that the signals animals use in communication are always directly related to vital needs and emotions, while human language provides not only orientation in the environment but also social interaction and survival of the individual and the group. Here we find conventional signs, and the relationship of the object and the sign is no longer a direct and inseparable one (Leontiev, 1965/1981; Vygotsky, 1997). Here the link between the object and the subject's attitude toward it is also not syncretic. Such a link provides an opportunity for reflection the possibility of developing consciousness and self-awareness. Through language, a new type of reality emerges, one composed of conventional signs and conventional rules of operating on them, and, with the ability to operate and create plans in this new sign reality, active transformation of the material environment becomes possible.

In the mainstream discourse, the fact is virtually neglected that commonly quoted Vygotsky counterposed drastically higher mental functions, which he called cultural and believed to be specific only to humans, to the "natural" functions, which both humans and animals have. Vygotsky is popular mainly among specialists in the "linguistic turn" in cultural psychology¹ but perhaps the most striking example of the development of his ideas is found in neuropsychology, in Vygotsky's colleague A. R. Luria's theory of the dynamic brain localization of higher mental functions (Luria, 1962, 1963). Luria proved that unlike "natural" functions, which are linked to specific brain structures, higher mental functions are organized as chains of conditional reflexes that are receptive to dynamic transformations and substitutions of brain units.

The implicit idea of cultural differences as being somewhat superficial, not affecting the basics of the human psyche, does not allow psychological science to reflect social reality adequately and to be useful to society in an age of tremendous speed and scale in cultural transformations. This type of psychology does not fit the reality of the contemporary multicultural world either for theoretical assessment or, even more important, for practice. A most important cause of the crisis in mainstream psychology is the confusion of ideals and values we are witnessing in the contemporary multicultural world; in this world, people have to understand each other and interact in situations of uncertainty and in a mix of civilizations with a multiplicity of values. Of special importance for understanding the problem is the moral conflict that arises in the course of interactions among people who belong to cultures embodying incompatible values and reference points (Mironenko, 2013). This kind of situation is not new or previously unknown in human history. Today, however, it is becoming:

• ubiquitous, whereas previously relatively constant contacts among communities with different cultural-moral orientations were confined to certain areas where cultural communities lived in close proximity

¹ Though interpretations of Vygotsky's ideas in the international literature are multiple and versatile (Dafermos, 2015).

- relatively constant, whereas previously it was intermittent, because even in those places where various cultural communities lived in close proximity "intercultural" communication was confined strictly to specific kinds of interaction
- universal, whereas previously such contacts were confined and entrusted to specially trained people, and in each culture there were rules and norms for communication with strangers and such contacts were monitored by the community and generally known

Today intercultural communication takes place everywhere and all the time; everyone is drawn into it, and rules are absent. In this kind of situation it may be expected that the more certain people are of the absoluteness of the moral values to which they adhere, the more frequently intercultural conflicts will occur and the graver their consequences will be. The greatest danger in a multicultural world is a slide from dialogue to confrontation and conflict. And this is precisely the result when one of the parties has unshakable confidence in its own knowledge of moral truths and in its right to judge those who do not share these "truths."

The problem of values and moral reference points is indeed a problem of vital urgency for contemporary society. It therefore seems not only useless but extremely dangerous to adopt a prejudiced approach to the study of this problem and to replace scientific investigation by faith in the infallibility of one's own ideals and objective analysis by missionary appeals and a search for justifications and accusations — a matter regarding which contemporary mainstream psychology is often at fault.

The problem of the biology-culture relation in human nature is a perennial problem of psychology; it permeates the entire history of our science. The development of psychology has always been quite dramatic, replete with methodological discussions, if only because of the position of psychology at the intersection of natural sciences and humanities, which are different in their methods. The discourse of the "understanding" (humanitarian, teleological) psychology versus the "explaining" psychology (clinging to natural sciences, causal) entails endless debate over the criteria for obtaining and verifying knowledge and over the adequacy of that knowledge.

A characteristic feature of the current development of this discourse is that there are fewer appeals for the destruction of the opponent, as in the discourse of the "old" crisis (Vygotsky, 1997), than for peaceful disengagement. The question of whether psychology should split into several distinct sciences is much discussed in the literature (Driver-Linn, 2003; Hunt, 2005; Mironenko, 2008; Walsh-Bowers, 2010; Zittoun et al., 2009). Fairly strong arguments can be provided in support of each solution. On the one hand, the previous few decades have witnessed the intensive development of psychological research at the intersection with other sciences, especially biological sciences, which were developing particularly rapidly at the turn of the millennium. The development of new concepts and new research methods mutually suitable for the natural sciences and for psychology and the accumulation of a large amount of new empirical data naturally entail a tendency to healthy differentiation (Bower, 1993; McNally, 1992; Mironenko, 2008); this process follows the general tendency to differentiation in the course of the historical

development of science.¹ On the other hand, strong arguments are presented in favor of psychology's maintaining the status of an integrated science at the intersection of natural sciences and humanities: "Defining tensions make psychology a dynamic pluralism whose strands must collide and interact, generating both novel scientific discovery and emergent perspectival shifts in theory and areas of major interest. Because psychology *is* a single discipline, emerging out of these interdependent tensions" (Hunt, 2005, p. 372).

Is psychology able to sustain that dynamic pluralism? Whatever the boundaries of psychology may be, to overcome the contemporary crisis it has to break down the stereotype of the essential stability of human nature and of the pure unity of human biology and culture.

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- ¹ For example, chemistry and physics separated in the 18th century, when the number of methods and recognized facts specific to each topped the number of mutually accepted methods and facts; in these circumstances, further development required the splitting of a previously integrated science.

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The analysis and perspectives of studying basic and special types of self-determination according to A.L. Zhuravlev's and A.B. Kupreichenko's concept

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An analysis of Russian and foreign ways of understanding the phenomenon of self-determination has been performed. It has been found that the concept of individual and group self-determination by A.L. Zhuravlev and A.B. Kupreichenko is the most developed in modern Russian psychological science. Using the concept as a basis, the conceptual schemes (made by A.E. Vorobieva and A.A. Akbarova) of studies of personal, moral, social and economic self-determination were considered as the examples of the basic and special types of self-determination. Moral self-determination was studied with questions about ideas of morality, moral strategies and personality orientation, attitude toward unethical phenomena, ability for self-regulation and emotional intellect. Social and economic self-determination were studied with questions that show one's social level, satisfaction with economic and social status and their dynamics, a valuation of favorable circumstances for an increase of status and economic activity. Value and anti-value, spheres and forms of showing of social and living personality's activity were also determined. Fundamental differences (variability, success criteria, implementation in behavior, a level of ability to control a process, the role of external factors) and similarities (successfulness, a formation level, a range, dynamics, conceptions, strategy, values, factors) between the components of the conceptual schemes of these types of selfdetermination were identified. The principles of studying (proportion of basic and specific types of self-determination, a display of resultative, procedural and formal-dynamic characteristics, consideration of factors of different levels) of basic and special types of self-determination were suggested.

Keywords: basic and special types of self-determination, social self-determination, economic self-determination, life self-determination, moral self-determination, structure and factors of self-determination

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Introduction

Social changes that began in Russia in the 1990s entailed changes in a value system, success criteria and social regulators that caused a high level of uncertainty and a constant need for self-determination for every member of Russian society. A development and a reconsideration of one's life path has become a priority under the new conditions. Social and economic instability in Russia remain present, compelling a subject to be ready to reconsider her strategies, values and place in the society; thus, the results of personal self-determination research are in demand, making the scientific problem of self-determination one of the most relevant.

A self-determination phenomenon is related to a category of complex psychological phenomena. The need for research on this type of phenomenon is conditioned by the fact, that close and particular psychological phenomena are researched and developed well enough, which is the second reason for high scientific interest in the problem of self-determination.

The definition of a self-determination phenomenon varies between Russian and foreign psychology.

In a foreign psychological school of thought, self-determination is understood as the intrinsic motivation of person's activity. In the R.M. Ryan and E.L. Deci (2000) conception, self-determination is described as an ability to choose and to have a choice. This definition allows taking into account both an inner individual choice and objectively existing limitations for a freedom of choice. Self-determination includes one's environment management or result-oriented actions, but may also include a refusal of control. E. Deci (1980) suggests that self-determination is not only an ability but also a basic human need. The selfdetermination definition is considered to be closely linked with a notion of personal freedom. G. Rychlak (1979; 1981) sees the foundation of freedom in a subject's own ability to determine his or her own actions, to include his or her in a system of determination of his or her own activity and to restructure it, add goal determination to causal ones and proceed from his or her own wishes and goals based on them (Rychlak, 1984). R. Harré (1979; 1983), W. Tageson (1982) and J.A. Easterbrook (1978) are scientists who made a contribution to the development of this phenomenon. R. Harre posits the subjectivity and multilevel quality of human behavior regulation. W. Tageson understands psychological freedom as a self-determination force. He regards the self-reflection of determinants and activity restrictions as key components. G. Easterbrook has similar views, but he focuses his attention on the control over basic needs and the anxiety that arises from interaction with the outside world.

In our opinion, the Russian psychological school of thought regards self-determination in a wider sense, as a process of the long-lasting search for one's self, which may result not only in self-realization but also in a voluntary refusal of selfrealization for higher purposes, and it may also be a description of a group or a subject (A.N. Eremina, M.R. Ginzburg, A.L. Zhuravlev and A.B. Kupreichenko, N.S. Prjazhnikov, V.F. Safin). M.R. Ginzburg believes that personal self-determination does not stop in the teenage years. According to his studies, a personality comes to new self-determination through further development. V.F. Safin regards self-determination as a process of getting control over different life spheres, self-creation, self-affirmation. N.S. Prjazhnikov considers self-determination to be a constant search for "I-conception" and affirmation of it among other people. He regards self-determination as way beyond one's limitations. A.L. Zhuravlev and A.B. Kupre-ichenko draw attention to the fact that self-determination is life-long process and that it might coincide with self-realization, self-preservation and self-sacrifice at some life stages. The studies mostly touch upon personal self-determination. There are also a few groups of self-determination studies. For example, A.N. Eremina studies moral group self-determination with different levels of social-psychological maturity.

Another feature that sets the Russian approach apart is a differentiated study, subcategory distinction and correlation determination. In the foreign psychological school of thought self-determination has rather a universal nature.

Many Russian academics have dedicated their work to the topic of self-determination (K.A. Abul'hanova, I.I. Bashaeva, L.I. Bozhovich, A.V. Brushlinskij, T.M. Bujakas, M.R. Ginzburg, V.V. Guljakina, S.A. Ivanushkina, G.V. Ivanchenko, E.A. Klimov, L.A. Naumova, I.A. Oboturova, O.V. Ovchinnikova, A.K. Osnickij, A.V. Petrovskij and V.V. Shpalinskij, V.A. Petrovskij, G.S. Prygin and V.P. Farjutin, S.N. Prjazhnikov and E.Ju. Prjazhnikova, S.L. Rubinshtejn, V.F. Safin and G.P. Nikov, M.G. Ugarova, D.I. Fel'dshtejn, A.S. Chernyshev and others). Collectivistic, professional, personal and ethnic self-determination are the most researched topics. Moral, economic, social, religious, gender, life, spiritual, family and political self-determination are less researched. Different self-determination types have been researched mostly in relation to youth by I.I. Baskhajeva, L.I. Bozhovich, V.V. Guljakina, S.V. Dolmatova, N.I. Zajchenko, S.O. Zujeva, S.A. Ivanushkina, L.A. Naumova and N.S. Prjazhnikov. However, it has been suggested by reseachers such as N.N. Abramova, M.R. Ginzburg, A.L. Zhuravlev and A.B. Kupreichenko, S.A. Kalashnikova, O.V. Savvina and E.V. Kruglikova that self-determination as a life-long process. For this reason, the bounds of the research field have become broader.

According to S.L. Rubinshtejn's (1973) position, self-determination is a path of personality development. It is an inner determinant of behavior motives. He also drew attention to the fact that a process of life recomprehension occurs constantly and is characterized by striving for spiritual categories. In K.A. Abul'hanova-Slavskaja's (1991) opinion, self-determination is an awareness of a person's position that is formed inside the coordinates of the relationship system. Developing the ideas of S.L. Rubinshtein, she marks important elements of self-determination, including one's determination, activity, conscious striving for determinate position (Abul'hanova-Slavskaja, 1973). In the works of L.I. Bozhovich (1968), the need for self-determination is regarded as the need for a certain personality system of meanings. According to V.F. Safin and G.P. Nikov (1984, p. 67), in a psychological sense, a self-determined personality belongs to a subject who has realized what he wishes (goals, life plans, ideals), what he is (his personality and physical characteristics), what he is able to do (his capabilities, predisposition, talents), and what a society expects of him; he is a subject who is ready to function in the system of social relationships. When they use the term

self-determination, A.L. Zhuravlev and A.B. Kupreichenko (2007) mean a subject's search for his own way of life in the world, based on his perceived, accepted and formulated (created) basic relations to the world, humanity and himself with respect to time, as well as to his own system of life-meanings and principles, values and ideals, opportunities and expectations. In summary, all of the definitions given to this phenomenon denote its procedural nature, awareness and the subject's search for a place in life. The definition given by A.L. Zhuravlev and A.B. Kupreichenko shows the complete essence of the phenomenon, those inner factors that motivate a life-long pursuit.

There are several ways of understanding the self-determination phenomenon structure. The widespread model is based on the struture of the psychological relation. It includes cognitive, emotional and connotative components. The triangular structure can be supplemented with value, as well as motivational, communicational and other components (Bashaeva, 2005; Naumova, 2005; Padalko, 1998; Safin, Nikov, 1984; Ugarova, 2004). Some other authors base the structure of self-determination on motivation. (Borisova, 1995; Klimov, 1996; Safin, 1985; Safin, 1986). In the opinion of A.B. Kupreichenko, the most detailed structure and the most complete analysis of a self-determination content were presented by M.R. Ginzburg (1996). He highlights space-time and contextual-meaning elements of self-determination. His model includes the psychological present and psychological future. The psychological present consists of two elements: value and meaning core (which is a factor in self-learning) and self-realization. The elements of the psychological future are contextual future (which provides a contextual perspective) and temporal future (which provides a temporal perspective). However, A.B. Kupreichenko (2007) denotes some limitations of this model and other self-determination models. These limitations are: 1) the lack of a moral dimension; 2) the lack of analysis of a psychological past; 3) the lack of attention and description of formal-dynamic characteristics of self-determination; 4) the main elements of self-determination are not differentiated according to a significance level for a subject and temporal stability; and 5) the lack of links between the elements of self-determination. V.V. Guljakina (2000) outlines the lack of a general complete conception of the self-determination phenomenon in the scientific literature and the insufficient systematization of the existing information. M.G. Ugarova (2004) draws attention to a lack of a universal method in the determination of a professional self-determination structure. Based on the aforementioned unsolved problems around the self-determination phenomenon, A.L. Zhuravlev and A.B. Kupreichenko (2007) offer their own multilevel selfdetermination model for a group and personality, as well as principles of the study of the phenomenon. This concept advanced the scientific understanding of the phenomenon, and became the foundation for a number of studies that relied on its concepts.

Methodology and research basis

According to the conception of A.L. Zhuravlev and A.B. Kupreichenko (2007), there are two components in the structure of self-determination: a rigid core and a plastic shell. The core contains conceptions about the world and human society

composition principles, the meaning of life, values and orientations, ideals and taboo, main life capabilities, principles and aspirations. The shell includes conceptions about the surrounding socio-psychological space: values, goals and motivations of different life stages; knowledge of a person's own capabilities and opportunities on each life stage; and a person's readiness for certain actions, connected to an attainment of a desired position in a social-relationships system during each life stage. A hypothesis about a more complex five level structure of self-determination was also suggested. It consists of the "axis" or life-guide (the most stable formation), a possible "transition zone" between the "core" and the "shell" and the "surface layer" of self-determination, which demonstrates a personality image and its atypical characteristics. However, in a number of studies performed by students and followers of A.B. Kupreichenko, a two-level self-determination model is used.

From the point of view of A.L. Zhuravlev and A.B. Kupreichenko (2007), this psychological phenomenon can be defined as a process, a property (characteristic of a personality or a group), or a subject's state ("cross-section" of the process on a certain development stage, its intermediate result). The authors define formal-dynamic and contextual (procedural and effective) characteristics of self-determination. Formal-dynamic characteristics include a level of development, a range, a homogeneous/heterogeneous nature, proportionality and stability, situational stability/variability, universality/selectivity in different conditions, a process intensity, a dynamic nature and efficiency.

The term procedural characteristics includes life strategy, methods of achieving goals, ideas of necessary and permissible limits of activity levels, cycles and resource spending, guidance for information collection and analysis and rules of decision making.

The effective characteristics contain worldview and self-concept, values and ideas about their alteration, conceptions about world composition principles, basic attitude toward oneself and others, the entire world and expectations connected to it, attitude toward some elements of socio-psychological space, conceptions about one's own life perspective, evaluation of one's personal opportunities and abilities and goal-achieving criteria.

To continuing grouping the aspects of self-determination structure understanding suggested by A.L. Zhuravlev and A.B. Kupreichenko, we unite their model and M.R. Ginzburg's model into a structural-dynamic group.

After a critical evaluation of her predecessors' (A.K. Markova, N.S. Prjazhnikov and others) attempts to build the relative structure of self-determination types, A.B. Kupreichenko (2010) comes to the following conclusion. She regards spiritual and vital self-determination as basic. Spiritual self-determination includes gnostic (basic attitude toward world composition principles, society and human, expressed through "true — false" categories), moral and aesthetic self-determination. In the opinion of Kupreichenko, vital self-determination is both opposed to and supplemental to spiritual. It assumes a strategy identification for need satisfaction, physical survival and procreation. Personal and life self-determination are realized through these basic types. Social, economic, political and other types of self-determinations are based on these types and are considered to be special types. A.L. Zhuravlev and A.B. Kupreichenko (2008) formulated principles of empirical research organization of self-determination:

- 1) accounting for moral-value and life-meaning dimension;
- temporal dimension analysis (through research on a subject's self-consciousness dynamics or through a subject's attitude toward to his or her past, present and future);
- 3) accounting for a stage nature of a subject's life and development;
- 4) accounting for a subjective properties of a human and a group;
- 5) emphasis on a transformative subject activity;
- 6) analysis and evaluation of content and formal-dynamic characteristics of self-determination;
- 7) analysis of content elements of self-determination based on how they differ in a significance level for a subject and temporal stability;
- 8) leaning on a necessary, bare minimum of self-determination components, which form hierarchically organized structure;
- 9) self-determination analysis from a subject's position.

The goal of this work is to extend one's knowledge and to apply a conception of self-determination of A.L. Zhuravlev and A.B. Kupreichenko to specific studies, making a comparative analysis of basic and special types of self-determination to extend the conception. We assume that basic self-determination research has both fundamental differences and some similarities with special self-determination studies. Accordingly, our main goal is to question the conceptual research schemes of moral and social and economic self-determination and to suggest our own perspectives for research on different self-determination types.

Results

Keeping in mind the task of researching one of the special types of self-determination, based on the aforementioned concept, it is necessary to create a conceptual model that takes into account the structure, characteristics and the relationship of the self-determination types suggested by A.L. Zhuravlev and A.B. Kupreichenko. For example, a conceptual scheme (Figure 1) was created in a complex study of social and economic self-determination made by A.A. Akbarova in a laboratory of social and economic psychology at the Institute of Psychology of the Russian Academy of Science. In connection with the fact that the core elements of any special type of self-determination are building blocks of the basic types (according to A.B. Kupreichenko), core elements of social and economic self-determination (self-concepts and conceptions about the world, values, life perspectives, possibilities, expectations, achievement criteria) are also the elements of basic, life selfdetermination. These elements can be classified as resultative characteristics of self-determination. Life self-determination is based on spirituality and vitality, so it immanently includes itself.

Elements of the shell (conceptions about the economic phenomenon, economic strategies, social activity) are at the same time the elements of social and economic self-determination and a fulfillment of a basic self-determination in spe-





cific spheres of life. These elements can be assigned to procedural characteristics of self-determination. Moreover, formal-dynamic characteristics such as the successfulness of self-determination, dynamic nature and a level of formation can be researched through inconsistency/consistency of a personality's values, dynamic nature of life perspectives in social and economic spheres, satisfaction with one's own social and economic status and self-concepts, and the range of social activity. Factors influencing any of the self-determination types (individual factors (sociodemographical belonging, personal features), group factors (reference groups) and macrogroup factors (economic, political and other)) cannot be ruled out either.

The conceptual scheme was produced in a research program that contained the following content blocks:

- questions of one's own social status and criteria of first definition; questions about satisfaction with personal social and economic status and the nature of their dynamism; questions to determine the favorability of the settings for an increase in status; questions about the economic activity (attitude toward money, income sources, satisfaction with one's own economic activity, readiness to take economic risks, concurrence);
- 2) values and "anti-values" defined by L.M. Smirnov, importance of which is rated in relation to oneself and a country (Smirnov, 2003),
- 3) spheres and forms of personality's life and social activity;
- 4) identification of socio-demographic characteristics.

As an example of basic personality self-determination type, a conceptual scheme of person's moral self-determination (Figure 2) (carried out by A.E. Vorobieva under A.B. Kupreichenko supervision (Kupreichenko, Vorobieva, 2013) can be studied. Moral self-determination is one of the most studied by A.B. Kupreichenko types of self-determination phenomenon. She suggested a four-segment structure:

- self-determination in relation to morality as a part of social consciousness and social institute;
- self-determination in relation to the surrounding world's objects and phenomena;
- self-determination in relation other people, groups and a entire society from a moral point of view;
- self-determination in relation to oneself as a subject of moral relations.

It is worth noting that ideals and guides, which serve as a starting point from which further elements of self-determination are chosen, are particularly important. That is why, in the conceptual research scheme of moral self-determination, the central spot is reserved for these specific elements.

According to the scheme, a notion of morality and moral compass are parts of the core elements. Moral strategies and attitude toward unethical phenomena are considered as the shell elements. The aforementioned elements also fit into the four-segment structure of moral self-determination. An influence of social-economic and group factors and life events was considered through the prism of individual and personal features.





The conceptual scheme was produced in a research program, containing the following content blocks:

- 1) attitude toward unethical phenomena in mass media (TV advertisements and unethical words in newspapers headlines);
- 2) conceptions of morality and ethics (origins of morality as a phenomenon, significance of morality for the society, the absolute/relative nature of morality, a compensation for good and evil, personal morality (manifestation of one's strength or weakness, the nature of personal morality), moral strategies (a necessity of keeping the moral norms, activity or passivity of moral behavior, mutuality or non-mutuality of moral behavior), moral orientations (egocentric, group-centric, humanistic, world-creative);
- 3) An ability of self-regulation;
- 4) Emotional intelligence;
- 5) Identification of socio-demographic characteristics.

Discussion

The conceptual research schemes allow the definition of the following elements of moral (as an example of basic type), social, and economical (as an example of special type) self-determination:

1. Successfulness (index of successfulness/unsuccessfulness in moral self-determination is a classification of its result by total combination of positive or negative (thus, it has either a humanistic or antisocial nature); index of successfulness in context of social and economic self-determination is a level of satisfaction with one's own social and economic status);

2. Level of formation (the index of moral self-determination's formation is a coordination or lack of it between, on one hand, the ideas of morality, moral strategies and orientations and, on the other hand, attitude to unethical phenomena; in social and economic self-determination, level of formation is non-contradictoriness of values and "anti-values" because values are core elements of self-determination, according to A.L. Zhuravlev's and A.B. Kupreichenko's conception);

3. Range (a variety of application fields; there are potentially more fields for moral self-determination than there are for social and economic because moral self-determination, as well as the basic type, pierces all human activity spheres, but the number of them for a specific person may vary, depending on their moral orientation, cultural influence, etc.);

4. Dynamics (the index of it in moral self-determination are age cross-sections because of the moral changes in personality, which take place under the influence of new life experience, etc.; in context of social and economic self-determination, dynamics index is life perspective in a specific spheres, shown on subject's own expectations of graphics of changes in one's social and economic status);

5. Conceptions (in the context of moral self-determination, conceptions are ideas about the origins of morality as a phenomenon, compensation for good and evil, conceptions about morality as a manifestation of a personal strength or weakness, conceptions about the nature of personal morality; in a core of social and economic self-determination lay the conceptions of the world and self-concepts — see Figure 1);

6. Strategies (strategies in moral self-determination are regarded as a strategy of necessity of keeping moral norms, a strategy of active or passive moral behavior, mutuality or non-mutuality of moral behavior; in context of social and economic self-determination, strategy means social and economic activity).

7. Values (in moral self-determination, values are conceptions about the significance of morality for society, conception about absolute or relative nature of morality; in context of social and economic self-determination, values and "antivalues" are discussed);

8. Factors (in programs of moral and social and economic studies personal, social-group and macro-social factors are taken into consideration — see Figure 1 and 2);

Based on the results of our own studies of moral and social and economic selfdetermination, we suggest some theoretical principles, which must be proven. We see some notable differences in particular elements and indexes of moral (as an example of basic type) and social and economical (as an example of private type) self-determination:

1. Moral self-determination is less variable and can be rigid and non-adaptive. Variability of moral self-determination may be regarded as negative (except for the cases of moral personality development), according to the conception of A.L. Zhuravlev and A.B. Kupreichenko (2007). This fact was also proven by a thesis by A.E. Vorobjeva (Vorobjeva, Kupreichenko, 2013).

2. Success criteria of moral self-determination are completely different (it can be even opposite) from social and economic self-determination types. The moral self-determination criteria are internal; the social and economic criteria are set by the social comparison, i.e., they are external.

3. Implementation of moral self-determination of a specific behavior is focused on other people; implementation of social and economic self-determination is focused on the subject himself.

4. The shell of the moral self-determination is less flexible than it is in context of social and economic self-determination.

5. People can control their social and economic perspectives. A change of moral self-determination is less controllable, there are no clear pictures of perspectives or coherent expectations in this case.

6. In case of moral self-determination, prolonged influence of socialization agents is more significant than it is for social and economic self-determination.

7. It is impossible to evaluate possibilities and resources for moral self-determination. Moral self-determination frequently develops spontaneously under the influence of self-determination agents and normative and non-normative life events. It is necessary to have some basic level of moral development to be able to control one's own moral features.

On the basis of analysis of conceptual research schemes, elements of moral (as an example of basic type), social and economic (as an example of private type) self-determination similarities, we suggest the following rules of studying basic and special self-determination types. They expand those given by A.L. Zhuravlev and

A.B. Kupreichenko (2007), who suggested principles of research on personality and group self-determination.

1. During the study of the basic type of self-determination, special types can be ignored or used as an example of the basic type's manifestation (for example, moral self-determination manifests in the economic field as moral attitude toward money and labor).

2. During the study of special self-determination types, a basic type must be taken into account; spiritual self-determination or its components as well as life self-determination must be included in conceptual model.

3. The following must be considered in the structure of self-determination: basic self-determination is the de-facto core of the special type. The shell is an outward manifestation of any self-determination type; it is a specific area of application for a special type of self-determination.

4. During the study of the special type of self-determination, it is necessary to distinguish effective, procedural and formal-dynamic characteristics. While researching a basic type of self-determination, we assume less clarity and measurability of these characteristics; thus, they can be shown less in the conceptual scheme. However, this assumption requires more analysis.

5. It is necessary to take into account micro-, meso- and macro-level factors during the study of both special and basic self-determination types.

Conclusions

High topicality of self-determination research is determined by two factors: 1) the need of psychological science to move into a study of an integral phenomenon and 2) prolonged socio-economic instability in Russian society, which launches the processes of self-determination in all of the social classes.

Self-determination implies active self-development of a personality, search of one's life position, making a decision in a critical situation. The process continues throughout one's entire life.

There are many subtypes of self-determination. Not all of them are researched well enough.

The self-determination phenomenon has different interpretations in foreign and Russian psychological school of thought.

There are three groups of methods that describe self-determination structure in the Russian psychological school of thought: 1) those based on the relation concept, 2) those based on motivation and 3) structural-dynamic. The last type is the most studied.

The goal of research was attained. Based on the multi-level model of a group and personal self-determination, suggested by A.L. Zhuravlev and A.B. Kupreichenko, studies of different types of self-determination (basic and special (moral, social, economic)) have been conducted. The analysis of conceptual research schemes with respect to elements of moral and social and economic self-determination similarity has been performed. Principles of basic and private self-determination research were suggested and marked for further empirical searches for differences between elements and indexes of mentioned self-determination types.

Application of an aforementioned model to the study of some types of selfdetermination makes it possible to research a large number of elements (values, ideals, concepts, strategies, needs, capabilities, self-concepts, etc.) that are not as isolated as they used to be studied, but the model requires complex research and building an interconnected structure. This method is difficult to carry out in an empirical study, as it requires an analysis of a large number of variables, which is labor intensive for a researcher and tiring for respondents. It is necessary to include projective methods to identify a subconscious influence of other elements of a self-determination structure on a subject's behavior. However, there are no defined guidelines for such inclusion in the self-determination rules of study.

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Postnonclassical methodology and application of virtual reality technologies in social research

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The postnonclassical paradigm has increasingly become a conceptual basis for social research in various fields in an attempt to overcome the limitations of the classical and non-classical approaches. Subjects of social research activities require changes in the paradigm at all levels of research: from the statement of the problem to the elaboration of the appropriate methods and the analysis of the research data. The search for new research methods, technologies and techniques plays a crucial role in this process. One of the most promising methods that has rapidly developed in recent years is the technology of virtual reality (VR). This technology is being widely applied to both natural science and social science research. In this article, we examine the possibilities of using VR technology for the resolution of current tasks in social research from the perspective of the postnonclassical approach.

Keywords: postnonclassical paradigm, social research, virtual reality technology, ethnic and racial attitudes, verbal and non-verbal communication, avatar

Postnonclassical paradigm in social research and new information technologies

In recent decades, social sciences in Russia and beyond have faced new challenges caused by ever-changing realities and the emergence of new phenomena, social risks and problems at various levels: from individual to interpersonal to intergroup to international. These problems include not only the individual's search for their own place in the rapidly changing environment and the necessity to address vital issues of distinct groups but also the search for new ways of removing threats to society and humanity as a whole.

Today, one of the most pressing problems (and the most topical issue in social research) is that of security on many different levels (Zinchenko, 2011; Zinchenko & Zotova, 2014), along with security-related phenomena, such as terrorism (Zinchenko, Shaigerova, & Shilko, 2011; Chaiguerova, & Soldatova, 2013; Solda-

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tova, Shaigerova, & Shlyapnikov, 2008), emergency situations (Soldatova, Zinchenko, & Shaigerova, 2011), extremism (Zinchenko, 2014), social stability (Dontsov & Perelygina, 2013), xenophobia (Soldatova, Nestik, & Shaigerova, 2011), interethnic and intercultural communication (Poëppel & Bao, 2011), migration of large groups of people and their adaptation to the host culture (Soldatova & Shaigerova, 2002; Soldatova & Shaigerova, 2015).

At the current stage of societal development, which has given exceptionally complex tasks to social science, the resources traditionally used in social research within the classical and non-classical approaches are insufficient. To overcome the limitations of these approaches, new frameworks are proposed, for example, the historical-evolutionary approach in psychology (Asmolov et al., 2014)

The postnonclassical paradigm has increasingly become a conceptual basis for social research in various fields (Mezzich et al., 2013; Pervichko & Zinchenko, 2014; Zinchenko & Pervichko, 2012a,b; Zinchenko & Pervichko, 2013). The use of the postnonclassical paradigm is not limited to a simple change in the conceptual framework of social research. Complex developing systems, e.g., subjects of social research activities, require changes in the paradigm at all levels of research: from the statement of problem to the elaboration of methods and analysis of the research data. In this regard, there is a strong need for reviewing the philosophical and general scientific methodology, as well as the specific scientific methodology. The search for new research methods, technologies and techniques plays a crucial role in this process.

One of the most promising methods that has rapidly developed in recent years is the technology of virtual reality (VR). This relatively recently created technology, is widely applied to both natural science and social science research. In-depth analyses of the methodological peculiarities of applying VR technology to psychological research show that it can be efficiently used in cognitive, organizational, sport and many other branches of psychology (Zinchenko et al., 2010). Research activities performed by means of CAVE and HMD systems of virtual reality have made it possible to obtain new data about the processes of the formation of cognitive space maps (Lakhtionova & Menshikova, 2013), the perception of 3D optical illusions (Menshikova, 2013) and testing of vestibular system dysfunctions (Kovalev et al., 2014). At the same time, the potential of VR technology has not been fully realized, and its application requires a deeper, well-rounded analysis.

We examine the possibilities of using VR technology for the resolution of current tasks in social research from the perspective of the postnonclassical approach.

Researching social processes through the use of VR environments

The timely character of VR-assisted research of social processes is determined by some scientific and applied tasks that are exceptionally difficult or impossible to fulfill by means of classical research methods (e.g., psychological interviews, questionnaires). These tasks include studying the processes of ethnocultural identification and the formation of racial and ethnic attitudes; analyzing the behavior of partners that belong to different cultures when arranging virtual communication and videoconferences; developing "virtual avatars" to diagnose and regulate social

conflicts; and creating virtual scenes to develop specific skills of interaction with partners representing a different cultural background or a different ethnic group.

VR-assisted social research is ongoing in several areas: studying the peculiarities of social interaction with virtual partners (avatars); studying social skills through the use of virtual partners; studying and training social skills in virtual scenes initiating an emergency; developing methods of diagnostics and correction of social phobias (e.g., stage fright); and studying the role of non-verbal communication (the synchronization of hand/head/body micromovements) and proxemics. VR technologies are widely used in studying non-verbal behavior, personal space (Bailenson et al., 2003), social interaction skills (Guadagno et al., 2007; Fox & Bailenson, 2009), the origins of prejudices and social stereotypes (Dotsch & Wigboldus, 2008; Groom et al., 2009), social facilitation and inhibition (Blascovich et al., 2002; Hoyt et al., 2003).

We consider a few of the most promising avenues of VR-assisted social research. To start, we provide definitions of the terms used in the subsequent text. *Virtual Reality Systems* (VR) is a combination of hardware and software that allows users to become immersed in a three-dimensional virtual environment as well as interaction with this environment by impacting the sense organs. *Virtual environment* (VE) means simulating bits of real world using computers and sensory equipment and forming through people's senses: sight, hearing, smell, touch. *Avatar* is a computer-generated user's representation in the form of a three-dimensional model.

Studying, diagnosing and training communication skills through VR technology

Virtual environments have been developed and used to diagnose communication disorders and to train communication skills. A methodological technique to create virtual environments that help to form communication skills consists of studying the interaction between the user and a computer agent within the framework of a specific scenario. To objectify the interaction, researchers use on-line recordings of psychophysiological parameters (e.g., heartbeat rate, galvanic skin resistance). The data analysis allows psychologists to select interaction scenarios more efficient for the user. Such scenarios may be complexified depending on the training success. This methodology helps to create a vast number of various scenarios for different types of communication skills.

In particular, VR systems are extensively used for treating social anxiety disorders, e.g., speech anxiety. Virtual systems have been proved to be more efficient than online chats and videoconferences (Emmenlkamp, 2005). Equally important is the fact that a therapist can manipulate VR by increasing or decreasing its impact on the patient. For example, he can change the virtual audience's reaction to the speaker's words or actions (Anderson et al., 2005).

Jouriles and his colleagues (2011) used VR in their communication training for women who were afraid of getting into conversations with male strangers. Female students were placed into situations of face-to-face communication with real men and then with male avatars. The results showed that making the acquaintance of an avatar is easier, and this type of virtual training helps women to feel more confident when interacting with real men (Jouriles et al., 2011).

The use of VR in communication training allows researchers to develop efficient methods of testing subjects' individual characteristics. In one of our tests, we created dynamic VRs that required a high degree of sustainable perception of 3D objects in motion whose impact made it possible to reveal a number of athletes that had more developed vestibular function (Menshikova et al., 2014). In other experiments, the use of VR systems in communication training allowed us to identify the shyest members of a group (Caplan, 2003). Such people are likely to communicate through social networks, thus avoiding face-to-face communication; for this reason, researchers try to decrease VR sound and visual diversity to lessen the stress in subjects when creating VRs for introverts (Stritzke et al., 2004). With this end in view, they shorten the period of eye contact between the subject and the avatar and create standard-looking avatars, i.e., ones resembling average members of the same social group the subject belongs to. One of the tests showed that female introverts preferred communicating with those avatars that looked like them, unlike female extraverts, who opted for avatars of a different nationality, wearing motley clothes and with different haircuts (Dunn et al., 2012). If such limitations are in place, the shy subjects readily interact with avatars and display less fear towards communication in comparison to communication with a real person. The same result was shown by Hammick and Lee (Hammick & Lee, 2014) in the experiment where introverts discussed alcohol-related issues with real interlocutors. Although the subject-matter of the discussion was topical, the shy subjects remained reserved throughout the conversation and received high scores on the Trait-like Communication Apprehension Scale (McCroskey, 2009). However, when communicating with avatars, these subjects behaved more actively and eventually obtained significantly lower scores.

New VR tools for non-verbal communication are currently being developed and certified, for example, special haptic tools which provide tactile contact with virtual objects. Such tools may be successfully used in exploring face-to-face communication processes because touch strength may give an information about approval, persuasion and maintenance of social status The importance of using tactile information for the simulation of virtual scenes has been recently demonstrated in several studies (Robles-De-La-Torre, 2006; Bailenson & Yee, 2007; Haans & IJsselsteijn, 2005). So tactile sensations were investigated by means of joysticks that simulate a handshake and memorize its power and other parameters (Bailenson & Yee, 2007). Tactile and kinesthetic sensations were studied by activating cutaneous receptors with mechanical, electric, or thermic vibrodevises (Haans & IJsselsteijn, 2005). It was found that the activation of tactile contact considerably amplifies the Presence effect in a virtual environment as well as the sense of togetherness with the virtual surroundings. The authors also analyzed in detail some advanced models of "indirect touches", which are devices that via mobile receive and transmit the strength of a hand grip and warmth over distances. Such devices may be regarded, with various degrees of plausibility, as tools of virtual tactile contact.

The above-mentioned devises of non-verbal communication are necessary for the study of social processes using VR technology. Furthermore, the better VR tools simulate sensations and perception of real-life situations, the more reliable results obtained using VR technology.

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Interaction with avatars in a virtual environment

Several research activities in the field of the psychology of communication are devoted to the peculiarities of real people's interactions with 3D computer-generated characters: avatars and agents. The difference between avatars and agents is as follows: the former are controlled by humans, whereas the latter are operated by a computer program. Several factors were identified which influenced the degree to which a real person was ready to accept a virtual partner as a subject of social interaction, i.e., to be convincing and lead to the use of natural communication skills (Blascovich & Beall, 2010):

- the degree of confidence that the virtual partner is in fact another person (an avatar) and not a programmed object (an agent);
- the manifestation of low-level (involuntary) behavioral reactions typical of any real man in a situation of real-life communication (e.g., involuntarily keeping a distance when talking to an avatar or the reaction of fear towards the avatar's aggressive behavior);
- the importance of the situation for the user : the higher the importance, the higher the user's requirements for realism of virtual environment
- communicative realism, i.e., the interrelation of verbal and non-verbal components of communication;
- the demographic characteristics of virtual partners: race, nationality, sex, appearance, age.

Studying the interaction with avatars in a virtual environment has revealed some consistent patterns, e.g., subjects preferred anthropomorphic (human-like) avatars (Nowak & Rauh, 2005) and were likely to trust avatars whose sex and race were the same as theirs. The efficiency of communication between users and avatars can be increased, even in eye contact situations (Bente et al., 2007). Zhang and his colleagues (Zhang et al., 2006) investigated the specific non-verbal, non-derivative signals used by an observer when communicating with an avatar. A virtual environment was created where the subject was offered the role of a teacher of a foreign language who should interact with a virtual group of students. The group members displayed different levels of language knowledge and skills. The virtual environment was interactive: the subjects, along with non-verbal influences in their virtual toolbox, were able to move virtual inanimate objects, maintain eye contact with the members of the virtual group and use pointing gestures to attract the virtual students' attention. This interaction caused great interest among the subjects: at some point, they would start talking to the virtual students as if to real human beings. The experiment revealed a number of specific, non-verbal, prosodic and kinesthetic signals that the subjects used when interacting with virtual partners.

The VR methods helped researchers to explore various aspects of interaction between humans and avatars in virtual environments. In the process of communication between real and virtual partners, new effects were discovered, including the digital chameleon effect: the avatar's imitation of the subject's behavior raised the efficiency of their interaction (Bailenson & Yee, 2005). The experiment situation was as follows: an avatar would deliver a pre-recorded three-minute speech (advising students to carry their ID on visiting campus) while manifesting two modes of non-verbal behavior. In one group, the avatar's head movements would repeat those of the subject with a four-second delay (this delay factor was empirically determined as optimal). In the other group, the avatar's head movements were random. The subjects were more likely to praise and agree with those avatars who imitated their non-verbal behavior. In other words, the virtual partner that behaved in a more realistic way, e.g., imitated the interlocutor's head micromovements, was perceived as more trustworthy.

Just as interesting are various types of research into interpersonal distances that humans keep when interacting with avatars, which is specifically important in intercultural communication. One of the tasks for such research activities is to study the interrelation between non-verbal behavior and the distance that is most convenient for interaction with an avatar. The theoretical premise for this type of research is a hypothesis about the interrelation between non-verbal and spatial components of communication (Argyle & Dean, 1965). According to the hypothesis, there is a balance between such systems of non-verbal communication as tactile contact, visual interaction (eye contact) and interpersonal distance. When one of these systems is excessively involved, the others are inhibited. For example, an intense tactile contact causes lesser eye contact; the same repression of eye contact occurs when the communication distance is shortened. The change in the ratio of non-verbal behavior systems is due to the need for the development of an optimal communication mode. This hypothesis was tested in studies on the interaction between humans and virtual avatars. Bailenson and his colleagues (2003) investigated the impact of various factors on the interpersonal distance. Each subject's behavior was observed in two different situations: 1) she/he was asked to come up to a motionless avatar to read and memorize the name and the number fastened to the shirt on the avatar's chest and spine, respectively; 2) she/he was asked to perceive an approaching avatar. The influence of the following factors was studied: 1) the subject's sex; 2) the avatar's sex; 3) perception of the virtual partner as an agent (i.e., a pre-programmed virtual object) or as an avatar (i.e., a virtual representation of a real human being) that had been formed by a set of instructions given before the experiment; and 4) eye contact: the avatar was looking at the subject or past him/her. In the process of communication, the behavioral responses of the subject during communication were registered, which allowed to assess the minimum distance between the subject and his/her virtual partner. Changes in the interpersonal distance were assessed separately for situations where eye contact was/was not involved, for different types of visual partners (avatar/agent) and for situations where the partners were of the same/different sex. The important factors influencing the subject's decision to install shorter interpersonal distance were the subject's sex, the avatar's sex, and the direction of the avatar's gaze. Equally important was the subject's perception of the virtual partner. The interpersonal distance was much shorter with avatars than agents in both female and male samples. Eye contact resulted in an increased interpersonal distance when interacting with avatars for the subjects of both sexes. Thus, Argyle and Dean's hypothesis was plausible and was able to explain the following peculiarity of real humans' communication with virtual partners: people are inclined to maintain a psychologically comfortable distance during communication by manipulating either the interpersonal distance or eye contact. The obtained data also support the basic hypothesis that it is possible to use virtual environments with

avatars to study communication processes because the same patterns were revealed for real-life communication (Bailenson et al., 2003).

In another paper (Bailenson et al., 2008), the authors analyzed the issue of setting an interpersonal distance between the user and so called the self-avatar which was collocated with the user's face and body in the real world. They assumed that the closest distance would be set with the self-avatar, particularly with those avatars that had the user's photographic resemblance. The participant was instructed to go around and carefully examine the avatar that was represented either a strangeravatar or a self-avatar. In addition, the self-avatar could be shown with a high or low degree of photographic resemblance. The subjects' behavior was monitored by video camera. At the end, the subjects were asked to fill out questionnaires to reveal their attitude towards the avatar as well as the degree of embarrassment in close proximity to the avatar. The avatar's sex and three degrees of resemblance between the avatar and the subject ("like me," "not quite like me," "a stranger") were chosen as variables. The avatar's behavior was pre-programmed in the same manner: they blinked and turned their faces to the subject. The subject task was to approach an avatar within 1.5 meters, then go around and, in the end, to stand right in front and answer the questions while carefully examining the avatar. In the process of receiving answers, the interpersonal distance was recorded. The results confirmed the authors' initial hypothesis that the mean minimum distance increased when decreasing degree of embarrassment. The "like me" and "not quite like me" avatars (having a high and a low degree of photographic resemblance) scored the lowest value of embarrassment, while the "stranger" had the highest one.

The study of Guadagno and his colleagues (2007) tested the influence of male/ female sex and the behavioral realism in the avatars' actions on subject's credibility of a virtual scene. . By "avatar's behavioral realism", the authors mean the correlation between avatar's lip movements and the spoken words, avatar's blinking and head movements to maintain eye-contact. Virtual partners could be of either sex and differed from one another in terms of their behavioral realism. The subject was informed whether the virtual partner was a computer simulation (an agent) or represented another student (an avatar). The persuasiveness of the avatar's speech on a subject-matter (e.g., how important it is to obey the rules on campus) was assessed. The results showed that the subjects were inclined to trust avatar's speech of the same sex. A special questionnaire revealed the influence of behavioral realism on the persuasiveness of the avatar's speech: the higher the degree of the avatar's behavioral realism, the stronger its influence on humans. Also the complex correlation between the virtual partner's sex and the subject's perception of the partner as an avatar or an agent was revealed. If a virtual interlocutor was a pre-programmed agent, its influence was stronger when it looked like a male human. In contrast, an avatar represented as another student was more convincing if it looked like a female.

Using VR technologies in studies of racial prejudices and interethnic relations

VR systems make it possible to efficiently study *racial* and *ethnic attitudes*. This effect is achieved through the use of *virtual embodiment technology*. The basic idea of this technology is to evoke virtual-body-ownership illusion – virtual embodi-

ment experiences in which a person accepts a virtual body as a replacement for his or her own. The technology poses some distinct challenges, for example, it allows to initiate a virtual experience of being an avatar of different race or ethnicity. It was supposed putting somebody in the skin of a black avatar could reduce implicit racial bias (IRB). For example, it was shown the decrease in IRB scores when participants were placed in a coalition with members of another racial group (Kurzban et al., 2001). The virtual-body-ownership illusion could be induced experimentally by using a virtual mirror in which the participant would see her/his own virtual body. Experiencing the ownership illusion may be enhanced by the body's movements, although even in the absence of motion it may remain as strong. The social stereotypes formed during the experience of the ownership illusion were so strong that they manifested themselves even in simple behavioral acts. For example, lightskinned subjects being embodied in black-skinned avatars played the virtual drums of an African tribe much more ardently compared with the situation when they were embodied in light-skinned avatars or played the real drums in the real nondigital world (Kilteni et al., 2013).

The study by Groom, Bailenson and Nass (2009) investigated how the race of the subject's own avatar influenced the subject's racial attitudes. The virtual embodiment technology was used to change an own avatar's appearance (including the racial features of its face). The participants were split into two groups. The subjects of the first group saw her/ his/ own avatar as a light-skinned person, whereas those of the second group were embodied in a dark-skinned people. The authors conjectured that watching one's own avatar as belonging to a different race would result in reducing implicit racial bias. The subject's behavioral reactions were observed in two situations: 1) when she/he was asked to imagine herself/himself as a human being of a different race; and 2) when she/he viewed herself/hisself embodied in an own avatar having distinct features of a different race (a different face skin color). The experiment was conducted to determine how people's implicit racial bias was affected by the race of their own avatar and also by the type of the model representation (imagined vs. embodied). Volunteers of different races participated in the experiment. In a virtual environment, the subjects were embodied in a light/ dark-skinned avatar and were asked to respond to the interviewer's questions. At the same time, they were (or were not) able to see their own avatar's face reflected in a virtual mirror. The interpersonal distance between the subject's own avatar and the avatar- interviewer was assessed as a measure of racial bias. After the experiment, the subjects were asked to fill out two questionnaires revealing their racial and racist prejudices: the Racial Argument Scale - RAS (Saucier & Miller, 2003) and, in part, the Modern Racism scale (McConahay, 1986). In situations where the subject saw his/her own avatar, considerable differences were revealed between the results of explicit (questionnaire's scores) and implicit (the interpersonal distances) racial bias. When the subjects only imagined themselves as belonging to a different race, these differences were less pronounced, which indicates that the situations in which a subject's imagination was involved differed considerably from those where the subject could see his/her own avatar that had features of a different race. Subjects embodied in dark-skinned avatars tended to behave more friendly towards light-skinned counterparts than those embodied in light-skinned avatars. The authors concluded these data confirmed the hypothesis about the automatic activa-

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tion of racial prejudices. Other studies showed that light-skinned avatars were less likely to help a dark-skinned avatar in a virtual environment compared to avatars of the same race (Easwick & Gardner, 2009). McCall and his colleagues (2001) revealed that in a virtual environment imitating a conflict situation the participants demonstrated increased aggression toward dark-skinned avatars than toward lightskinned avatars Mentioned above studies help researchers to develop new methods of assessment of racial prejudices by applying VR systems. The analysis of VRassisted social research activities has proved the efficiency of VR technologies in studying communication, personal space, racial and ethnic prejudices, friend/foe identification and avatars' communication abilities.

Conclusion

- 1. Virtual reality is becoming a highly efficient method of social research; therefore, systematic studies of methodology, ethic norms, and technological advantages for the development and implementation of VR technology in both the theory and practice of social research, are needed.
- 2. The analysis of VR technologies shows several methodological peculiarities that distinguish these technologies from the traditional methods of psychological lab experiments. Some of these peculiarities may be regarded as advantages when compared to the methods of classical experimental psychology, whereas others can be seen as new issues that require new types of analyses
- 3. VR-assisted experiments demonstrated that VR technologies can be effectively used in various fields of fundamental and applied psychology, namely, social and organizational psychology, psychotherapy and psychological rehabilitation, sports, safety and cross-cultural psychology.
- 4. The analysis of VR-assisted experiments in the field of ethnic prejudices and interethnic activities has shown that the potential of these technologies has not been fully realized. At the same time, the possible benefits of using these technologies in this field are manifold and may help psychologists to achieve research aims and to complete practical tasks (e.g., to form positive precepts, develop communication skills). VR technologies fulfill the postnonclassical approach to studying social phenomena and, therefore, need further development.

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PSYCHOPHYSIOLOGY AND COGNITIVE PSYCHOLOGY

The connection of hemispheric activity in the field of audioverbal perception and the progressive lateralization of speech and motor processes

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This article discusses the connection of hemispheric control over audioverbal perception processes and such individual features as "leading hand" (right-handedness and lefthandedness). We present a literature review and description of our research to provide evidence of the complexity and ambiguity of this connection. The method of dichotic listening was used for diagnosing audioverbal perception lateralization. This method allows estimation of the right-ear coefficient (REC), the efficiency coefficient (EC), and the effectiveness ratio (ER) of different aspects of audioverbal perception. Our research involved 47 persons with a leading right hand (mean age, 29.04±9.97 years) and 32 persons with a leading left hand (mean age, 29.41±10.34 years). Different hypotheses about the mechanisms of hemispheric control over audioverbal and motor processes were assessed. The research showed that both the left- and right-handers' audioverbal perception characteristics depended mainly on right-hemisphere activity. The most dynamic and sensitive index of the functioning of the two hemispheres during dichotic listening was the efficiency coefficient of stimuli reproduction through the left ear (EC of the left ear). It turns out that this index depends on the coincidence/noncoincidence of the leading hemispheres in speech and motor processes. The highest efficiency of audioverbal perception revealed itself in the left-handers with a leading left ear (the hemispheric-control coincidence), and the lowest efficiency was in the left-handers with a leading right ear (the hemispheric-control divergence). The right-handers were characterized by less variation in values, although the influence of the coincidence/noncoincidence of the leading hemispheres in speech and motor processes also revealed itself as a tendency. This consistent pattern points out the necessity for further research on asymmetries of the

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different modalities that takes into account their probable interaction. The results of our study comport with scientific data showing genotypic left-handers with subzero right-ear coefficient (REC) values to be more efficient than left-handed persons who display high REC values.

Keywords: left-handers, right-handers, dichotic listening, right-ear coefficient (REC), efficiency coefficient (EC), leading hemisphere in the process of audioverbal perception

The beginning of the study of the cerebral organization of the mental functions of left-handed people dates back to the mid-19th century, when Paul Broca formulated the rule that the hemisphere that controls speech is at the opposite side of a leading hand. In 1899 Bramwell described aphasia as a "cross" in a 36-year-old left-handed person with right-sided hemiparesis (Bramwell, 1899). Later on, it was discovered that there is no direct connection between handedness and hemispheric dominance in speech.

The Wada test and dichotic listening are considered to be the two main methods for differentiation of a dominant-in-speech hemisphere. Wexler and Halwes (1983) proved the high test-retest reliability of the dichotic listening method. Zatorre (1989) carried out dichotic listening on a sample of right- and left-handed patients who also took the Wada test. The finding about speech laterality according to the results of dichotic listening coincided with Wada test values in 36 of the 38 individuals (95%). These empirical data give grounds for judging the dichotic listening test to be highly accurate as an instrument for differentiating a dominantin-speech hemisphere.

Until now, many contradictory facts have been gathered from the results of dichotic listening with left-handers. For instance, according to the findings of Kimura (1983) 50 percent of left-handers have left-hemispheric dominance in speech, and the remaining 50 percent have right-hemispheric dominance. According to the findings of Warrington and Pratt (1973) this proportion is 75% and 25%, correspondingly. On analyzing the findings of Hécaen and Sauguet (1971), Kinsbourne (1988) reported that 70 percent of left-handers have bilateral representation of speech, and most of the remaining 30 percent have left-hemispheric dominance. Moffat, Hampson, and Lee (1998) reported that, according to their research, 54 percent of left-handers have left-hemispheric dominance in speech, and 46 percent have right-hemispheric dominance. Dos Santos Sequeira and colleagues (2006) showed exactly opposite results (left-hemispheric dominance in speech in 46.4% of left-handers, and right-hemispheric dominance in the remaining 53.6% of lefthanders). For their part, 64% of right-handers have left-sided speech control, and 36% have right-sided speech control according to this research.

Kimura explains her findings in the following way. When two diverse stimuli are introduced in different auditory canals, the difference in the capacity of the ducts increases so much that transmission in the ipsilateral canal is suppressed (Kimura, 1961). This supposition explains the right ear's advantage. In his study Kotik (1975) comes to the following conclusion: both the left and the right hemispheres of the brain take part in audioverbal processes, particularly in the process of perception and reproduction of dichotic verbal stimuli. Thus, both the hemispheres are capable of coding audioverbal information. However, tracking in a subdominant hemisphere has its own particular features; in the case of dichotic perception, verbal stimuli form "the track"—that is, the "acoustic iconic figure" in the right hemisphere. When transmitting to the left hemisphere this track is subject to linguistic encoding, and it can be reproduced. At the same time, stimuli coming into the right ear and transmitted immediately to the left hemisphere have a shorter transmission path and, probably, this path is shorter on one link of encoding. Thus, one can suppose that stimuli perception is equally efficient in both auditory canals, but the hemispheres are not equal in the process of reproduction. This phenomenon creates an advantage for the right ear (Kotik, 1974).

When the results of dichotic listening in left-handers who do not have any lefthandedness in their family were analyzed, the advantage of the right ear appeared, but there was no distinction in stimuli perception by the right and left ears within hereditary left-handers. Left-handers with left-handed relatives have a pronounced right-sided asymmetry, and left-handers who have no left-handed relatives show signs of bilateral and right-hemispheric control of speech function (Kinsbourne, 1988). Some other researches point out the absence of differences in asymmetry between hereditary and nonhereditary left-handers (Springer & Deutsch, 1989). According to the finding of Jäncke and colleagues right-handers and ambidexters reproduce the stimuli more rapidly and often as they are delivered into the right ear during dichotic listening, while left-handers respond more rapidly to the stimuli addressed to the left ear (Jäncke & Shah, 2002; Jäncke, Wüstenberg, Scheich, & Heinze, 2002).

In this article in discussing the empirical data we avoid the phrase "dominantin-speech hemisphere." In our opinion, the procedures of the different variants of the dichotic listening test (verbal, syllabic, musical, etc.) are aimed not so much at the full composite of the processes of speech functioning, which is complex in its morphofunctional organization of the structure, but at its particular processes namely, at audioverbal perception and audioverbal memory.

Method

In our experiment, the dichotic listening test was administered to two groups of individuals. Both groups consisted of healthy individuals from 18 to 51 years old with specialized secondary education, incomplete higher education, or higher education. None of them had a craniocerebral injury or organic brain lesion; none had sought medical help from a psychiatrist. The group of right-handers consisted of individuals with a leading right hand (47 persons aged 29.04 ± 9.97) who did not have any left-handed close relatives. In the group of left-handers (32 persons aged 29.41 ± 10.34) were individuals with a leading left hand who had at least one left-handed close relative (a father, mother, brother, sister, grandmother, grandfather, uncle, aunt) and who did not have any injuries or other organic brain diseases.

In this research the dichotic listening test used was by Kimura (1961) and was adapted to the Russian language by Kotik (1974). The experimental procedure consisted of 13 presentations of verbal-stimulus material. In the first series four dichotic pairs of words were presented to each individual. Before each following presentation the individual was to pronounce all the heard words. Then the earphones were reversed (the phones on the left ear were placed on the right ear), and the procedure was repeated (the second experimental series). Only the first-series results were used for analysis (Kovyazina & Roshchina, 2014). The subjects were given the following instruction: "You will be presented simultaneously with different words through both earphones, some words into one ear, other words into the other. The words are produced in series. There are long pauses in between the series. Your task is to name all the heard words during the pauses."

The following coefficients were determined on the basis of the test results:

- The right-ear coefficient (REC) was determined according to this formula:
- REC = $(\Sigma D \Sigma S) / (\Sigma D + \Sigma S)^* 100\%$, where ΣD is the total quantity of correctly reproduced words presented to the right ear and ΣS is the total of correctly reproduced words presented to the left ear.
- The effectiveness ratio (ER), proposed by Kotik (1988), was determined according to this formula:
- ER = $(\Sigma r \cdot \Sigma w) / (\Sigma r + \Sigma w)^* 100\%$, where Σr is the total number of right answers and Σw is the total number of mistakes.
- The efficiency coefficient (EC): EC total, EC of the right ear, EC of the left ear:
- EC total = A / taw * 100%, where A is the number of correctly reproduced words and *taw* is the total number of test words for all the reproduced words; taw = 104 words.
- EC (right ear) = A(r) / taw(r) * 100%, where A(r) is the number of correctly reproduced words by means of the right ear and taw(r) is the number of test words by means of the right ear; taw(r) = 52 words.
- EC (left ear) = A(l)/taw(l) * 100%, where A(l) is the number of correctly reproduced words by means of the left ear and taw(l) is the number of test words by means of the left ear; taw(l) = 52 words.

In the opinion of A. R. Luria, when rating the reproduction of dichotic stimuli one needs to employ all three indices (REC, ER, and EC), which in aggregate define "a dichotic syndrome" (Kotik, 1988).

Results

All the individuals in the research were divided into six groups depending on the leading hand and REC values. The extraction method of the extreme groups according to the quartile values of the REC (median, 11.76; 25th percentile, 0; 75th percentile, 28.2) was applied to divide the individuals into six groups: the group with a leading right hemisphere in audioverbal perception included those individuals whose REC 2qw less than 0%; the group with bihemispheric control of audioverbal perception included those individuals with a REC of 0% through 28.2%; the group with a leading left hemisphere in audioverbal perception included those with a REC of more than 28.2%. Each of these groups was divided into subgroups according to the leading hand. Thus, there were six groups of individuals: the left-

handers with a leading right hemisphere in audioverbal perception — that is, with low REC values (8 persons, 10%); the left-handers with a leading left hemisphere in audioverbal perception — that is, with high REC values (9 persons, 11%); the lefthanders with bilateral control of audioverbal perception — that is, with medium REC values (15 persons, 19%); the right-handers with low REC values (11 persons, 14%); the right-handers with high REC values (11 persons, 14%), and the righthanders with medium REC values (25 persons, 32%).

Comparison of the values (according to Cramer's V) did not reveal any differences between the groups (V = 0.065, p = 0.845). The findings conformed to empirical data of the last 15 years, which show that the distribution of right- and left-handers depending on REC values is nearly equal (Dos Santos Sequeira et al., 2006; Moffat, Hampson, & Lee, 1998; and others).

Comparison of the REC values in the left-handers and the right-handers by means of the Mann-Whitney U test did not reveal any significant differences between them (the medium REC value in the right-handers was 10.39 ± 23 , 42%, the median was 11.76; in the left-handers it was 12.9 ± 27 , 33%, the median is 12.7%; U = 728.5, p = 0.814).

The research results are shown in Figures 1, 2, 3 and 5 for the following groups: 1, the left-handers with a leading left ear; 2, the right-handers with a leading left ear; 3, the left-handers with a leading right ear; 4, the right-handers with a leading right ear. Figure 4 is a comparison of the groups' high and low REC values only (REC>28.2% and REC<0%). The medium group's scores ($0\% \le \text{REC} < 28.2\%$) are presented as additional information.



Figure 1. The EC in all the groups and the results of the extreme-group comparison according to REC (1, 2, 3, 4) by means of the Mann-Whitney U test



Figure 2. The EC of the right ear in all groups and the results of the extreme-group comparison according to REC (1, 2, 3, 4) by means of the Mann-Whitney U test



Figure 3. The EC of the left ear in all groups and the results of the extreme-group comparison according to REC (1, 2, 3, 4) by means of the Mann-Whitney U test

Discussion

Let us begin analyzing the results with presumption 1 (existent in the scientific literature): there is tight interaction of the hemispheres and their reciprocal interference in right-handers but not in left-handers. Left-handers are characterized by "a relative autonomy of the brain hemispheres" (Semenovich, 1991, pp. 83–84) and a considerable elimination of the reciprocal inhibitory influence of the cerebral hemispheres (Corballis, 1983; Dobrokhotova & Bragina, 1994; and others). "Because of this, the right hemisphere should be 'freer,' which enables it to take part in various forms of mental activity flow more actively" (Semenovich, 1991, pp. 83–84).

Let us consider the values of dichotic listening of the left- and right-handers with high REC values (groups 3 and 4 in Figures 2 and 3). Analysis of the EC of the right ear and the EC of the left ear provides evidence that the contribution of the left hemisphere to audioverbal perception processes in both groups is equal (in these groups there are no statistically significant differences between the EC values of the right ear, U = 40.5; p = 0.493). And the right-hemisphere contribution is seemingly not equal (the EC values of the left ear of the left-handers are lower than those of the right-handers' reflecting tendency, U = 26.5; p = 0.078). The right hemisphere in the individuals in the 3rd group is less "active" than in those in the 4th group. Thus, presumption 1 is disproved both when accepting the empirical data as statistically insignificant (left-handers have no advantage) and when taking into account the differences in reflecting tendency (according to the EC of the left ear the advantage is with the right-handers, not the left-handers).

According to the model proposed by Sparks and Geschwind (1968) the poor reproduction of dichotic verbal stimuli through the left ear (with left-hemisphere dominance in speech) is explained by the fact that information obtained through the right ear arrives immediately in the left hemisphere; through the left ear it arrives initially in the right hemisphere, and then, through commissural fibers, it is transmitted to the speech areas located in the left hemisphere of the brain. But why is the EC of the left ear lower in the 3rd-group left-handers than in the 4th-group right-handers if the mechanism of the efficiency reduction of dichotic-stimuli reproduction through the left ear is the same?

Let us make presumption 2: that the presence of differences between the rightand left-handers is hidden in a different hemispheric control of motor and verbal processes. If motor and verbal processes are under the control of oppositional hemispheres, the EC values of a nonleading ear are lower than are similar values when hemispheric control of motor and speech processes is nonoppositional. One needs to compare groups 1 and 2 in Figure 2 and groups 3 and 4 in Figure 3 in order to verify this presumption.

Let us check presumption 2 by analyzing the EC of the right ear in groups 1 and 2 — the left- and right-handers with low REC values, correspondingly, in Figure 2. Our presumption is not verified as there are no statistically significant differences between the EC values of the right ear in groups 1 and 2 (U=25; p=0.115). However, the left hemisphere's contribution is somewhat higher within the left-handers (group 1) than within the right-handers (group 2). The EC total value rises to statistical significance in the left-handers of group 1 but not in the right-handers of group 2 (Figure 1; U=16; p=0.02). The comparison of groups 3 and 4 is provided in our discussion above of presumption 1. In addition, the higher EC values of the

left ear in groups 1 and 2 in comparison with the EC values of the left ear in groups 3 and 4, correspondingly, in Figure 3, can be explained by the fact that the left ear is leading in groups 1 and 2. Thus, in the presence of right-hemisphere dominance in audioverbal perception both hemispheres are more "active" in the left-handers than in the right-handers in the absence of statistically significant differences between the EC values of the left and right ear in these groups (1 and 2; 3 and 4).

The findings enable us to make another presumption — presumption 3: when the left hemisphere is dominant in audioverbal perception processes, then the coincidence/noncoincidence of hemispheric control over motor and speech processes influences the EC values of the nonleading ear (the EC values of a nonleading ear are higher in the case of coincidence than in the case of noncoincidence). When the right hemisphere is dominant in audioverbal perception processes, then the coincidence/noncoincidence of hemispheric control over motor and speech functions influences the EC values of the leading ear (the EC values of a leading ear are higher in the case of coincidence than in the case of noncoincidence).



Figure 4. The EC in left- and right-handers with low, medium, and high REC values

Let us compare groups 1–2 and 3–4 in Figure 3 for the purpose of verification. Verification needs to show that the presumption is correct for both the right- and left-handers and needs to confirm the right hemisphere's greater contribution to hemispheric interaction in that, as the presumption states, "influences" on a lead-ing and nonleading ear are always connected with the right hemisphere (the left ear). The comparison reveals that the presumption is not verified, but one may assert its higher probability as EC total values in group pairs 1–2 and 3–4 (Figure 1) have statistically significant differences. Moreover, the most interesting result is the following consistent pattern: the EC is significantly higher in the left-handers with

a leading left ear than in the right-handers with a leading left ear; and this index is significantly higher in the right-handers with a leading right ear than in the left-handers with a leading right ear (Figure 4). The following fact deserves attention: the highest efficiency among all the groups is achieved by the left-handers with a leading left ear; the next highest efficiency is achieved by the right-handers with a leading right ear and then by the right-handers with a leading left ear, and the least efficiency is typical of the left-handers with a leading right ear. One cannot but admit that audioverbal perception efficiency is conditioned by an intermodal interaction (the interaction of manual and audioverbal asymmetry). This finding points out the necessity of further research on the asymmetries of the different modalities with due regard for their contingent interaction.

Let us state presumption 4: the left-handers with low REC values and the righthanders with high REC values have similar features in their audioverbal perception processes because manual and verbal processes in both groups are under the control of one hemisphere (groups 1 and 4) (see Figure 4). The same is correct in relation to the right-handers with low REC values and the left-handers with high REC values as manual and verbal processes in the both groups are controlled by different hemispheres (groups 2 and 3). One needs to compare each of the group pairs according to their ECs in order to accept this presumption (Figure 1).

Analysis of the results shows that there are no significant differences in the EC values both in the pair of groups 1 and 4 and in the pair of groups 2 and 3. However, there are significant differences between groups 1 and 2 (in favor of the left-handers with low REC values) and groups 3 and 4 (in favor of the right-handers with high REC values).



Figure 5. The ER in all groups and results of the extreme-group comparison according to REC (1, 2, 3, 4) by means of the Mann-Whitney U test

To complete our discussion of the results, notice that the EC turns out to be the least informative index for indicating the ratio between the number of correct answers and the number of mistakes when reproducing words during dichotic listening (Figure 5). The groups almost do not differ in this index value. Only between the left-handers with low REC values (group 1) and the right-handers with low REC values (group 2) there is a distinction between reflecting tendency (in favor of group 1). The EC partly conforms to the regularity described above (Figure 4). However, this consistent pattern is not observed in groups 3 and 4. On the one hand, this inconsistency may point to a fundamental distinction between the indices of efficiency and effectiveness. On the other hand, it may point to the necessity for further verification of the empirical data by involving more individuals.

Conclusion

The research results reveal that the peculiarities in the field of audioverbal perception within both the left- and right-handers depend mainly on the right hemisphere's activity. The most dynamic and sensitive index of the two hemispheres functioning during dichotic listening is the efficiency coefficient of stimuli reproduction through the left ear (EC of the left ear). It turns out that this index depends very much on the coincidence/noncoincidence of leading hemispheres in speech and motor processes. The results of this research match the data about genotypic left-handers with low REC values being the more effective than left-handers with high REC values.

Presumption 1 turns out to be the most debatable because of its claim that lefthanders' right hemisphere is more active than right-handers' right hemisphere. "All the real left-handers ... are placed rather closer to right-handers on the conceptual line whose one extremity is occupied by the right-handers and whose other extremity is represented by an ideal left-hander who is theoretically expected to be antipode to a right-hander in all the functional asymmetries (including psychic asymmetry) but who is, indeed, absent" (Dobrokhotova & Bragina, 1994, pp. 189).

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Electrophysiological analysis of the cognitive component of social creativity in young males and females with different individual characteristics

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This article sets forth the problem of studying social creativity from the psychophysiological perspective. Presented here are the first experimental records of studying the cognitive component of social activity. This article describes the peculiar hemispheric activity during the resolution of interpersonal problems by students of different individual peculiarities and professional achievement levels. The author shows that when the solution to a verbal divergent task by young males and females of high creativity and professional achievement is reached, the frequency-spatial EEG indexes are higher in the parietal and frontal brain regions. In the solution of a convergent task, these indexes are higher in the frontal, central and cervical brain zones. In case of young males and females of low creativity and average and low levels of professional achievement, the solution of a convergent task is accompanied by increased EEG power in the central, frontal, parietal zones of both hemispheres.

Thus, the assessment of the psychophysiological mechanisms of the cognitive component in social activity has shown that a definite picture of hemispheric activation stipulates the peculiarities of divergent and convergent thinking in young males and females of various levels of creativity and professional success.

This difference, revealed at the initial stage of investigation, demands a deeper study of the phenomenon of social creativity in the professional training of a personality that is inclusive of this personality's individual peculiarities.

Keywords: social creativity, creativity level, EEG power peculiarities, lateral arrangement profile (LAP), gender

Introduction

The changes observed in modern Russian economic, political, and social domains are naturally reflected in those challenges faced by the higher education system of today. The future young expert should now be able to solve nonconventional creative problems in the professional sphere, thus showing competitive power at the

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labor market. Much depends upon social creativity that helps one overcome barriers, stereotypes, and behavioral patterns, to modify the communications behavior repertory, and promote self-realization and self-actualization in interpersonal interactions (Osipova, 2000; Kaufman, Baer, Loomis, 2010); which are essential for so many present-day occupations.

The works of modern Russian psychologists treat social creativity as a specific mental characteristic, showing itself as an ability to give rise to new ideas in communication and to produce multiple variants of viable solutions to those problems referred to interpersonal communication (Kann, 1997; Ilyinykh, 2011; Tyurmina, 2004; Akhmetova, 2010).

Another matter of disagreement is the interconnection between gender and creativity (Runco, 1986; Abra, Valentine-French, 1991; Chan, 2005; Kaufman, 2006).

Foreign psychologists treat social creativity either as a form of social intellect (J. Guilford, R. Sternberg) or social genius (S. Grace, R. Tomassoni).

A number of authors studying social creativity have noted its components. Thus, according to A.A. Popel, social creativity includes self-actualization ability, social motivation, communicative sensitivity, and social imagination (Popel, 2005; Banyukhova, 2011).

A.Ye. Ilyinykh (2011) proposed the following structural model for social creativity. Its basic components are motivational (creative position, pursuit of self-improvement and personal growth), cognitive (verbal originality in the use of verbal means in everyday communication), communicative (employment of those communicative means that are adequate to the communicative situation), emotional (assessment of the partner's emotional state), and existential (availability of a life goal, its meaningfulness, sense of a time perspective).

As shown above, social creativity is to be understood as a complex personal characteristic that entails the recognition and analysis of the reasons and dynamics of various social situations and the ability to make effective creative decisions. It is characterized by an ability to interpret socially significant situations in an original and flexible way (Ilyinykh, 2011).

Proceeding from the position that human behavior is a synthesis of biological and social factors, one may state that the study of interpersonal communicative interaction should also be placed among the critical tasks in social psychophysiology, particularly electrophysiological communicational patterns, perception of other people's behavioral peculiarities in communication, etc.

There are few studies of psychophysiological mechanisms, specifically cerebral mechanisms underlying adequate perception of a socially significant situational context and decision-making.

Method

This research is the initial stage of a future, larger study of the psychophysiological aspects of social creativity in students with different individual peculiarities and abilities with respect to professional skills.

In our studies of social creativity's cognitive components with respect to the effective use of verbal means in communication, we utilized the social creativity model proposed by A.Ye. Ilyinykh. The basis of the study also included our pre-

vious research of the same respondent group, which was aimed at the identification of electrical brain activity peculiarities according to the task type and personal equation.

Hence, **the objective** of this research is a study of the brain's electrical activity in young males and females with different creativity levels, academic achievement and lateral arrangement in solving cognitive tasks of social creativity.

The subject under examination is the EEG peculiarities in young males and females of different creativity levels, lateral arrangement profiles (LAPs), and professional achievements as they undergo verbal tests.

The test subjects were undergraduate humanists (4-5 years of studies) of the Academy of Psychology and Pedagogics at South Federal University; the sample totaled 250 people aged between 21 and 23. All the respondents were divided into groups according to their verbal creativity levels, professional achievements (scholarships, University Rector's commendations, scientific and social achievements, top results at academic research contests, etc.), lateral arrangement profiles (LAPs), and gender.

Research methods included literature analysis, psychological testing, talk method, EEG method, and expert estimations of document-supported achievements. We also traced the group since the start of their tenure at the University.

Psychodiagnostic methods included the Guilford subject use methods in the Tunik modification (to diagnose verbal creativity), as well as T.A. Bragina and N.N. Dobrokhotova's functional interhemispheric asymmetry profile determination methods.

Guilford subject use methods in the Tunik modification were applied to diagnose verbal creativity.

The results obtained by a treatment of the retrieval could be presented as three groups.

Group 1: persons demonstrating a low level of verbal creativity; results lower than the originality level Or \leq 0.81, uniqueness level Un \leq 2;

Group 2: persons demonstrating a middle level of verbal creativity; results within the following limits: originality level $0.82 < \text{Or} \le 0.93$, uniqueness level being $2 < Un \le 5$;

Group 3: persons demonstrating a high level of verbal creativity; results exceeding the originality level Or > 0.94, uniqueness level Un > 5.

T.A. Bragina and N.N. Dobrokhotova's functional interhemispheric asymmetry profile determination methods. These methods comprise a number of questions and estimates motor (hand, foot) and sensory (ear, eye) asymmetry with the further profiling of right, left, mixed, or ambidextrous.

Psychophysiological methods. The investigation applied the EEG (electroencephalography) method. EEG recordings were conducted according to international standards (10–20%) consistent with the standard procedure of registering the EEG background, eye-opening and eye-closing tests. To register brain electric activity, 21 electrodes were used, a monopolar scheme with ipsilateral ear referents.

Investigation procedure description. All those who took part in the investigation were subdivided depending on gender, lateral arrangement profile (LAP), and academic progress level. According to LAP, the test subjects were subdivided into those representing left, right, and mixed LAPs. They were subdivided according to their academic progress level into high progress (achievements in scientific and social life, scientific publications, diplomas, scholarships), moderate progress (scientific publications, participation in conferences), and low progress (no publications, no scientific or social life) groups.

Before the EEG examination started, the test subjects were instructed on how to accomplish the verbal tasks. Two types of tasks were used in the investigation:

- verbal convergent (the test subject had to recollect proverbs about interpersonal interaction);
- verbal divergent (inventing one's own original proverb about interpersonal interaction, or a free creative search task);

The above tasks were presented during EEG recording. EEG was also marked at the beginning and end of the presentation; the signal 'test subject's reply' was also registered as this person was ready to give a reply. Test subjects' replies to verbal tasks were recorded in the study protocols. In addition, while EEG was being recorded, the test subjects were offered background tests (EO — eyes open, EC eyes closed). All the documented data on each test subject were assessed according to the factors of velocity, flexibility, originality, productivity. Next, the EEG data were analyzed. In our investigation, we used the mean time spent by the test subject to solve each given task. The time was measured as the lapse between the end of the task presentation and the 'reply' signal given by the test subject.

Each functionally relevant EEG period underwent a spectral analysis within the following frequency ranges: theta1 (4.0 – 6.0 Hz), theta2 (6.0–8.0 Hz), alpha1 (8.0–10.5 Hz), alpha2 (10.5–13.0 Hz), beta1 (13.0–24.0 Hz), and beta2 (24.0–35.0 Hz).

Mathematical treatment of the data was performed with STATISTICA 8.

Results

The electrophysiological and statistical analysis of every frequency range from theta1 to beta2 of each functional test in various groups of test subjects revealed a significant difference in brain area activity during the solution of the above types of test tasks depending on the personal equation.

The solution of a verbal convergent task the by test subjects of low creativity is characterized by power amplification in the occipital and frontal temporal zones of the left hemisphere (O1, T3) and the frontal temporal zone of the right hemisphere (T4) (p < 0.05). In those of average creativity level: anterior frontal and middle frontal zones of both hemispheres (Fp1, Fp2, F3, F4) (p < 0.05). In those of high creativity level: anterior frontal zones of both hemispheres (Fp1, Fp2, F3, F4) (p < 0.05).

While solving a verbal divergent task, the test subjects of high creativity level showed power amplification in the anterior frontal, central and parietal zones of the right hemisphere (Fp2, C4, P4) (p < 0.05). In those of average creativity level, power amplification was evident in the occipital zones (O2, O1, Oz). In those of low creativity level, power amplification was evident in parietal and frontal temporal zones of the left hemisphere (P3, P4, T3) (p < 0.05) (Fig. 1).



Figure 1. Statistically significant differences in the EEG power when comparing students of different creativity levels in solving problems of convergence and divergence (p < 0.05)

The solution of a verbal divergent task by persons of high professional achievements is accompanied by power amplification in the back temporal zone, mainly of the right hemisphere, and the central frontal zone (T6, Fz); in those of average achievement level, the parietal central zones of the left hemisphere (Pz) are amplified; in those of low achievement level, the frontal temporal zone of the right hemisphere (T4) (p < 0.05) is amplified.



Figure 2. Statistically significant differences in the EEG power when comparing students of different achievement levels in solving problems of convergence and divergence (p < 0.05)

While solving a divergent task, the test subjects of high achievement level showed power amplification in the parietal central zone of the right hemisphere and the frontal central zone (Pz, Fz); in those of average achievement level, the occipital zone of the right hemisphere and the frontal zone of the left hemisphere (O2, F3) are amplified; in those of low achievement level, the occipital zone of the left hemisphere and the frontal zone of the right hemisphere (O1, F4) (p < 0.05) are amplified (Fig. 2).

It has been established that in individuals of low creativity and of mixed, right and left LAP, the localization of active brain zones is of a diffuse character, with a greater activity revealed in the occipital, central, and temporal zones of both hemispheres (O1, O2, C3, C4, T3, T4). This is most obviously manifested in divergent task solutions (p < 0.05). During average activity of young males and females (of the left and mixed LAP profiles), apart from the above named zones, the active zones become the central zones, which are particularly characteristic of the left and mixed profile representatives (p < 0.05). Right LAP representatives revealed connections of a more localized character, yet in the verbal divergent task solution the picture was similar to the above described groups (p < 0.05). Individuals of high creativity had a common tendency of including middle frontal and anterior frontal brain areas of both hemispheres. One should also note a lesser number of active zones in high creativity persons independent from LAP, which might be linked with a more effective cerebration, lower energy consumption, and the availability of definite cognitive schemes for a successful solution of the given task.

It has been shown that in young females and males of high creativity, the most significant power indices were higher in the parietal, temporal, and frontal brain regions (P3, P4, F3, F4) (p < 0.05). In young males and females of the right LAP, the power was higher in the frontal and temporal zones of the left hemisphere (F3, T3), whereas in those with the left and mixed LAPs in the right or left hemisphere during divergent task solutions. In the solution of a convergent task, the power increased in the frontal, central, and occipital brain zones. However, the people with the right and mixed LAPs showed symmetrical power growth in the central brain zones (C3, C4) (p < 0.05). The above tendency could be traced in high creativity young males and females, regardless of the level of their achievements.



Figure 3. Statistically significant differences in the EEG power when comparing young males and females of different levels of achievement, creativity and LAP in solving problems of convergence and divergence (p < 0.05)

In high creativity and average creativity young males and females of average and low achievement levels, as they solved a convergent task, power growth was not localized, yet diffusely distributed among the central, frontal, parietal zones of both hemispheres (C4, C3, F3, F4, P3, P4). In young people with high achievements, asymmetrical brain zones power increased during a divergent task solution, which fact speaks in favor of intensive interhemispheric interaction. It is characteristic that young males and females with the right LAP, high creativity and achievement level in the solution of the given tasks, engage more symmetrical brain zones (p < 0.05). (Fig. 3).

Conclusions

The assessment of the psychophysiological mechanisms of the cognitive component in social activity has shown that the peculiarities of divergent and convergent thinking in young males and females of various levels of creativity and professional success are stipulated by a definite picture of hemispheric activation. In the solution of a verbal divergent task by young males and females of high creativity and professional achievement, the frequency-spatial EEG indices are higher in the parietal and frontal brain regions. In the solution of a convergent task, these are higher in the frontal, central, and cervical brain zones. In cases of young males and females of low creativity and average and low levels of professional achievement, the solution of a convergent task is accompanied by increased EEG power in the central, frontal, parietal zones of both hemispheres.

While studying, young people of a high creativity level demonstrate better results in both their research activities and social life.

This difference, revealed at the initial stage of the investigation, demands further study of the social creativity phenomenon in the professional training of a personality inclusive of this personality's individual peculiarities.

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Cognitive predictors of success in learning Russian

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This study examines the role of cognitive characteristics in the success in learning Russian, assessed through teachers' grades and test scores on standardized state exams.

This paper examines the relationship between cognitive characteristics, such as nonverbal intelligence, working memory and speed of information processing, and the results of the Unified State Exam for 11th grade students, the Basic State Exam for 9th grade students and the traditional assessment of Russian language learning.

This study involved students in the 9th and 11th grades from four educational institutions in the Moscow and St. Petersburg regions; 427 students were studying in the 9th grade (50.3% were boys) and 398 students were studying in the 11th grade (44.8% were boys).

This study concluded that expert assessment of Russian language learning is more associated with successful test scores on the Unified State Exam (r=0.71, p<0.01) than with the results of the Basic State Exam (r=0.46, p<0.01).

This study showed that at the lower and upper levels of secondary education, nonverbal intelligence is a significant predictor of success in learning the Russian language according to expert estimates. In addition, we found differences in the relationship between cognitive performance and success in learning the Russian language as assessed by tests. Nonverbal intelligence contributes significantly to individual differences in scores for the Unified State Exam in Russian, while the contribution of cognitive characteristics on the Basic State Exam is not statistically significant.

Keywords: nonverbal intelligence, cognitive characteristics, success in learning Russian, Unified State Exam, State Final Examination, annual assessment

Introduction

The problem of the relationship between language and thought is central for a number of sciences — from linguistics to cognitive neuroscience. This is not surprising because language is not only a means of communication but is also a means

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of processing, storing and transmitting information and, in general, knowledge of the world (Gentner & Goldin-Meadow, 2003; Verbitskaya, 2013; Zinchenko, 2009; Zinchenko & Pervichko, 2013, etc.). Of particular importance is the native language of the student in the course of learning because only by means of language does a child receive new knowledge in all subject areas. Apparently, individual differences in the proficiency level of students in their native language can be associated with academic success in general. However, the process of mastering the mother tongue may be associated with individual differences in cognitive learning.

Understanding the mechanisms of the formation of individual differences in academic success is important not only for the education system. It is also important for each individual student and their families because individual differences in school performance are related to subsequent events in adult life — in higher education, professional choices, mental and physical health and even life expectancy (Power et al., 2013, etc.).

A number of studies have shown that success in learning is associated with cognitive characteristics such as intelligence (Druzhinin, 2007; Malykh et al., 2012; Tikhomirova et al., 2014; Deary et al., 2007), working memory (Bull et al., 2010), speed of information processing (Semmes et al., 2011) and others. Moreover, it was shown on a sample of high school students that intelligence is the "central core" in the relationship between cognition and academic success and that intelligence has the most significant influence on academic success compared with other cognitive characteristics (Rinderman & Neubauer, 2004, p. 574).

In recent years, predictors of academic success, including success in learning how to read, learning a native language and learning mathematics, have attracted the interest of researchers (e.g., Kovas et al., 2011). However, the focus shifted towards the study of cognitive predictors of success in learning mathematics, including the Russian sample (e.g., Tikhomirova et al., 2014; Morosanova et al., 2014; Rudenko, 2013). Unfortunately, most of the scientific studies on the factors that shape individual differences in language learning were conducted abroad (see review article by Krumm et al., 2008), and almost no studies have been conducted on the cognitive predictors of individual differences in successfully mastering the Russian language.

The relationship between success in learning and cognitive performance may be associated with the different types of analyzed indicators of success (e.g., teacher evaluation, scores on state exams, graduation, etc.). Quite often, teachers' assessments are considered a measure of success in learning, reflecting students' understanding of certain elements of the school curriculum. However, the subjectivity of teachers' assessments can result in incorrect comparisons among the educational achievements of students, particularly from educational institutions, with different educational programs (e.g., schools for gifted children, etc.).

Standardized tests on school subjects are also used as indicators of success, which are designed for research purposes, and for the diagnosis of educational achievements at the state level (state exams). These tests include same-type tasks and apply uniform methods for assessing the quality of the work done. In particular, the following final state exams were introduced in Russia: the Unified State Exam (USE) was introduced in 2009, which must be passed at the end of formal education, and the Basic State Examination (BSE) was introduced in 2010 (in terms

of up to 2014 — State Final Examination). These standardized test items were designed to objectively assess the level of knowledge that students learned in different types of educational institutions.

The aim of this study is to examine the role of cognitive characteristics, such as nonverbal intelligence, working memory and speed of information processing, in the successful learning of the Russian language (in terms of both school grades and state exams).

Method

The study involved students in the 9th grade (mean age = 15.77, SD = 0.47) and 11th grade (mean age = 17.77, SD = 0.42) from four secondary public schools in the Moscow and St. Petersburg regions. Of the 427 students who were studying in the 9th grade, 50.3% were boys, and of the 398 students who were studying in the 11th grade, 44.8% were boys.

Cognitive characteristics

To assess working memory and the speed of information processing, the Internet version of the test battery "Cognitive characteristics" was used (https://www.inlab-twins.ru). The test battery was adapted, and it contained a number of tasks aimed at measuring the level of cognitive performance (Tikhomirova, Malykh, Tosto, Kovas, 2014). For this paper, we used the following tests:

- "Corsi block", in which a participant had to repeat the sequence of "lighting" blocks, and which determined the volume of working memory. The empirical analysis included the number of correct answers on the test.
- "Reaction time", in which a participant had to press a key corresponding to a number on the screen and which captured the speed of information processing. We analyzed the average response time for the correct answers.
- To assess nonverbal intelligence we used the "Standard Progressive Matrices" test (Raven, 1999).

Success in learning

Russian teachers' evaluation of academic quarters (on a sample of 9th grade students) or of semesters (on a sample of 11th grade students) was used as an expert evaluation of the success of the training assessment. We analyzed the arithmetic average of teachers' ratings on the Russian language learning for a more subtle differentiation of expert ratings.

The rate of success in learning was defined by the results of the Unified State Exam (for 11th grade students) and the Basic State Exam (for 9th grade students) for Russian language learning. The USE was assessed in primary points, which were later converted into test points in accordance with the conversion scale. We used test scores. Test items in the BSE were evaluated in primary points that were then correlated into a five-point scale. This paper analyzes the primary points for the BSE.

Analysis of the results was carried out on the basis of anonymous personal data with prior written consent from the parents of the participants.

Results

The study analyzed the test indicators of success in learning Russian — the results of the Unified State Exam and the Basic State Examination — as well as expert assessments — grades given by teachers of the Russian language. The empirical analysis also included the cognitive characteristics of the students — speed of information processing, working memory and nonverbal intelligence.

Table 1 presents descriptive statistics for analyzed measures of cognitive development and success in learning Russian for students in the 9th and 11th grades.

	9 th grade	11 th grade
USE_11	_	70.21 (12.22)
BSE_9	32.77 (7.29)	-
Grade_Russian	3.61 (0.58)	4.02 (0.65)
Working memory	5.12 (1.95)	4.29 (2.04)
Speed of information processing	0.73 (0.22)	0.73 (0.23)
Nonverbal intelligence	48.71 (6.38)	52.37 (4.74)

Table 1. Means and standard deviations

Table 1 presents the mean of test scores for the Unified State Examination (USE) and the Basic State Exam (BSE), which were calculated in accordance with the established rules of converting the primary points. "Grade_Russian" shows the average value of the arithmetic mean for quarter (for 9th grade students) or semester (for 11th grade students) marks for the study of the Russian language. For working memory and nonverbal intelligence, the average number of correct answers is shown. For the speed of information processing, the average response time for correct responses in seconds is shown.

Minimum and maximum values are as follows: for USE_11 — from 0 to 100; for BSE_9 — from 0 to 42. "Grade_Russian" ranges from 2 to 5, "Working memory" from 0 to 12 and "Nonverbal intelligence" from 0 to 60.

According to Table 1, a sample of 11th grade students showed higher performance on the Russian language, working memory and nonverbal intelligence evaluations. However, the estimates differed significantly for the Russian language ($\eta^2 = 0.09$, p < 0.001) and nonverbal intelligence ($\eta^2 = 0.09$, p < 0.001) evaluations. The speed of information processing did not differ between students of the 9th and 11th grades.

In further analysis, we analyzed the relationship among test scores and expert estimates of success in learning Russian and cognitive characteristics (speed of information processing, working memory and nonverbal intelligence).

ANOVA showed no effect of educational institutions on test scores and expert estimates of academic success (p > 0.05), allowing us to conduct a further comprehensive analysis of the data.

It should be noted that the teachers' grades for Russian language learning correlated with test scores for the BSE (r = 0.46, p < 0.01).

Table 2 presents the results of the correlation analysis of the relationship between the Basic State Examination and estimates for Russian language learning with cognitive development in 9th grade students.

	Speed of information processing	Working memory	Nonverbal intelligence
BSE	0.12	-0.11	0.09
Grade_Russian	-0.10	0.17**	0.30**

Table 2. Relationships of test and expert estimates of academic success with cognitive characteristics in 9th grade students

**p<0.01

As shown in Table 2, BSE scores did not correlate with any of the analyzed cognitive characteristics (p > 0.05). However, the expert estimate was associated with working memory (r = 0.17, p < 0.01) and nonverbal intelligence (r = 0.30, p < 0.01).

In high school students (11th grade), it was shown that the test scores (USE) highly correlated with the teachers' estimates of Russian language learning (r = 0.71, p < 0.01).

Table 3 presents the results of the correlation analysis of the relationship of the Unified State Exam and estimates for the Russian language learning with indicators of cognitive development in a sample of 11th grade students.

Table 3. Relationships of test and expert estimates of academic success with cognitive characteristics in 11th grade students

	Speed of information processing	Working memory	Nonverbal intelligence
USE	-0.12	0.20**	0.28**
Grade_Russian	-0.03	0.16*	0.31**

According to Table 3, in a sample of 11^{th} grade students, the test scores correlated with working memory (r=0.20, p < 0.01) and nonverbal intelligence (r=0.28, p < 0.01). Similar patterns were found for the expert estimates. The speed of information processing did not correlate with test scores or with expert estimates of Russian language learning (p > 0.05).

The correlation analysis showed that in 9th and 11th grade students, the expert estimates of success in learning Russian show similar patterns in the relationship with cognitive performance. Grades for Russian language learning in both age samples correlated with the level of development of working memory and nonverbal intelligence, but did not correlate with the speed of information processing.

Test indicators of success in Russian language learning — the USE and BSE — differ in their relationship with cognitive performance. The USE is interrelated with

working memory and nonverbal intelligence. The BSE is not associated with any of the analyzed measures of cognitive development.

To investigate the role of cognitive variables — speed of information processing, working memory and nonverbal intelligence — multiple regression analyses were performed on samples of 9th and 11th grade students. Dependent variables test success rates and expert estimates — were introduced sequentially. The independent variables were measures of the cognitive development of the students.

Table 4 shows the results of the regression analysis for the test scores for Russian language learning on a sample of 11th grade students.

Table 4. Results of the regression analysis of the USE the Russian language in students of 11^{th} grade

	β	B (standard error B)	t	Р
Working memory	0.12	0.74 (0.12)	1.28	0.20
Speed of information processing	-0.05	-2.72 (4.93)	-0.55	0.58
Nonverbal intelligence	0.24	0.62 (0.25)	2.54	0.01

In 11th grade students, among all the analyzed cognitive characteristics, the only significant predictor of high test scores was nonverbal intelligence (β = 0.24, *p* < 0.01). The characteristics of the regression model were as follows: R² = 0.10, adjusted R² = 0.07, F = 3.09, *p* < 0.01.

Regression analysis was conducted on the BSE scores on a sample of 9th grade students. It is worth emphasizing that the results of the regression analysis on the BSE were statistically not significant: no significant predictors were found among the cognitive variables.

Further analysis included multiple regression analysis on the expert estimates of success in learning Russian. Table 5 shows the results of the regression analysis on the assessment of Russian language learning on a sample of 11th grade students.

	β	B (standard error B)	t	P
Working memory	0.06	0.02 (0.03)	0.66	0.51
Speed of information processing	0.02	0.04 (0.26)	0.16	0.88
Nonverbal intelligence	0.32	0.04 (0.01)	3.34	0.00

Table 5. Results of the regression analysis on "Grade_Russian" in 11th grade students

According to Table 5, the expert estimates — grades on the Russian language assessments — for a sample of 11th grade students predicted nonverbal intelligence ($\beta = 0.32$, p < 0.001). The characteristics of the model were as follows: R² = 0.12, adjusted R² = 0.09, F = 4.74, p < 0.001.

Table 6 shows the results of the regression analysis on the expert estimates of success in learning Russian on a sample of 9th grade students.

	β	B (standard error B)	t	Р
Working memory	0.13	0.04 (0.02)	1.80	0.07
Speed of information processing	-0.03	-0.07 (0.19)	-0.36	0.72
Nonverbal intelligence	0.24	0.02 (0.01)	3.47	0.00

Table 6. Results of the regression analysis on "Grade_Russian" in 9th grade students

Similar results on the expert estimates were obtained for the sample of 9th grade students. The only cognitive predictor of grades for Russian language learning was nonverbal intelligence. The characteristics of the model were as follows: $R^2 = 0.10$, adjusted $R^2 = 0.09$, F = 7.37, p < 0.001.

In the multiple regression analysis, similarities in expert estimates were revealed between the samples of 9th and 11th grade students: 9% of the variance of the grades for Russian language learning was predicted by nonverbal intelligence. However, differences were revealed between the samples for the test scores: the USE results could be predicted from nonverbal intelligence (7% of the variance), and the contribution to the results of the BSE were statistically not significant.

Discussion

In general, it was shown that the expert estimates and the test indicators of success in learning the Russian language are interconnected to different extents at the lower and upper levels of secondary education. Thus, grades for Russian language learning are to a much greater extent associated with the USE results in the 11th grade than with the BSE results in the 9th grade. This fact may be associated with both the superior validity of the USE and with the selection of students who wish to continue their studies at the upper level of secondary education.

The study found no association between the level of cognitive development and the BSE scores in Russian language learning. This may reflect the specificity of success in learning Russian in contrast, for example, with success in mathematics. In a study on the Russian sample, the BSE scores in mathematics significantly correlated with spatial memory (r = 0.20, p < 0.05) and were not related to nonverbal intelligence (in Russian: Morosanova et al., 2014). It is possible that non-cognitive characteristics are more important for success in learning the Russian language at the lower and upper levels of secondary education. The studies highlight the role of learning activity as a component of achievement motivation for success in learning the mother tongue, mathematics and reading (Anderman, Midgley, Wigfield, & Eccles, 2001).

On the contrary, the test scores for the USE on Russian language learning are associated with working memory and nonverbal intelligence. This fact is consistent with the results of previous studies, which emphasize that these cognitive variables especially contribute to individual differences in academic success across different fields (e.g., Rinderman & Neubauer, 2004).

As a result of our study, we found no relation of all the analyzed measures of success in learning the Russian language with the speed of information processing.

Similar results were obtained in our previous studies of success in mathematics (In Russian: Tikhomirova et al., 2014).

Interestingly, the contribution of cognitive characteristics to expert estimates of Russian language learning is equivalent in the two samples — 9^{th} and 11^{th} grade students. For example, 9% of the variance of the expert estimates can be explained by nonverbal intelligence. A slightly smaller percentage of variance of the USE scores (7%) is also explained by a single cognitive predictor — nonverbal intelligence. These data correspond to studies that found a moderate to strong association between intelligence and a whole range of indicators of success in learning (Sternberg et al., 2001). However, the relationship tends to be stronger if intelligence is seen not as a test indicator, but as a latent variable allocated by means of factorization of measures from a battery of tests. Moreover, it was shown that intelligence is a cognitive measure of a higher order and plays a mediating role in the relationship of elementary cognitive characteristics and academic success (Rinderman & Neubauer, 2004). Thus, our results confirmed that the level of nonverbal intelligence is a significant predictor of success in learning the Russian language.

It seems necessary to emphasize not only the relationship of intelligence and success in learning but also their differences within educational activities. Indeed, in our study the level of nonverbal intelligence explains no more than 10% of the variance of success in learning Russian. Apparently, some of the remaining variance relates to measurement errors; however, there are other factors in addition to intelligence affecting academic success. These factors may include personality traits, level of motivation and effort, support from parents, interaction with the teacher and the quality of a school as a whole (for discussion of these factors see, for example, in Petrides, Chamorro-Premuzic, Frederickson, & Furnham, 2005).

In our study we found no contribution by working memory on individual differences in either expert estimates or test indicators of success in learning the Russian language. This result may be related to the characteristics of the stimuli in the working memory test used in our study. Working memory was measured with the "Corsi block" test based on nonverbal stimulus material. At the same time, the contribution of working memory on success in learning the Russian language was obtained in a study using verbal stimuli to determine the level of working memory (Krumm et al., 2008).

Conclusion

This study shows that at the lower and upper levels of secondary education, nonverbal intelligence may be a significant predictor of success in learning Russian as assessed by experts. At the same time, we found differences in the relationship of cognitive performance with success in learning the Russian language in terms of test scores. Nonverbal intelligence contributed significantly to individual differences in the results of the Unified State Exam in Russian, while the contribution of cognitive characteristics to the results of the Basic State Exam was not statistically significant.

The study also showed that in high school students the teachers' estimates of Russian language learning more highly correlated with test scores on the USE (of 11th grade students) than with test scores on the BSE (of 9th grade students).

Limitations

We used a cross-sectional design. Therefore, the test scores of Russian language learning — the USE and the BSE — were analyzed on two independent samples. However, to evaluate the stability of test success rates, it is necessary to conduct a longitudinal study. A future direction for research may be associated with the study of cognitive predictors of success in learning Russian on a sample of bilingual students in Russian schools.

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CLINICAL PSYCHOLOGY

Resource function of conceptual and metacognitive abilities in adolescents with different forms of dysontogenesis

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This study investigated the level of conceptual and metacognitive abilities and their interaction in adolescents with different forms of dysontogenesis. The total sample (N=173) included four groups of young adolescents (11-12 years old): with normal development, with infantile cerebral palsy (CP), with attention deficit hyperactivity disorder (ADHD), and with delayed intellectual development (DID). We measured the adolescents' performance on tests of conceptual abilities (the use of categories at different grades of generalization, the discovery of abstract meaning and implicit connections between concepts) and metacognitive abilities (attention selectivity, as measured by Münsterberg's test and the understanding of hidden pictures, and attention organization, as measured by indices of cognitive styles). The results showed, first, that in comparison with normal adolescents, the adolescents with CP and ADHD had a deficit of metacognitive abilities, but they did not differ in rates of conceptual abilities. As for adolescents with DID, even though they had lower rates of conceptual abilities and attention selectivity, they did not differ from the "norm" group on some indices of attention organization. Second, a tendency for the disintegration of conceptual and metacognitive abilities (as measured by correlation and factor analysis) was most clearly seen in the adolescents with ADHD and DID. The adolescents with CP and ADHD had conceptual (categorial and generative) abilities as a mental resource, and the adolescents with DID had metacognitive abilities as a mental resource. The resource function of conceptual and metacognitive abilities was determined not only by their level but also by the extent of their interaction (integration).

Keywords: dysontogenesis, infantile cerebral palsy, attention deficit hyperactivity disorder, delayed intellectual development, conceptual abilities, metacognitive abilities, mental resource

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Introduction

Adolescence is a distinct period of psychological development. On the one hand, it is a sensitive period of intellectual development as this is the time when conceptual thinking develops –"formal operational thought" (Piaget, 1969) or "thinking in concepts" (Vygotsky, 1934/1982); such thinking leads to a qualitative leap in the development of the intellectual resources of a child. On the other hand, there is a marked slowdown in intellectual development at this time (as compared with its dynamics in previous stages of ontogenesis) because of the onset of puberty.

In research on childhood dysontogenesis a "normative approach" was dominant for many years. In this approach specific signs of psychological activity were seen as "standard," and the corresponding group of children was labeled as the "norm"; adolescents with development deviant to this norm and delayed intellectual development were described as having "deficits." Modern scholars rightly suggest that in the case of dysontogenesis one should speak not of developmental deficits but of developmental differences (Akhtar & Jaswal, 2013; Kapp, Gillespie-Lynch, Sherman, & Hutman, 2013; Norbury & Sparks, 2013).

Among the most common forms of dysontogenesis are cerebral palsy (CP), attention deficit hyperactivity disorder (ADHD), and delayed intellectual development (DID). Many studies describe detailed features of the intelligence of children and adolescents with these types of deviant developments (Barkley, 1997; Peneda, Ardila, & Rosselli, 1999; Shipitsyna & Mamaychuk, 2001; Sonuga-Barke, Houlberg, & Hall, 1994; Swanson, Castellanos, Murias, LaHoste, & Kennedy, 1998). The interest of our study is that the state of intelligence of adolescent children with deviant developments differs greatly. In particular, adolescents with CP are a very diverse group in the development of intelligence - they range from having quite good intelligence to having various forms of delayed intellectual development, including manifestations of intellectual disability. The range of symptoms of intellectual disorders in adolescents with ADHD also varies widely, up to signs of intellectual giftedness ("twice exceptional"). There are even broader boundaries of the DID syndrome: this form of dysontogenesis covers children with minimal brain dysfunction, children with learning disabilities (educationally disabled), slow learners, and children who have suffered social and cultural deprivation as a result of poor living conditions. The existence of such an amazing variety of levels of intelligence under the conditions of deviant development is apparently not accidental: it is evidence of the existence of complex compensatory mechanisms.

However, there is still no clarity as to which intellectual qualities (abilities) can be regarded as a resource basis for the intellectual development of the atypical child. From our perspective, conceptual and metacognitive abilities can act as resource factors in the development of intelligence in normal adolescence and in the adolescence of children with dysontogenesis.

Conceptual abilities are intellectual qualities responsible for the formation and evolution of semantic connections, the use of categories with different grades of generalization, the detection and discovery of implicit connections, and the generation of new ideas. In different studies, conceptual abilities are presented as "the ability to do abstract thinking" (Sattler, 1988), "conceptual intelligence" (Li, 1996), "generative thinking" (Ward & Sifonis, 1997), "thinking in concepts" (Vygotsky,

1934/1982), and "semantic, categorial, and generative abilities" (Kholodnaya, 2012).

Metacognitive abilities are intellectual qualities responsible for the involuntary and voluntary regulation of intellectual activity. Their main function is to control information processing. Metacognitive abilities are described as "cognitive control" (Dreisbach, 2012; Morton, Ezekiel, & Wilk, 2011; Sergiyenko, Vilenskaya, & Kovaleva, 2010), "metacognitive control" (Son & Sethi, 2006), "metacognition" (Efkides, 2008; Flavell, 1979;), "executive functions" (Benedek, Jauk, Somer, Arendasy, & Neubauer, 2014; Burgess, 1997), and "inhibition" (Dempster, 1991; Lubow & Gewirtz, 1995).

Thus, conceptual and metacognitive abilities can act as a resource (compensating) factor in the intellectual development of adolescents with different forms of dysontogenesis.

Method

The objective of the study was the identification of the resource functions of conceptual and metacognitive abilities under the conditions of different forms of dysontogenesis. In accordance with the objective of this study and the hypotheses drawn up regarding a selection of adolescents with varying forms of dysontogenesis, we carried out a study of both the conceptual abilities — namely, categorical ability (the search of categories with different degrees of generalization) and generative ability (abstract metaphorical thinking and making implicit connections between concepts) — and the metacognitive abilities (attention selectivity, through the use of indicators of the selection of relevant information, and attention organization, through the use of indicators of the cognitive styles impulsivity/reflectivity and field dependence/field independence).

The total sample included four groups of young adolescents: 51 adolescents from Moscow schools with normal development (the norm group), 42 with infantile cerebral palsy (the CP group), 40 with attention deficit hyperactivity disorder (the ADHD group), and 40 with delayed intellectual development (the DID group).

SPSS Statistics (version 13) was used for data processing.

Methods for measuring conceptual abilities

- 1. The Classification of Objects method (Vygotsky-Zeygarnik), which focuses on category generalization abilities (the ability to group many objects using different generalization categories).
- 2. The Explanation of Proverbs method, which assesses metaphorical thinking abilities through the identification of the abstract meaning of proverbs; (two proverbs were used: "All that glitters is not gold" and "Good things come in small packages."
- 3. The Conceptual Synthesis method, which assesses the ability to make connections between concepts on the basis of three unconnected words (Kholodnaya, 2012).

Methods for measuring metacognitive abilities

- 1. Münsterberg's test-assess selective attention in finding meaningful words in a series of random letters (the efficiency of selecting relevant words).
- 2. The Understanding of a Series of Pictures with a Hidden Meaning method assesses selective attention when the relevance of a situation is highlighted. (The participant is shown a series of three pictures; the third picture has an ambiguous meaning that doesn't follow from the two previous pictures.)
- 3. The Matching Familiar Figures Test (MFFT) by Kagan identifies the cognitive style of impulsivity/reflectivity. (The first six subtests were used.) The test assesses individual differences in attention organization namely, the ability to involuntarily slow down a response to a multiple-choice question in order to gather information.
- 4. The Embedded Figures Test (EFT) by Witkin identifies the cognitive style field dependence/independence. (The second part (form B) was used.) The test reveals individual differences in attention organization that are responsible for the involuntary moderation of the field effect.

Results

Mean data values of conceptual and metacognitive abilities in the groups norm, CP, ADHD, DID

The most important result was that there was no difference between adolescents with a normal type of development and adolescents with symptoms of dysontogenesis. However, the differences among the CP, ADHD, and DID groups are worth mentioning. These similarities and differences are analyzed below.

The adolescents with CP in comparison with those in the norm. The norm group and the CP group showed no differences in categorical generalizations (the number of groups and the number of points in the Classification of Objects method), abstract metaphorical thinking (the number of points in the Explanation of Proverbs method), and the construction of relationships between concepts (the number of points in the Conceptual Synthesis method). Furthermore, there were also no differences between these groups in metacognitive abilities (Understanding of a Series of Pictures with a Hidden Meaning, the speed of the first response in Kagan's method, the speed of finding simple figures in a complex image in Witkin's method, correct responses only). However, the children with CP had significantly lower rates of several metacognitive abilities: there was a decrease in attention selectivity while doing Münsterberg's test ($p \le 0.01$), and the increase in the number of errors when using Kagan's method was a result of the low effectiveness of perceptual scanning in the multiple-choice situation ($p \le 0.01$). The tasks from Witkin's method proved the most difficult for the CP group. There was a significant increase in the number of refusals in finding simple figures ($p \le 0.01$) and an increase in the time needed to find simple figures in a complex image (all answers, $p \leq 0.01$).

Thus, adolescents with CP in comparison with those in the norm group had sufficiently preserved conceptual (categorical and generative) abilities. At the

same time there was a decrease in metacognitive abilities (consequently, there was a deficit in voluntary and nonvoluntary control as a result of the reduction in the effectiveness of semantic selection, perceptual scanning, and perceptual structuring).

The adolescents with ADHD in comparison with those in the norm. Adolescents in the ADHD group gave similar results. They showed no difference, compared with the norm group, in retaining conceptual abilities: categorical generalization (number of points; number of groups), abstract-metaphorical thinking (number of points in the Explanation of Proverbs method), and the generation of connections between concepts (number of points in the Conceptual Synthesis method). Furthermore, there were also no differences between these groups in metacognitive abilities (Understanding of a Series of Pictures with a Hidden Meaning, the speed of the first response in Kagan's method, the speed of finding simple figures in a complex image in Witkin's method, correct responses only).

At the same time, there were statistically significant differences in several metacognitive abilities. Adolescents in the ADHD group showed lower effectiveness of semantic selectivity while doing Münsterberg's test ($p \le 0.01$). Furthermore, they displayed a slower/ inaccurate information-processing strategy when taking Kagan's test: there was a simultaneous increase in the number of errors ($p \le 0.05$). Also, as in the CP group, adolescents with ADHD found the task in Witkin's method difficult. They showed an increase in the mean time spent locating a simple figure in a complex image (all answers) ($p \le 0.05$), and a significant increase in the number of failures to find simple shapes in a complex image ($p \le 0.01$).

Thus, adolescents diagnosed with ADHD — compared with adolescents in the norm — retained conceptual ability (thus retaining the ability of categorical generalization and the generation of connections between concepts), but there was a marked reduction in metacognitive abilities (consequently, there was a reduction in the effectiveness of semantic selection, perceptual scanning, and perceptual structuring).

The adolescents with DID in comparison with those in the norm. Adolescents in the DID group showed no difference with those in the norm on only in the two indicators of metacognitive abilities (in the latent time of the first response in Kagan's test and in the mean time of finding a simple figure in a complex one in Witkin's test, when taking the correct answers into account).

Participants from the DID group showed significant differences in all indicators of conceptual (categorial and generative) abilities: they were more prone to using a global strategy for sorting objects, making small groups and grouping objects thematically ($p \le 0.01$); their capacity for abstract-metaphorical thinking and the generation of connections between concepts was lower ($p \le 0.01$; $p \le 0.01$).

In addition, there was a decrease in most of the indicators of metacognitive abilities in these children: semantic selection effectiveness in Münsterberg's test was lower ($p \le 0.01$); there was less ability to choose a relevant characteristic when understanding pictures with a hidden meaning ($p \le 0.01$); there was an increase in mistakes when undertaking Kagan's method ($p \le 0.01$); their response time slowed down and there was an increase in the number of refusals when carrying out tasks in Witkin's method ($p \le 0.01$; $p \le 0.01$).

Thus, the intelligence of adolescents with delayed intellectual development was characterized by a deficiency of both conceptual and metacognitive abilities.

Correlation analysis

Table 1 shows the number of correlation links at different levels of significance among indicators of conceptual and metacognitive abilities in each of the four groups of adolescents.

Table 1. The number of correlation links at different levels of significance between indicators of conceptual and metacognitive abilities in different groups

Group	Number of correlation links, $p \le 0.01$	Number of correlation links, $p \le 0.05$	Total number of correlation links, $0.01 \le p \le 0.05$
Norm	16	15	31
СР	26	25	51
ADHD	15	5	20
DID	12	8	20

As can be seen from Table 1, the highest number of links among the different indicators of conceptual and metacognitive abilities can be observed in the CP group (51 links, 26 of them are highly significant). The norm group occupied an intermediate position (31 links, 16 of them are highly significant). In the ADHD and ID groups there was a sharp decline in the number of significant links among indicators of conceptual and metacognitive abilities (20 links, 15 of them are highly significant; 20 links, 12 of them are highly significant, respectively).

In our view, the existence of close links among different types of abilities can be considered a marker for the integration of the intelligence structure and therefore as an indirect manifestation of the resource capacity of intelligence in the CP and norm groups. Characteristically, the most "successful" group was the CP group, perhaps because these children received more favorable learning conditions in the form of individualized additional education and specialized correction programs. In contrast, in the ADHD group and particularly in the DID group, the connections between conceptual and metacognitive abilities were weakened; this result can be interpreted as a reduction in the resource capabilities of intelligence in children with these forms of dysontogenesis.

Factor analysis results

We used factor analysis to study the structure of the relationships among indicators and to reduce the initial number of correlations by moving to new variables (factors). Factor analysis of the data was performed using the principal components method (rotation according to the varimax normalized criterion) with the groups norm, CP, DID, and ADHD separately.

Factor matrix in the norm group. As seen in Table 2, three factors were highlighted in the norm group.

Mothod/Indow	Fac	Factors (varimax normalized)			
Method/Index	1 (26.5%)	2 (21.7%)	3 (20.1%)		
Conceptual abilities					
Classification of Objects, points	0.187	-0.170	0.819		
Classification of Objects, number of groups	-0.164	-0.120	0.928		
Explanation of Proverbs, points	0.619	-0.039	0.019		
Conceptual Synthesis, points	0.764	-0.163	0.126		
Metacognitive abilities					
Münsterberg's test, time in seconds	-0.154	0.809	-0.036		
Münsterberg's test, number of words found	0.759	0.189	0.090		
Understanding of Pictures, points	0.694	-0.157	-0.006		
Kagan's test, response time in seconds	0.258	0.870	-0.181		
Kagan's test, number of mistakes	-0.631	-0.470	-0.350		
Witkin's test (mean time; correct answers only), in seconds	-0.251	0.765	-0.120		
Witkin's test, number of refusals	-0.447	-0.400	-0.582		
Witkin's test (mean time; all answers), in seconds	-0.587	0.309	-0.590		

Table 2. Factor matrix in the norm group

Note: The highest weight indicators are noted in bold.

Factor 1, The Integration of Conceptual and Metacognitive Abilities, is made up of two indicators of conceptual abilities (explaining proverbs and making connections between concepts) and three indicators of metacognitive abilities (semantic selection success, perceptual scanning accuracy as a result of the reflective style, and perceptual structuring accuracy as a result of the field-independence style).

Factor 2, Cognitive Tempo, includes only time indicators of metacognitive abilities (taking longer to complete semantic selection, response time on Kagan's test, time needed to find simple shapes in a complex image).

In turn, Factor 3, Perceptual and Conceptual Differentiation, is a combination of indicators of conceptual and metacognitive abilities: the higher the conceptual differentiation (the generation of more categorical groups), the higher the perceptual differentiation (in the form of a trend toward the field-independence cognitive style).

Thus, in the norm group there were pronounced effects of the integration of conceptual and metacognitive abilities (a reduction in the number of factors of up to three, the content of the first and the third factor).

Factor matrix in the CP group. Table 3 presents the results of factor analysis in the CP group.

N 41 1/T 1	Factors (varimax normalized)			
Method/Index	1 (25.8%)	2 (23.7%)	3 (16.1%)	4 (14.7%)
Conceptual abilities				
Classification of Objects, points	-0.106	0.221	0.895	-0.196
Classification of Objects, number of groups	0.251	0.083	0.924	0.120
Explanation of Proverbs, points	-0.184	0.730	0.400	-0.151
Conceptual Synthesis, points	-0.576	0.550	0.099	-0.067
Metacognitive abilities				
Münsterberg's test, time in seconds	0.899	-0.064	0.082	0.182
Münsterberg's test, number of words found	-0.134	0.746	0.237	0.176
Understanding of Pictures, points	0.156	0.807	0.115	-0.264
Kagan's test, time of response in seconds	0.894	0.035	0.058	0.235
Kagan's test, number of mistakes	0.111	-0.797	0.139	0.241
Witkin's test, mean time (correct answers only), in seconds	0.792	-0.103	0.032	-0.326
Witkin's test, number of refusals	0.045	-0.189	-0.060	0.962
Witkin's test, mean time (all answers), in seconds	0.601	-0.244	-0.031	0.640

Table 3. Factor matrix in the CP group

Note: The highest weight indicators are noted in bold.

There are four factors in this group. Factor 2, Integration of Conceptual and Metacognitive Abilities, is of the greatest interest. It is composed of two indicators of conceptual abilities (explanation of proverbs and making connections between concepts) and three indicators of metacognitive abilities (success of semantic selection, ability to distinguish a relevant feature in a hidden image, and accuracy of scanning as a manifestation of the reflective style).

However, the integration effects in the CP group were less pronounced. In particular, the number of factors rose to four: there were two special factors, one of which included only indicators of conceptual differentiation (Factor 3), and the other (Factor 4) included only indicators of perceptual differentiation.

Another impotent factor is Factor 1, Cognitive Tempo, which includes only time indices of metacognitive abilities (similar to Factor 2 in the norm group). It seems that the acceleration/deceleration of time taken in searching for the answer and making a decision in the different types of intellectual activity is a specific trait of adolescent children, regardless of the form of ontogenetic development.
Factor matrix in the ADHD group. Table 4 presents the factor-analysis results in the ADHD group.

	Factors (varimax normalized)				
Method/Index	1 (28.6%)	2 (20.7%)	3 (13.3%)	4 (10.8%)	
Conceptual abilities					
Classification of Objects, points	0.818	-0.001	0.090	-0.273	
Classification of Objects, number of groups	0.029	0.769	0.213	0.199	
Explanation of Proverbs, points	0.837	0.070	0.222	-0.061	
Conceptual Synthesis, points	0.744	-0.097	-0.169	-0.076	
Metacognitive abilities					
Münsterberg's test, time in seconds	-0.406	0.409	0.532	0.066	
Münsterberg's test, number of words found	0.127	0.052	0.644	0.118	
Understanding of Pictures, points	0.861	-0.040	0.153	0.046	
Kagan's test, time of response in seconds	-0.176	0.420	0.613	-0.306	
Kagan's test, number of mistakes	-0.416	0.166	-0.758	0.003	
Witkin's test (mean time; correct answers only), in seconds	0.001	0.899	-0.070	-0.186	
Witkin's test, number of refusals	-0.166	-0.179	0.062	0.945	
Witkin's test (mean time; all answers), in seconds	-0.161	0.560	0.003	0.769	

Table 4. Factor matrix in the ADHD group

Note: The highest weight indicators are noted in bold.

There are four factors in the ADHD group. Factor 1, Conceptual Abilities, includes three main conceptual-ability indicators (categorical generalization, explaining proverbs, and making connections between concepts). In contrast to the results in the norm group, this factor relates to only one indicator of metacognitive abilities (successfully picking out relevant information in understanding hidden images).

The effect of the integration of the indicators of metacognitive and conceptual abilities is partially reflected in Factor 2, Perceptual and Conceptual Differentiation, which includes the number of allocated groups in the method of classification of objects (conceptual differentiation) and the speed of finding a simple figure in a complex image in Witkin's test (perceptual differentiation).

Factor 3, Reflectivity, is of particular importance in understanding the intelligence of children with ADHD. This factor is characterized by the following relationship: the more pronounced the reflectivity (slow/accurate style of information processing), the higher the semantic selectivity (the more accurately meaningful words are found in a series of letters in Münsterberg's tests).

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However, we can see an overall increase in the manifestations of the disintegration of conceptual and metacognitive abilities in the ADHD group: first, there are four factors (rather than three as in the case of the norm group); second, indicators of conceptual and metacognitive abilities "fall" into different factors. There was no effect from combining time indices in one factor in the ADHD group.

Factor matrix in the DID group. Factor-analysis results of indicators in the DID group are shown in Table 5.

N 1 . 1 (Y . 1	Factors (varimax normalized)				
Method/Index	1 (27.5%)	2 (24.7%)	3 (11.3%)	4 (10.9%)	
Conceptual abilities					
Classification of Objects, points	-0.301	0.844	-0.013	-0.214	
Classification of Objects, number of groups	-0.252	0.849	-0.018	-0.179	
Explanation of Proverbs, points	0.076	0.721	-0.099	0.347	
Conceptual Synthesis, points	-0.292	0.417	-0.354	-0.352	
Metacognitive abilities					
Münsterberg's test, time in seconds	0.841	-0.076	0.101	0.106	
Münsterberg's test, number of words found	-0.162	0.093	-0.054	0.940	
Understanding of pictures, points	0.079	0.761	-0.005	0.226	
Kagan's test, time of response in seconds	0.832	0.036	0.138	-0.060	
Kagan's test, number of mistakes	-0.441	-0.395	0.362	-0.086	
Witkin's test (mean time; correct answers only), in seconds	0.831	-0.258	-0.077	-0.160	
Witkin's test, number of refusals	0.209	0.016	0.925	-0.039	
Witkin's test (mean time; all answers), in seconds	0.831	-0.156	0.449	-0.060	

Table 5. Factor matrix in the DID group

Note: The highest weight indicators are noted in bold.

There are four factors in the ADHD group. A partial integration of conceptual and metacognitive abilities is brought to light only in Factor 2, Conceptual Abilities (this factor combines two indicators: categorical generalization in object classification and explaining proverbs), in which there is one indicator of metacognitive abilities (successfully picking out relevant information in hidden images). However, in comparison with the other groups, the DID group had a more distinct tendency toward the disintegration of conceptual and metacognitive abilities. Thus, Factors 3 and 4 represent separate, unrelated indicators of metacognitive abilities (the number of refusals as a manifestation of lower-level perceptual structuring abilities in Factor 3 and the success of semantic attention in Factor 4). It is significant that the generative ability (conceptual synthesis) is not included in any of the four factors in the DID group — that is, the role of this conceptual ability in this form of dysontogenesis is sharply reduced, a result that also shows a tendency for intellectual disintegration. Apparently, the weakness of connections between conceptual and metacognitive abilities was the primary weakness in the intelligence of the children with DID.

Factor 1, Cognitive Tempo, is identical to the same factor in the norm and CP groups; this finding confirms the assumption of the universal role of the time aspect of intellectual activity in early adolescence.

Discussion

According to Vygotsky, conceptual thinking is one of the most important mental resources. Formed during adolescence, it qualitatively rebuilds all forms of cognitive activity and allows for the voluntary regulation of behavior (Vygotsky, 1934/1984). Similarly, Vekker noted that conceptual thinking has a top-down, increasing influence on basic cognitive processes by increasing their productivity (Vekker, 1976). As for the role of conceptual thinking, Yasyukova concludes that the formation of conceptual thinking creates a zone of proximal development of the child's intelligence and indicates the potential for the child's further learning at all stages of school education (Yasyukova, 2005).

Another equally important mental resource is the control mechanism of information processing. In this study two forms of involuntary (operational) cognitive control were considered: attention selectivity (the ability to pick out relevant, meaningful words from random letters and the ability to concentrate on relevant characteristics when understanding pictures with a hidden meaning) and attention organization (the effectiveness of perceptual scanning, through the use of indicators of the cognitive style of impulsivity/reflectivity, and the effectiveness of perceptual structuring, through the use of the cognitive style of field dependence/field independence).

The resource capacity of the intelligence of adolescents is determined not only by the level of conceptual or metacognitive abilities but also by the extent of their interaction (integration). A tendency toward the disintegration of conceptual and metacognitive abilities was most clearly seen in the adolescents with ADHD and DID (in the form of a weakening of connections between the indicators of conceptual and metacognitive abilities, which was detected using correlation and factor analysis).

Unfortunately, we have not found empirical studies in which the relationships between conceptual and metacognitive abilities in adolescents with different forms dysontogenesis are examined. However, our findings on the resource functions of conceptual and metacognitive abilities fit well into the cognitive-energetic model by Sergeant (2005), which was developed to explain ADHD and in which a particular importance was attached to the possibility of resource distribution. According to this model a lack of energetic resources can lead to activity defects both in mechanisms of top-down regulation, which lead to a deficit of inhibitions and voluntary attention, and in mechanisms of down-up regulation, which lead to exhaustion and fluctuations in attention. From our point of view, conceptual abilities are responsible for top-down regulation, which allows the work of generalization mechanisms and the making of new mental content, whereas metacognitive abilities are responsible for bottom-up regulation, which is connected to involuntary control processes dealing with information processing.

Conclusion

The potential resource capacities of the intelligence of adolescents with CP, ADHD, and DID that allow them to keep up with adolescents in the norm group include such mental resources as, first, conceptual abilities as a top-down compensation (primarily in adolescents with CP and ADHD) and, second, metacognitive abilities as a bottom-up compensation (primarily in adolescents with DID). An important compensatory factor for adolescents with a special development type is the degree of interaction (integration) of conceptual and metacognitive abilities. One of the promising lines of the study is clarification of the resource functions of conceptual and metacognitive abilities in adolescents and youth because conceptual thinking and an individual system of self-regulation are formed finally at these stages.

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Fear of childbirth in pregnant women: External and internal factors

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Fear of childbirth (FOC) is an important psychological problem that is studied worldwide because it affects the well-being of pregnant women. However, in Russia, this problem does not receive adequate attention among researchers. The purpose of the present study was to investigate the conditionality of fear of childbirth (FOC) in pregnant women by external and internal factors, which we assumed were the reasons for this fear. As external factors, we considered socio-demographic indicators (e.g., age, marital status, level of education, housing, and the attitude of relatives towards pregnancy) as well as indicators of gynecological history (e.g., the term of pregnancy, the outcome of previous pregnancies, and pregnancy complications). As internal (psychological) factors of the fear of childbirth, we considered personal anxiety as well as general inclination towards and negative consequences of different fears (20 types of fears and phobias were examined). The study was conducted with a Russian sample of 76 women at different stages of pregnancy and with different socio-demographic indicators and gynecological histories. The analysis of the results showed the absence of significant differences between women who were pregnant with FOC and those without this fear in terms of the external factors considered in this study. According to the study's data, a general inclination of women to fear is associated with fear of childbirth. However, the findings for the women with FOC did not indicate significant positive correlations between the level of this fear and exposure to any of the 20 types of fear and phobias measured in the study. Furthermore, the results did not detect relationships between the FOC level and women's personal anxiety. The results allow us to conclude that FOC is a separate phenomenon that is not dependent on other phobias and fears. Fear of childbirth has a subjective and highly individual genesis. It is not a direct consequence of objective factors, and it cannot be predicted based on women's personal characteristics (in particular, anxiety). For further study of this problem, we suggest that researchers identify different types of FOC and describe their content as a way to help develop practical methods of providing psychological assistance for women during pregnancy.

Keywords: fear of childbirth (FOC); pregnancy; personal anxiety; fears; phobias

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Introduction

Fear of childbirth (FOC) is an important issue affecting the well-being of pregnant women and their children. It complicates the support of the pregnancy and prevents the normal flow of deliveries. According to studies conducted in different countries, approximately 20 to 80 per cent of pregnant women experience varying levels of FOC, and the incidence of FOC has increased over time. Research also highlights a paradoxical situation: with the improvement of modern delivery capabilities, fear of childbirth remains a major source of stress and leads some women to end their pregnancy or avoid natural childbirth through analgesics or caesarean section (Körükcü, Firat, & Kukulu, 2010; Searle, 1996; Zar, Wijma, & Wijma, 2002). The birth of a child can represent an objective risk, which is associated with such factors as the woman's physical well-being and pregnancy complications. However, it is often the case that fear of childbirth occurs without any objective danger. FOC can complicate the delivery process. For example, it can result in a prolonged childbirth and cause psychological problems after the birth of a child, for example, postpartum depression and birth trauma with possible post-traumatic stress disorder (PTSD) (Ayers, 2014; Bahl, Strachan, & Murphy, 2004; Bewley & Cockburn, 2002; Hildingsson et al, 2002; Johnson & Slade, 2002; Ogrodniczuk, 2004; Ryding, Persson, Onell, & Kvist, 2003). Tyutyunnik, Mikhailova & Chuhareva (2009) indicate that emotional fluctuations are dangerous not only for the pregnant woman but also for her unborn child. When a pregnant woman experiences stress, her body produces more cortisol. This adversely affects the immune system of pregnant women and adversely affects the health of the unborn child. Chronic stress over the course of a few weeks may slow fetal development and result in future problems in raising the child.

For pregnant women with childbirth fear, the value of psychological prenatal accompaniment is higher (Hofberg & Ward, 2003; Toohill, Fenwick, Gamble, Creedy, Buist, Turkstra, & Ryding, 2014). The study of Eriksson et al. (2006) indicates that socially constructed norms and expectations may influence the pregnant women's feelings in relation to childbirth. Thus, training women to have positive perceptions of childbirth and proper behavior during childbirth may be helpful. Nilsson & Lundgren (2009) also conclude that for women with FOC, the quality of their interaction with medical staff is very important. Prenatal training for women is a common practice; however, fear of childbirth often prevents adequate communication between a midwife and a pregnant woman. Fear of childbirth requires a special approach in working with pregnant women; therefore, it is necessary to understand the reasons for its occurrence as well as the content of this feeling among pregnant women (Fisher, Hauck, & Fenwick, 2006; Hildingsson, Nilson, Karlstrom, & Lundgren, 2012; Faisal, Matinnia, Hejar, & Khodakarami, 2014).

Pregnant women have a varied content of FOC. It was found that the most common contents of FOC are worries and concerns about the well-being of the baby, the health of the unborn child, women's own health and wellbeing, the pain of contractions, congenital abnormalities and possible medical interventions (Searle, 1996; Szeverenyi, Poka, Hetey, & Torok, 1998).

There have been many studies of FOC predictors, and these studies have reached different conclusions. Fisher et al. (2006) argued that fear of childbirth has social as

well as personal dimensions and is both a prospective and retrospective phenomena. Their study identified two main factors that reduce childbirth fear: positive relationships formed with midwives and the support women received from their informal network. The treatment of pregnant women by medical staff affects the content of women's personal experiences, which can be a condition of childbirth fear. Nilsson et al. (2010) note that the previous childbirth experiences of pregnant women with intense fear of childbirth have a deep influence and can be related to suffering and birth trauma.

However, according to Alehagen et al. (2006), negative personal experience of suffering is not necessarily a factor influencing FOC. Researchers did not find differences in the content of FOC among women who received epidural analgesia during labor pains and those who did not use analgesia. Moreover, pregnant women who received epidural analgesia in previous childbirth usually have a higher level of FOC. On the other hand, a number of studies have identified that the most common reason for fear was the lack of trust in the obstetric staff. The common reasons for FOC were worries about unfriendly obstetric staff, being left alone, appearing silly and not being involved in decisions (Melender, 2002; Nilsson & Lundgren, 2009; Saisto & Halmesmaki, 2003). Nilsson & Lundgren (2009) considered that the experience in which fear of childbirth does not develop represents active inclusion of women in this process and discharges their natural role in childbirth.

The study of Zakharova & Bulusheva (2009) identified connections of FOC with the characteristics of family relationships: affection of the pregnant woman for her mother and features of marital relations (e.g., the emotional intimacy of spouses, clarity or confusion of family roles, and the distribution of responsibilities). It has been shown that women with a low degree of affection for their mother are more inclined to fear a change in marital relationships and to fear loneliness, and women with a high degree of affection for their mother are often fearful and do not cope well with the forthcoming childbirth and motherhood without special assistance.

Research also focuses on the influence of personal factors on the emergence of fear of childbirth: anxiety, depression and phobic disorders. Pre-existing anxiety disorders may intensify when women become pregnant (Jokic-Begic, Zigic & Rados, 2014). Körükcü et al. (2010) used a sample of 660 healthy women with normal pregnancies and found that there was a significant relationship between fear of childbirth and anxiety. The study of Spice et al. (2009) found that higher levels of anxiety sensitivity — physical concerns, higher trait anxiety, and expecting a first child — all independently predicted a greater FOC. The authors also suggest that FOC can be associated with other fears. However, the survey of 506 pregnant women by Zar et al. (2002) showed no significant relationship of FOC with specific types of anxiety disorders. The study of Storksen et al. (2012) showed that anxiety and depression increased the prevalence of childbirth fear, although the majority of women with fear of childbirth had neither anxiety nor depression.

We agree with the position of Wijma et al. (2002) that personal and external conditions play a major role in generating childbirth fears and concerns. Most current studies focused on separate factors associated with FOC do not provide a holistic view of the phenomenon. The aim of our research was to apply the integrated approach to identify factors of FOC in pregnant women.

To realize this approach, we divide the spectrum of factors that can lead to fear of childbirth into «external» and «internal» groups. As for «external» factors, we also divide them into two parts. The first group of factors is «objective» reasons, i.e., those circumstances based on medical or statistical data that can greatly complicate the delivery or make it more dangerous. The second group of external factors is composed of the social conditions that affect a woman's perception of pregnancy, delivery and motherhood. This could include the level and nature of education, relationships with their family and friends, and an enabling environment for the implementation of maternal functions (marriage, housing and income), that is, those factors that do or do not provide a sense of confidence and security. In this group of factors, we also consider the term of pregnancy associated with the approaching birth, a potentially frightening situation, and the negative experience of the previous birth. Internal (personal) reasons, in accordance with the available data, include such important factors of FOC as personal anxiety, fears and phobias, which can develop into fear of childbirth during pregnancy and anticipation of delivery.

The study is based on the following hypotheses:

- 1. Fear of childbirth is stronger and appears more often when the expectation of objective problems during childbirth is higher because of the following factors: older age of the pregnant woman, complications and health problems during pregnancy, problems in previous pregnancies.
- 2. Fear of childbirth is associated with factors that contribute to a sense of uncertainty and insecurity among pregnant women: "not married" status, lack of vocational education, unwanted pregnancy, and relatives' negative attitude towards the pregnancy.
- 3. Fear of childbirth is stronger for women with a higher anxiety level.
- 4. Fear of childbirth is a common way in which fears and phobias are exposed and actualized during pregnancy.

Methods

We developed a questionnaire consisting of open- and closed-ended questions to discover the external factors associated with the emergence of fear of childbirth. Some questions fix the following socio-demographic variables: age, marital status, education, housing, job, expected or unexpected pregnancy, and attitude of close people (family) towards the pregnancy. Other questions fix the following obstetrical and gynecological history: the duration of this pregnancy, previous pregnancies and presence of complications in the pregnancy.

We used a modified variance of "The hierarchical structure of the topical fears of personality", which was questionnaire designed to examine healthy persons (Scherbatyih, 2002), and the "Scale for self-evaluation of personal anxiety" questionnaire (Russian version of H. Spilberger's questionnaire adapted by Y. Hanin) (Kostina, 2006) to identify internal factors of fear of childbirth. These questionnaires allowed us to test assumptions about the effects of anxiety as an intrinsic factor, which can be a predictor of FOC; the relationship of FOC with a total exposure of a woman to fears (phobias); and the relationship of FOC with certain types of fears and phobias. Modification of "The hierarchical structure of the topical fears of personality" questionnaire consisted of the exclusion of issues relating to certain types of fears, which we felt were not relevant to the objectives of this study (e.g., fear of superiors, fear of war, fear of public speaking, and fear of suicide), and the inclusion of fear of childbirth. As a result, the questionnaire focuses on the identification of 21 types of fear:

- 1 Fear of spiders and snakes;
- 2 Fear of darkness;
- 3 Fear of insanity;
- 4 Fear of illnesses of loved ones;
- 5 Fear of crime;
- 6 Fear of changes in one's personal life;
- 7 Fear of liability;
- 8 Fear of old age;
- 9 Fear of a heart attack;
- 10 Fear of poverty;
- 11 Fear of the future;
- 12 Fear of exams;
- 13 Fear of death;
- 14 Fear of confined spaces;
- 15 Fear of heights;
- 16 Fear of depth;
- 17 Fear of the negative consequences of the illnesses of loved ones;
- 18 Fear of contracting any disease;
- 19 Fear associated with sexual function;
- 20 Fear of childbirth;
- 21 Fear of aggression towards close people.

In this questionnaire, the "hierarchy of fears" is applied to identify the representation of fear of childbirth in the total structure of fears and their interrelation. Respondents scored each item of this questionnaire on a 10-point Likert-scale. The points each pregnant woman assigned for each type of fear and the integral indicator of exposure to fears (sum of the points for all items) were considered in the diagnostics. An average integral component of this questionnaire was 90.5 points. We considered a numerical score for fear of 20 to be the measure of fear of childbirth (the average is 5 points).

We used Fischer's angular transformation criterion φ^* to study differences in external factors (socio-demographic indicators and detailed anamnesis) among women with various expressions of fear of childbirth. The connection between the presence of fear of childbirth and general exposure to fears among pregnant women was determined by using Pearson's tetrachoric correlation coefficient (Phicoefficient). Pearson linear correlation coefficients examined the connections between different types of fears proposed in "The hierarchical structure of the topical fears of personality" questionnaire; personal anxiety and fear of childbirth were calculated with Microsoft Excel.

Participants

Seventy-six women at different stages of pregnancy registered at one of the maternal centers of Kazan, Russia, participated in the study. The pregnant women involved in the study ranged in age from 20 to 36 years old, and the average age was 25.5 years old. All women participated in the survey on a voluntary basis; the questioning was conducted anonymously. The gynecological midwife that accompanies these women during their pregnancy assisted with the data collection. Thirty-two of the 76 women interviewed had experienced fear of childbirth above the average level.

Results

For the frequency analysis, data on the "external" factors of the participants were divided into two groups according to the self-assessment of FOC expressiveness. The first group of pregnant women who did not experience FOC (from 1 to 5 points) included 44 women (57,9 %), and the second group of participants, whose

Table 1. Differences between pregnant women having and not having fear of childbirth in the frequency of socio-demographic and pregnancy history variables

Variables	Fear of childbirth is not expressed, N=44		Fear of childbirth is expressed, N=32		φ* _{emp}
	\mathbf{n}_1	%	n ₂	%	
Age					
Younger than 25 years old	21	51.2	20	48.8	1 202
Above 26 years old	23	65.7	12	34.3	1.202
Education level					
General secondary education and students	10	45.5	12	54.5	1 206
Secondary and higher professional education	34	63.0	20	37.0	1.390
Marital status					
In marriage	32	57.1	24	42.9	0.226
"Not married" or cohabitation	12	60.0	8	40.0	0.226
Attitude to pregnancy of relatives					
Positive, the pregnancy was expected	35	55.6	28	44.4	
Negative or indifferent	9	69.2	4	30.8	0.926
Evaluation of housing conditions					
The conditions are "good" and "normal"	36	55.4	29	44.6	1 1 1 2
The conditions are "not satisfactory"	8	72.7	3	27.3	1.115
History of pregnancy					
First pregnancy	34	58.6	24	41.4	0 226
Repeated pregnancy	10	55.6	8	44.4	0.220
Miscarriages, abortion in past pregnancies	15	75.0	5	25.0	0.3
Complications of the pregnancy	12	70.6	5	29.4	0.5
The term of pregnancy					
Up to 30 weeks	31	64.6	17	35.4	1 5 4 0
Above 30 weeks	13	46.4	15	53.6	1.548

fear of childbirth was expressed above average (from 5 to 10 points), included 32 women (42,1 %). The values of Fischer's angular transformation criterion φ^* reflect the quantitative differences between the pregnant women experiencing fear of childbirth and those not affected by this fear for socio-demographic indicators and obstetric-gynecological history (Table 1). The statistics in Table 1 do not show significant differences between pregnant women affected by fear of childbirth and those not experiencing this fear in relation to any "external" variables included in the analysis. Thus, the analysis has disproved the hypothesis of any external factors impacting on the manifestation of fear of childbirth. It suggests that fear of childbirth has some deep subjective causes.

The general exposure of women to fears was considered among the internal factors of fear of childbirth. To determine the relationship between these parameters, the sample of 76 women was divided into four parts. Among women who do not have fear of childbirth (44 women), according to the integral indicator of "The hierarchical structure of the topical fears of personality" questionnaire, 30 are not inclined towards fear and 14 are inclined towards different types of fear. Among women who have fear of childbirth (32 women), five are not inclined towards fear and 27 are inclined towards different types of fear. The data analysis was conducted with the use of Pearson's tetrachoric correlation coefficient (Phi-coefficient φ) (Table 2).

Groups	Women are not inclined to fears	Women are inclined to fears	Total		
FOC is not expressed	30	14	44		
FOC is expressed	5	27	32		
Total	35	41	76		
	$\phi=0,6;p\leq0.01$				

Table 2. The relationship between the manifestation of fear of childbirth and general tendency towards fear

According to the information obtained, the expression of fear of childbirth and the general tendency of pregnant women to fear have a strong direct relationship ($\varphi = 0.6$; $p \le 0.01$). Therefore, fear of childbirth could be regarded as one of the manifestations of women's susceptibility to phobias and fears.

The study also analyzed connections between personal anxiety and susceptibility to fear and the intensity of fear of childbirth among the 32 sampled women who expressed FOC. For this purpose the variables of personal anxiety from the questionnaire of Charles Spielberger - Yu. Hanin and values of the separate scales of "The hierarchical structure of the topical fears of personality" questionnaire were compared with the level of intensity of fear of childbirth through correlation analysis (linear Pearson correlation) (Table 3). Preliminary data normalization using Excel was performed.

The statistics presented in Table 3 show weak inverse relationships between FOC and fear of darkness (r = -0.5; $p \le 0.05$) and fear of aggression towards close people (r = -0.3; $p \le 0.1$). Thus, we can conclude that FOC is not the derivative of any types of fear. FOC is an independent phenomenon that exists regardless of the person's other fears. We also did not establish a significant correlation of FOC with

the indicator of personal anxiety. This result disproves the working hypothesis that FOC is based on a personal predisposition to anxiety that develops into the fear of childbirth during pregnancy.

Table 3. The correlation of fear of childbirth (FOC) expression with the expression of other fears proposed by "The hierarchical structure of the topical fears of personality" questionnaire (** $- p \le 0.05$; * $- p \le 0.1$)

Variables: types of fear and personal anxiety	FOC
1 – Fear of spiders and snakes;	-0.00
2 – Fear of darkness;	-0.47 **
3 – Fear of insanity;	-0.18
4 – Fear of illnesses of loved ones;	0.01
5 – Fear of crime;	0.22
6 – Fear of changes in one's personal life;	-0.17
7 – Fear of liability;	-0.04
8 – Fear of an old age;	-0.10
9 – Fear of a heart attack;	0.03
10 – Fear of poverty;	-0.11
11 – Fear of future;	-0.21
12 – Fear of exams;	-0.20
13 – Fear of death;	-0.23
14 – Fear of confined spaces;	-0.05
15 – Fear of heights;	0.25
16 – Fear of depth;	0.11
17 – Fear of negative consequences of illnesses of loved ones;	0.07
18 – Fear of the contracting any disease;	0.06
19 – Fear associated with sexual function	-0.00
21 – Fear of aggression towards close people	-0.32 *
Indicator of personal anxiety	-0.16

The content of FOC was identified through the analysis of the responses of women with FOC to the closed-ended question "Which factors cause your fear of childbirth and how much?". The subjective components of fear of childbirth had the following rankings based on the number of points assigned to each component by the sampled women:

- 1. Fear for the child's life and health (102 points);
- 2. Fear of physical pain (78 points);
- 3. Fear for their own lives and health (72 points);
- 4. The absence of any experience (62 points);
- 5. Another's negative experience (55 points);
- 6. Previous own negative experience (45 points).

The ranking indicates that the own-experience factors related to the causes of the emergence of childbirth fear were considered the least significant in the minds of women with FOC. The highest ranked factors of the FOC components are those for which women do not have direct experience, including the fear of possible problems associated with the delivery. That is, we can conclude that the main reasons for the formation of fear of childbirth are unrelated to objective problems and personality characteristics of pregnant women and are instead rooted in the subjective perception of the risks associated with childbirth in a social context. However, women are prone to internalization of cultural ideas that childbirth as a dangerous phenomenon and to formation of corresponding phobia in varying degrees. This suggests that we can distinguish between different types of content and subjective reasons for FOC in pregnant women. This issue will be discussed in the next paper.

Discussion

In this study, the manifestation of fear of childbirth occurred in approximately 42% of the sample of pregnant women. This result corresponds to statistical data presented in other studies, despite the fact that the identification of fear of childbirth was obtained using different methods (Körükcü, Firat, & Kukulu, 2010; Zar, Wijma, & Wijma, 2002). In our study, fear of childbirth was detected based on the subjective evaluation of women, while other authors used special tools - Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ). This suggests that women who experience fear of childbirth are adequately aware of its presence and the power of its manifestation. However, they do not recognize fear of childbirth objectively.

We cannot distinguish a certain "group at risk" among pregnant women based on external factors that would enable us to pay adequate attention to these women during prenatal preparation. According to the results of this study, any woman can have a manifestation of fear of childbirth, regardless of their age, past experience, social status, or existing health problems. This conclusion corresponds to the results of the Alehagen et al. (2006) study that also established that negative experiences during previous pregnancies had no effect on fear of childbirth. Our conclusion about the absence of the relationship of FOC and age of the pregnant woman corresponds with other studies that found that the age range of women experiencing fear of childbirth varies from 15 to 45 years old (Fisher, Hauck, & Fenwick, 2006; Körükcü, Firat, & Kukulu, 2010; Nilsson & Lundgren, 2009; Zar, Wijma, & Wijma, 2002). However, our data do not correspond with the data of Heimstad et al. (2006) that nulliparous women report higher levels of fear of childbirth than parous women. This divergence can be explained by the fact that our study analyzed the frequency of occurrence of fear of childbirth by nulliparous and parous women, but not the intensity of this fear. The independence of FOC from external factors indicates its subjective nature.

The suggestion about the relationship of FOC with a common exposure of fear was based on the view that fear of childbirth is a variant of phobic personality disorder, especially in its strong expressiveness. In particular, Zar et al. (2002) expressed the opinion that "...a more thorough investigation of extreme fear of childbirth as a possible 'childbirth phobia' is needed and is important for both theoretical reasons and clinical practice". However, we found that fear of childbirth is manifested regardless of other types of fears and phobias and is not linked to the level of personal anxiety measured by the questionnaire of Charles Spielberger — Yury Hanin. At the same time, researchers applying other tools for measuring symptoms of anxiety, anxiety disorders and fear of childbirth found connections among them (Körükcü,

Firat, & Kukulu, 2010; Spice et al. 2009). Our result corresponds with the study of Zar et al. (2002), who found no significant interrelations of fear of childbirth with certain types of anxiety disorders. However, we believe that the impact of the level of anxiety on the development of FOC requires additional research.

The variants of subjective constituents of the FOC content identified in this study coincide with the data obtained on samples from different countries (Fisher, Hauck, & Fenwick, 2006; Melender, 2002; Nilsson & Lundgren, 2009; Searle, 1996; Saisto & Halmesmaki, 2003; Szeverenyi, Poka, Hetey, & Torok, 1998). It could be argued that there are no cultural differences in the FOC content. However, in this study, the hierarchy of attitudes and perceptions that constitute fear of childbirth has been identified. Our data showed that for pregnant women, the more significant components of the FOC content are not available in real-time and in their direct life experiences. According to its FOC value, the setting related to the actual causes of fear of childbirth from their own life experience is least important among women with FOC. This result corresponds with the conclusion of Alehagen et al. (2006) that the previous experiences of parous women do not have a significant impact on fear of childbirth. In addition, these data support the conclusion of Fisher et al. (2006) regarding the social nature of the origin of FOC. Women assimilate dangers associated with childbirth from their socio-cultural context. Individual differences in susceptibility to this effect are most likely connected with the same reasons for other fears.

Conclusion

The analysis of the collected data has refuted the hypothesis regarding the impact of external factors on FOC formation, for example, the term of pregnancy associated with the approaching birth, different ages for giving birth, or the presence of pregnancy complications. The study did not confirm the hypothesis regarding the relationship of fear of childbirth with personal anxiety, which could be a predictor of this phobia for pregnant women. Fear of childbirth is associated with general exposure to fears among women, but there is no direct relationship between the manifestation of FOC and individual exposure to fears and phobias.

Based on the data, we can conclude that fear of childbirth is a personality-related phenomenon that occurs not due to factors that objectively threaten women's health or well-being and does not arise out of negative personal experience. This fear often appears to be "far-fetched", and its expression for a woman is difficult to predict. At the same time, the connection of fear of childbirth with the general exposure to fears allows us to consider it as a type of phobic disorder. Because fear of childbirth has a large degree of variability, both in content and in expression, it makes sense to consider its different types. This will allow for a better understanding of its nature and causes and therefore will offer effective practical recommendations on the organization and content of pregnant women's prenatal preparation.

Limitations

The data contained in the present article represent the first part of the study of the content, type of display and factors of FOC occurrence among pregnant women. Further analysis reveals different types of fear of childbirth contents in the context of exposure to other phobias.

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Social and personal factors of stable remission for people with drug addictions

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This article presents research on the most effective measures in rehabilitation programs for people with chemical addictions and research on the personal characteristics that influence the complete cessation of drug and alcohol consumption. Building a model of an effective rehabilitation process is one of the most significant problems in organizing aid for drug and alcohol addicts. Analysis of the results of previous research revealed a number of factors that influence the stability of remission: individual biological factors (general state of health, presence of co-existing diseases); individual psychological factors (coping strategies, shifting of attention, self-control, aggressiveness); rehabilitation program factors (duration of programs, rehabilitation measures, form of rehabilitation, conditions for admission to a rehabilitation center); social factors (family support, rehabilitation with children, availability of communities with no drug addictions); spiritual factors (call to a divine power for help). We have researched the most effective measures of rehabilitation programs for people with chemical addictions, as well as personal characteristics that influence the full cease in drug and alcohol consumption.

In our research we studied people undergoing rehabilitation in different programs (nonstate 12-step, confessional, and state). Five groups of respondents participated in the research; the total number of respondents was 945.

The purpose of our research was to investigate the factors of stable remission for drug addicts in different rehabilitation programs. Our conclusion is that there are outer (social) and inner (personal) factors of stable remission.

Our research revealed that during positive remission (abstinence from taking drugs) addicts had fewer social and psychological problems, and their social and psychological personal characteristics improved; it also revealed those measures that furthered the development of remission. Respondents considered the following the most effective measures: small groups, lectures on addiction, written tasks connected with the analysis of feelings (diaries, self-analysis etc.), individual and group psychological classes, sport, introduction to faith, prayer, labour, communication with graduates of rehabilitation programs. The received data demonstrates the necessity of complex approach to rehabilitation, with regards to biological, psychological, social and spiritual components of addiction.

Keywords: drug addiction, rehabilitation and resocialization, factors of stable remission

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Introduction

Building a model of an effective rehabilitation process is one of the most significant problems in organizing beneficial aid for drug and alcohol addicts. As previous experience shows, to stop consuming alcohol and drugs is just the beginning of a complex process to rehabilitate and resocialize addicts. Devising further rehabilitation and recovery measures aimed at keeping the remission stable is a complex but important task.

The factors that lead to stable remission are tightly connected with the processes of resocialization for people addicted to drugs and alcohol. Cessation of drug consumption in itself is one of the main factors that promote solutions to many social and psychological problems of people addicted to drugs. However, the problem of the informal relationships of respondents on remission remains mostly unsolved because of many potentially dangerous stimuli that go along with informal communication in a healthy environment.

Factors influencing the stability of remission

According to previous research, several groups of factors influence the stability of remission.

Individual biological factors

Individual biological factors are general health condition and co-existing diseases, including incurable diseases. Research on respondents who returned to drug and alcohol consumption after a long period of abstinence showed that in 70% of the cases the breakdown was connected with abrupt health aggravation caused by co-existing diseases (HIV, hepatitis) (Petrova, Kozyakov, & Udodov 2015, p. 26; Yakovlev, Zavarzina, Kozyakov, & Dubrovinskaya 2015, p. 30). In these cases, intoxication served as a means of stress relief after the health aggravation.

Individual psychological factors

Individual psychological factors include the ability to learn coping strategies and take responsibility for one's rehabilitation. The stability of remission increases if the addicted person acquires certain tools and skills for problem-solving, including coping strategies such as "attention shift," "self-control," and "keeping oneself at a distance" (Broome, Knight, Hiller, & Simpson, 1996, p. 487). The possibility of ceasing drug consumption improves as well if the addicted person takes responsibility for the delayed results of rehabilitation. Having an occupation and support in one's environment for one's psychic state can also have substantial value.

Improvement of the psychological state of drug and alcohol addicts as a factor that promotes the refusal of drugs has been noted by American researchers. Because of the value of this factor, during the first months of remission, psychological training oriented toward gaining confidence and the ability to refuse drugs has been emphasized (Gossop, Marsden, & Stewart, 1998, p. 348).

Almost 80 years ago three factors were determined to play a role in the recidivism of opioid addiction: (1) the presence of a premorbid pathology; (2) the presence of physical addiction, which leads to overfatigue and lasts for 6 to 9 months

after rehabilitation; (3) memories of relief from discomfort during drug consumption (Kolb, 1938, p. 32). This research showed that heavy depression leads to the reduction of opiate consumption, but hostility and aggressiveness promote an increase in consumption.

Program factors

Program factors are the period of rehabilitation, the rehabilitation measures, the form of rehabilitation, and the conditions for entering a rehabilitation center. Rehabilitation measures have a major influence on the formation of an orientation to a sober way of life and on the acquisition of useful life skills.

To analyze the influence of rehabilitation programs, it is necessary to note the results of the MATCH research project (Project MATCH Research Group, 1998), which was conducted in the United States at the request of the National Institute of Alcohol Abuse and Alcoholism (NIAAA). The project took 8 years; its goal was to research the types of alcohol-addicted people who respond best to different kinds of treatment and rehabilitation. Three types of treatment and rehabilitation were researched:

- Cognitive and behavior therapy, in which special attention is given to the correction of low self-esteem and its distortions, as well as to negative thinking
- Motivational therapy, which helps clients to become aware of and to develop personal power and resources that help to stop alcohol consumption
- "12 steps," which is a system of recovery based on support groups and stepby-step assignments

The research revealed that all three types are equal in their efficiency in addiction therapy.

In addition, comparative research on the influence of different rehabilitation programs (a 12-step program and a confessional Orthodox rehabilitation program), conducted in 2006 with 170 respondents, revealed that different rehabilitation programs have different kinds of influence on the social and psychological characteristics and beliefs of drug-addicted people. Many personal problems that were successfully solved by individuals on remission who had completed the confessional program — in particular, problems such as poor attitudes toward rules and norms, poor family relations, lack of honesty, high aggressiveness, and low self-confidence — remained unsolved or even aggravated in individuals who had completed a nonreligious form of rehabilitation. But the program of nonreligious rehabilitation had a stronger influence on reducing anxiety during further resocialization than did the religious program of rehabilitation. A specific religious influence on drug addicts manifested itself in their involvement with traditional and altruistic values (family, faithfulness, and honesty). A specific nonreligious influence was defined by an accent on the value of friendship and the value of life and inner harmony (Kytianova, 2007, p. 147).

One of the key predictors of the efficiency of a rehabilitation program is the length of stay in a therapeutic community (TC). Three months constitute a mini-

mum period for positive results (Simpson, & Sells 1982, p. 7). Other researchers mention 90 days as an optimal period of stay (Sanchez-Carbonel, Brigos B., & Cami J., 1989, p.136).

Regardless of the fact that early quitting and further relapses in TC programs are more the law than the exception, a group of American experts has come to the conclusion that such programs are rather effective and necessary for a significant number of people addicted to drugs and alcohol. A 12-year study of 405 men addicted to drugs showed that relapse risk was reduced with prolongation of the period of abstinence from drug consumption (Simpson & Marsh, 1986, p.87). Furthermore, as the years go by, the number of people who do not consume drugs daily increases.

A three-year study of 73 people addicted to opiate drugs in Barcelona revealed positive results in almost two-thirds of the respondents (Guardo Serecigni, 1988, p.72). Factors improving treatment and rehabilitation were staying longer in the treatment program, moving from a city to a village, and staying in a TC. The research also revealed that detoxification without additional rehabilitation measures did not promote stable remission.

Other studies have confirmed that the key factors of success are a staying longer in a treatment program, having an occupation, and lacking criminal experience (Nurco, 1994, p.52).

Social factors

Social factors that may influence the success of a rehabilitation program include having family support, participating in alternative activities, living in a community devoid of drug consumption, having a high level of social and labor adaptation, participating in social life, rehabilitating together with children.

One study was dedicated to the change in the identity of women going through rehabilitation with their children. Success in building a positive identity was higher in women going through rehabilitation together with their children than in women going through rehabilitation without them. The women who had children with them were evaluated as rejecting their deviant identity and accepting their parent role as their main personal identity (Surratt, 2005, p.75).

Other research has shown that many respondents in remission give as the reason for resuming drug consumption their inability to resist the negative expectations of their relatives. The best results were obtained in parallel work with addicts and their relatives when both sides could be successfully reoriented in the direction of constructive cooperation (Rokhlina, & Voronin, 1991, p. 46). The most significant criterion of successful remission was the increase of independence and responsibility for their lives of individuals in remission; their remission may be proof of their confirmation of the healthy part of their personality. Other significant criteria may be social characteristics, such as work placement; a stable, nonaddict social circle; and formation of a family.

Two follow-up studies were unique in their length (over 30 years). One of them was conducted by American researchers (Hser, Hoffman, Grella, & Anglin, 2001, p. 503) with 581 men addicted to drugs of the opiate group; the men were enrolled

in a treatment program in 1962–1964. The follow-up was conducted 33 years later with 526 people (over 90%) for whom information was available: 242 people were interviewed, and 284 people had passed away by that time. Long abstinence from heroin consumption was connected with lower indices of criminal activity, general disease, and psychological distress. High indices of occupation were associated with the cessation of narcotization. In the criminal group, the rate of drug consumption remained high even over a period of time.

Spiritual factors

In the opinion of some researchers, addiction is the function mainly of spiritual factors — specifically, individually preferred attachments that substitute for God (Kozyakov, 2013, 2014, Petrova, 2014, Veraksa, 2011, 2013, Zinchenko &, Pervichko, 2012). Hence, addiction may be cured by filling the emptiness when false attachments grow weaker; doing so enables one to plunge into a love relationship with God. In the opinion of the researchers, the majority of addicted people can stay away from drug consumption by themselves; this opinion contradicts the widespread belief that addiction can be cured only with outer help. In this type of treatment, special attention is given to the growth of spiritual qualities and turning for help to a divine power.

Background of the research

Our analysis of already-conducted research on the factors of stable remission revealed that the results of rehabilitation are influenced by different groups of factors: both outer (social) factors and individual ones (biological and psychological). In addition, many studies were conducted without using a systematic approach, and, as a result, the conclusions were sometimes contradictory. Therefore, it is necessary to continue research on stable remission and also to comparatively study the different types of rehabilitation programs.

Our research of the factors that influence the stability of remission provided the results of testing people going through rehabilitation in different programs (models): nongovernmental 12-step programs, confessional (Orthodox) programs, and state programs. People in remission and specialists of rehabilitation centers also took part in the research. As a result, we have a complex view of remission factors from different people: addicts who have made a decision to stop consuming drugs and who are staying at a rehabilitation center; people in remission with more than 1 year of abstinence; and specialists in rehabilitation centers.

Several groups participated in our research; the total number of people was 945:

- Addicted people going through different rehabilitation programs, 613 people (PRP)
- People in remission for a period of more than 1 year, 146 people (Rem.)
- Specialists in rehabilitation centers, 139 people (Spec.)
- Specialists at the National Association of Rehabilitation Centers (a nonprofit partnership) who filled out questionnaires describing the programs of the centers, 47

Purpose of the research

Our research has an applied character and was aimed also at studying the structural components of rehabilitation programs; these components provide the maximum impulse for altering the personality of addicted people and thus further lead to the complete cessation of drug and alcohol consumption.

Method

To conduct our research of stable remission factors, we developed questionnaires for the addicted people in our study, as well as for people in stable remission and for specialists. The questionnaires consisted of 26 questions about the following topics: general information (sex, age, and education), information about the addiction (type of addiction, period of drug consumption, remission, previous experience of treatment and rehabilitation, reasons for recidivism), health condition (subjective health evaluation, presence of co-existing diseases), social characteristics (having a family, relationships in the family). Then, the addicted people gave open responses to questions about the rehabilitation programs: what they liked, what they did not like, which components of the programs brought maximum results, what were the reasons for breakdowns, what measures of the programs and qualities of the specialists helped them stay sober.

Organization of the research

The collection of questionnaire data occurred from January to June 2014; 47 rehabilitation centers with their affiliates took part in the testing (including out-patient and postrehabilitative services). The research covered almost the whole territory of the Russian Federation. It included rehabilitation centers in Kaliningrad, Moscow and the Moscow district, St. Petersburg and the Leningrad district, the Pskov district, the Belgorod district, Rostov-on-Don, Stavropol and the Stavropol district, Yessentuki, Mineralnye Vody, Buddenovsk, Ufa, Kazan, Tomsk, Surgut, Vladivostok.

The research covered three types of rehabilitation centers that use the most popular programs in the Russian Federation. The first group included secular (nonconfessional) centers of rehabilitation that use the 12-step program (PRP-12) as their basic model. There were 301 respondents in rehabilitation in these centers who took part in this research. Although all these centers used the 12-step program, there were some differences in the number of specialists with different profiles and also in the measures used in the programs. The following centers and their subdivisions constituted this group: Healthy Country (Moscow and the Moscow district), Steps (Ufa, Kazan, the Leningrad district), Doctor Isayev's Clinic (Moscow and the Moscow district), Bekhterev (St. Petersburg), Harmony (Surgut), Generation (Moscow).

The second group comprised confessional (Orthodox) centers of rehabilitation (PRP-conf.); their programs are based on community forms of rehabilitation and use elements of the 12-step program as well. Taking part in the research were 194 addicted people going through Orthodox rehabilitation programs at the time of the test. The following rehabilitation centers took part in the research: Voskresenie (Malye Mayachki in the Belgorod district), Spas Center for Community Pedagogics

(Obninsk in the Kaluga district), Stream, Poshitni (the Pskov district), Sologubovka (the Leningrad district), the Return of the Perished Center for Spiritual and Moral Restitution of Personality (Tomsk), Rostov without Drugs (Rostov-on-Don), Healthy Stavropol Regional State Organization (Stavropol and the Stavropol region), Healthy Generation of the Caucasus, Soul.

The third group consisted of state centers of rehabilitation (PRP-stat.) working within the Narcological Service. This group included state drug-abuse clinics, hospitals, and ambulant centers of rehabilitation. Taking part in the research were 118 participants in state rehabilitation programs. The research took place at these centers: Rehabilitation departments Nos. 1 and 8 of the City Narcological Hospital of St. Petersburg, ambulant rehabilitation centers Nos. 2, 3, 4, and 5 of the Interdistrict Drug Abuse Clinic of St. Petersburg, and rehabilitation departments of the Kaliningrad Drug Abuse Clinic.

Some centers included in the group of Orthodox confessional centers, as well as state centers, used elements of the 12-step program in their work. The division into groups was determined by the organizational features of each group. In particular, secular nonstate centers that used the 12-step program rendered their services on a paid basis. Another trait of these programs was the minimal amount of labor therapy provided. According to these criteria, such centers were united in one group.

In the group of confessional rehabilitation centers situated outside of cities, mostly spiritual instruments of recovery were used: attending church, talking with a priest, and so forth. Rehabilitation patients in such centers were actively involved in labor for adjacent farms. As a rule, these centers were more accessible than the 12-step or the state centers: they either did not charge any fee for rehabilitation or they charged an acceptable price for it. These centers were united in a separate group as well.

A special feature of the state rehabilitation centers that were taking part in the researchwas the location of almost all of them in big cities. Some centers worked on internal treatment conditions, and others, on external treatment conditions. All state centers had medical staff, specialists in narcological psychiatry, clinical psychologists, and nurses. As a rule, rehabilitation services were rendered for free. These centers were united in one group.

To process the data, content analysis of the responses of the participants to open questions was applied.

Results

During the research it was revealed that various measures of the rehabilitation programs influenced the results of the whole rehabilitation to different degrees (Table 1).

Content analysis revealed that among the most helpful measures were the educational component (lectures, talks, and seminars), individual work (written tasks, diaries of feelings, self-analysis), measures aimed at physical recovery (sports, gymnastics, yoga, tennis etc.), psychology sessions, individual consultations.

Also, some measures were helpful to respondents in certain programs and not so helpful to respondents in other rehabilitation programs. For people taking part in 12-step programs, the most relevant measures were connected with the 12 steps: group or individual work, sessions with a psychotherapist, and physical **Table 1**. Results of the content analysis of the responses of people in rehabilitation and people in remission to the question "Which measures of your rehabilitation program help people to stay sober?"

Measures	PRP-12, %	PRP-conf., %	PRP-stat., %	Rem., %	Spec., %
Small groups (12-step programs)	95.6	3.1	4.3	14.6	16.2
Lectures, talks, seminars	48.8	16.3	11.9	26.8	36
Sports	40.7	18.9	29.9	18.3	17.6
Written tasks	48.5	5.8	8.5	16.5	18.4
Attending church	_	39.5	0.9	30.5	7.4
Individual psychology sessions	37	5.8	35	29.9	36.8
Training	26.3	2.6	9.4	19.5	30.9
Support and self-help groups	33.7	0.5	-	3.7	9.5
Travel, traveling groups	27.9	1.1	-	2.4	1.5
Prayer	3.4	27.9	1.1	14.2	13.2
Monitoring with a consulting specialist, harmonization of emotions	24.9	1.3	1.1	6.7	8.1
Labor activity	18.9	31.6	0.9	17.1	25.7
Creative activities	8.8	3.6	2.6	1	16.9
Reading religious literature	-	15.3	-	3.7	4.4
Communication with rehabilitants	7.7	4.7	13.7	15.2	1.5
Morning meetings	14.8	2.1	2.6	9.8	7.3
Service (volunteering)	-	14.2	-	6.1	4.4
Summary of a week, a day	13.5	4.2	1.1	2.4	6.6
Communication with graduates	12.1	3.1	1.1	8.5	2.9
Rest	11.8	2.1	2.6	3.7	0.7
Help for newcomers and weaker ones	-	10.5	1.7	10.4	2.9
Excursions, cinema- and theater-going	_	8.9	10.3	6.1	9.6
Meditation	9.4	-	0.9	1.2	11
Spiritual aspects	1	9.5	1.1	0.6	2.9
Family consultations, work with relatives and parents	1	1.1	2.6	1.8	9.6

Note. The following abbreviations are used in the table: PRP-12 — people in 12-step rehabilitation programs; PRP-conf. — people in confessional (Orthodox) programs; PRP-stat. — people in state programs; Rem. — people in remission for more than 1 year; Spec. — qualified specialists in rehabilitation centers, former addicts.

development. In general, for participants in 12-step programs the most helpful measures were the social and psychological, as well as the physical, components of rehabilitation.

Respondents in confessional (Orthodox) programs considered the following measures to be the most helpful: attending church; reading religious literature; prayer; labor activity; sports, physical training; lectures, talks; help for newcomers; volunteering; written tasks; individual sessions with a psychologist. Thus, the most helpful measures for people in confessional rehabilitation programs were those connected with the spiritual aspects of rehabilitation, labor and social activity, and physical training.

The most helpful measures for people in state rehabilitation programs were the following: work with a psychotherapist; sports activities; communication with other rehabilitants; lectures and seminars; excursions, visits to the theater, cinema; training; written tasks. As a whole, these respondents found the sociopsychological and physical spheres of rehabilitation to be the most helpful.

People in remission marked the following measures as the most helpful: attending church; prayer; individual sessions with a psychologist, psychotherapy; educational lectures, seminars; training, group classes; sports; labor; written tasks; communication with rehabilitants; help to newcomers and to weaker participants; volunteering; morning meetings; stories of recovering addicts; monitoring with a consultant, harmonization of emotions; small groups.

Thus, for people in remission who had previously gone through programs of rehabilitation, the most helpful measures were the spiritual ones. Other important measures were those connected with the psychological component (group or individual psychological sessions), the social component (providing help to others, communication), and the physical component (sports and physical activities).

Characteristics	PRP-12, %	PRP-conf., %	PRP-stat., %	Rem., %
Management, staff professionalism	21.9	11.1	17.9	16.4
Attending church	_	23.7	-	10.9
Work on oneself, one's feelings, self-development	21.2	8.4	1.1	14.4
Work with psychologist, psychotherapist	20.5	5.3	13.7	20.5
Atmosphere of friendship and respect	16.5	14.7	11.1	15.1
Healthy way of life (washing, sauna, meditation, relaxation)	3.7	4.2	0.9	16.8
12-step program	15.5	8.4	2.6	8.9
Orthodox (confessional) program	-	40	-	-
State program	-	-	2.6	-
Communication with other residents	13.5	13.2	10.3	9.6
Educational component, information about addiction	12.5	6.8	6.8	15.1
Small groups, morning meetings, analysis of the week	5.4	2.6	0.9	13
Exchanges with other residents, personal example of recovering people	5.4	6.3	5.9	13
Support, mutual help, care	12.1	12.6	3.4	8.9
Orthodox studies (reading the Bible, talks with the priest)		12.1	0.9	2.7
Trust in the program, feeling of safety	11.5	6.3	2.6	0.7
Taking responsibility, labor	6.1	15.8	2.6	11
Positive changes, efficiency of the program	10.4	1.1	1.7	3.4
Spiritual component, development of faith	3	9.5	-	6.8

Table 2. Results of the content analysis of the responses of people in rehabilitation and people in remission to the question "What do you like in your rehabilitation program?"

Note. See note to Table 1 for abbreviations.

Therefore, for people in remission all components were helpful, and the effectiveness of the rehabilitation consequently increased.

All the measures reflected in the responses, reveal the content of the rehabilitation programs, and our content analysis indicates which measures were most successful. In addition, all the measures are in one way or another instruments that should be further developed. It is thus possible to integrate the most effective instruments of rehabilitation in different models of rehabilitation programs.

Content analysis of the responses to the question "What do you like in your rehabilitation program?" revealed that respondents in all groups most frequently appreciated professionalism, considerate attitudes, and care of the participants by management and staff (Table 2).

Respondents in all groups marked the friendly and respectful atmosphere, the communication with other residents, and the educational component of the program (lectures, talks) as important characteristics. The warm and friendly atmosphere in the centers was especially meaningful; many of the rehabilitants used such terms as *home* and *family* when referring to their centers.

The research also revealed that respondents who were in the traditional programs examined here were likely to return to the same methods of rehabilitation when their attempts at rehabilitation were unsuccessful. This was not true for people in rehabilitation centers with nontraditional programs or confessions (Table 3).

Rehabilitation program	PRP-12, %	PRP-conf., %	PRP-stat., %	Rem., %
12-step program	65.3	23.2	39.3	69.2
Orthodox program	0.3	43.2	5.1	16.1
State program	-	2.1	43.6	6.8
Therapeutic Communities	-	2.1	-	1.4
Protestant program	1.7	7.4	4.3	6.5
Other (coding therapy, hypnosis, shamanism, etc., refuse)	32.7	22	7,7	_

Table 3. Previous programs of rehabilitation

Note. For other abbreviations, see note to Table 1.

The research also revealed that both outer (social and family) and inner (psychological) factors influenced the length and stability of previous remissions of the people currently in rehabilitation (Table 4).

The people in remission gave, above all, the following reasons for previous ineffective attempts at rehabilitation: insufficient number of group and individual psychological classes; lack of spiritual and moral component; insufficient amount of labor training and physical training; insufficient number of meetings with people who had completed the rehabilitation program or meetings with healthy people. Thus, the people in remission were more likely to see the reason for previous ineffective attempts at rehabilitation in the structure of the rehabilitation programs, while the people in rehabilitation were inclined to explain previous ineffective attempts to give up drugs on their own insufficient motivation to get sober. **Table 4.** Main reasons for ineffective (or less effective) previous attempts at rehabilitation by addicted people

No.	Reason for ineffective (or less effective) previous attempts at rehabilitation	Addicted people, %
1	Lack of motivation or absence of purpose, did not want to recover, personal problems ("because of my false pride, arrogance")	18.6
2	Rehabilitation program did not match	8.8
3	No acceptance of sickness; no awareness of weakness, was not standing on the edge between life and death, did not reach the "bottom"	8.63
4	Lack of experience and qualifications of the manager and staff of the center	5.98
5	Received medical treatment but no rehabilitation	5.64
6	Did not finish the treatment	4.81
7	Absence of information about the essence and symptoms of the sickness	4.31
8	Meeting former friends (fellow consumers)	4.65
9	No resocialization (postrehabilitation), no anonymous alcoholic groups available	4.65
10	No response, respondent did not indicate former ineffective or less effec- tive rehabilitation methods (refuse)	14.95

These conclusions demonstrate that it is necessary to develop the content and professional components of rehabilitation programs and to increase motivation in those addicted when building a complex system of rehabilitation.

Discussion

The data indicated a demand for a complex approach to rehabilitation that takes into account the biological, psychological, social, and spiritual components of addiction.

Among the most helpful measures of the rehabilitation programs were the following: the educational component of rehabilitation (lectures, talks, seminars); individual work (written tasks, diaries of feelings, self-analysis); activities for physical recovery (sports, warm-ups, yoga, tennis), work with a psychologist, individual consultations, introduction to religion, prayer, labor, communication with graduates of rehabilitation programs.

All groups of respondents marked the following qualities as among the most relevantones formed during rehabilitation that help them to stay sober the following: frankness, sincerity; having goals and a sense of purpose, persistence; kindness, responsiveness; ability to turn for help, mutual support. This result demonstrates that a properly organized social and psychological rehabilitation is in itself a powerful influence on the personalities of addicted people; this kind of rehabilitation enables them to establish their motivation for soberness and promotes the full cessation of drug and alcohol consumption.

In general, the research revealed that during positive remission the addicts had fewer social and psychological problems than they had previously, and their social and psychological personal characteristics improved; these developments facilitate the further development of remission.

Conclusion

Our research on the factors of stable remission for people with chemical addictions enabled us to discover the most effective measures of the rehabilitation programs and the outer and inner factors that may influence the stability and length of remission. The results of our research correspond with the results of other research conducted in this area — in particular, with the MATCH results (Project MATCH Research Group, 1998). These results demonstrated that different rehabilitation programs can be equally effective. The present research completed these results in relation to a complex approach to the rehabilitation process for people with chemical addictions. If the components of programs aimed at the holistic recovery of a personality and its biological, psychological, social, and spiritual potential are present, the effectiveness of rehabilitation increases, regardless of the model (or system) of rehabilitation. The current data are important for estimating efficiency, developing and constructing rehabilitation programs, and choosing individual rehabilitation and resocialization programs for people with chemical addictions.

The limitations of our research are both its short duration, which gave no opportunity for longer observation of the results, and the rather generalized division of the existing rehabilitation programs into models currently used in the Russian Federation.

We plan to expand the research of different rehabilitation programs, to conduct longitude research on the factors that influence the stability of remission, and to expand the research on the personal and psychological factors of stable remission for people with different forms of addiction.

The received data are important to estimate efficiency, to develop and construct rehabilitation programs, to choose individual rehabilitation and resocialization programs for people having chemical addictions.

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SOCIAL PSYCHOLOGY

The value sphere of native and newcomer youth in their subjective assessment of the environment of a megalopolis

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Currently, in the Russian Federation more and more attention is being paid to the quality of human capital. The innovative future of the country as a whole and its regions in particular depends on having young people with an active lifestyle, a high level of education, and a desire to be included in the development process of their country, region, city, or town. In most regions of the Russian Federation, programs and projects are supported that promote the self-actualization of young people and create conditions to ensure a full and rich life for the younger generation. But, despite these measures, as well as major government funding, the process of active internal migration and the outflow of talented young people from provincial areas into the central regions, as well as from rural to urban settlements, lead to the significant negative skewing of socioeconomic development in the regions of the Russian Federation. Thus, these are the issues: which characteristics of life in a megalopolis are valuable and attractive to young people and are there differences in the images of a big city held by native young people and newcomers.

The aim of the present study was to investigate the characteristics of the value-sense and need-motivational spheres of native and newcomer youth in a megalopolis as well as to reveal the specifics of their images of a contemporary megalopolis. A comprehensive study conducted in Ekaterinburg among young people in the senior classes of secondary schools, colleges, and universities, as well as among young working men and women (N = 1108; ages 17–25), disclosed the base values in the subjective evaluation of the environment of a megalopolis by native and newcomer youth. In accordance with the objectives of the study, the sample was divided into two contrasting groups: native residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg (living there since birth) – 437; newcomer residents of the sudy – 671 people. The study was conducted with the use of age-specific characteristics of a battery of diagnostic instruments. This article describes the specifics of the value orientations and evaluations of the image of the city among native and newcomer young people. Value determinants of the assessment of

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big city by the native respondents for the most part had a social focus, and at the same time this category of young people generally did not seek to dominate and manage the environment of the megalopolis. The newcomer young people had an intense orientation to values. This orientation ensured their adaptation to and formation of a positive image of the city as a potential location for their personal self-realization.

Keywords: values of young people, identification with the city, opportunities and risks in a megalopolis, adolescence, megalopolis, internal migration of young people

Introduction

The modern world is a civilization of cities. The development of society, technology, culture, wealth, and new knowledge are today the primary functions of cities but not of other socio-territorial formations. Cities are now centers of freight logistics, information, and social streams. Therefore, the fullness of city life — especially if we speak about a large city with multiple events and a large number of alternatives for work, leisure, education, sources of information, services, and other benefits (Kogan, 1990) — makes this type of settlement the most attractive location for many groups of people. This attraction is also evidenced by the population growth of large Russian cities (including as a result of internal migration) and the sparser rural population (Volkova, Sokolov, & Terentyev, 2015).

The development of modern cities depends on their human resources — that is to say, on their populations. Therefore, to attract and retain in the city the "creative class" — young people — the city has to create conditions for its future development. To this end, many cities have implemented targeted programs of social support for young people and the formation of specific conditions of the urban environment conducive to the maximum fulfillment of the capacity of their young residents. Thus, in the strategic development plan of the municipality of Ekaterinburg (Strategic development plan of Ekaterinburg through 2020, 2010), one of the priorities is the development of conditions for active self-determination and self-realization of young people as the carriers of innovation. However, the socioeconomic-development strategy for Moscow (Strategy for the socio-economic development of Moscow through 2025, 2012) emphasizes that one of the major challenges will be the reduction of the population of 20-35 year-olds by a third; as a result, Moscow will become a city with a strongly deformed age structure. In connection with these trends special attention in the development strategy of Moscow is paid to the mechanisms for creating special conditions to attract the people necessary for a megalopolis: representatives of "the creative class," highly qualified specialists, as well as active, talented youth.

A significant proportion of young people migrate actively inside the country. For example, more than 70% of high school graduates from small settlements moved to the Central federal region. And, in 2013, 114,347 people from rural settlements arrived in the cities of the Ural federal region; of them 39,754 people were from other regions of the Russian Federation and 74,593 migrated inside the Ural federal region¹ (Migration inside Russia by the territories of arrival and departure, 2014).

¹ The source shows the dynamic of migration within the country from 2011 to 2014, but at the same time for the bases index there were taken the results of 2010.

The experience of living in certain places affects the perceptions and environmental preferences of people. They may prefer or look for what they are accustomed to (Hauge, 2007). When they transfer their residence experience in other areas to the urban environment, certain risks of pseudourbanization are created. But also arriving in cities are young people with increasing experience of interaction within an urban community; they are changing themselves more and more, and the city and its way of life have already become for them a measure for evaluating environmental living conditions. The acquired experience of life in a city creates the individual stories of young people as citizens who identify themselves with the city. Identity with place is formed through a combination of human-ascribed meanings and values of a particular location (for example, a city) and various features (Lalli, 1992). Thus the urban environment becomes for young people a place of opportunities for self-realization. This process takes place with a background of the risks of urban life, and the goals that young people set reflect their need-motivational bases of personality.

A city concentrates opportunities, but young people are quite aware of the obvious disadvantages of the artificial, highly dynamic environment of a city (Kruzhkova, 2014); this environment runs counter to the natural conformity built up for thousands of years by the rural way of life that was typical for the majority of the population of Russia one hundred years ago (Bondyreva & Kolesov, 2004). However, the urban lifestyle is highly appealing to young people. So, since 2006 the capital of the Sverdlovsk region, Ekaterinburg, has experienced growth in its population, mainly because of positive net migration (Ekaterinburg, 2015), while the rural population of the Sverdlovsk region has aged and declined.

Many legitimate questions can be asked: What is important for young people in their evaluations of life in a city? Are there differences in the way native young people and immigrants understand a city? What values (and desires) form the basis for assessing the attractiveness / unattractiveness of a city from the perspective of young people?

Thus, the purpose of our study was to determine the specific value orientations of native and newcomer youth and the role these values play in their assessments of the environment of a megalopolis (in our study, Ekaterinburg).

Methods

The total sample of the study was 1108 adolescent respondents (17–25 years). The study involved young men and young women (34% and 66%, respectively) who were students in the senior classes of secondary schools, colleges, and universities in Ekaterinburg, as well as working young people. In accordance with the objectives of the study the sample was divided into two contrasting groups: native residents of Ekaterinburg (living there since birth) – 437; newcomer residents of Ekaterinburg who were actively adapting to life in the megalopolis at the time of the study (living there fewer than 3 years) – 671 people. Subsamples of the contrasting groups were balanced by sex and type of education (in each of the 16 categories there were at least 30 observations).

The following diagnostic instruments were used as the research methods:

- A questionnaire by I. V. Vorobyeva and O. V. Kruzhkova to gauge subjective assessments of stress factors in the environment of a big city. The questionnaire consists of 42 items describing physical, social, and other dynamic factors that may be perceived by residents of large cities as stressful. Subjects assess the items on a scale of 0 (absolutely no worries) to 4 (high emotional stress). The items are combined into eight groups: real risks and threats (factors that are dangerous for human life and health and significantly reduce the quality of life of the citizens — in particular, the presence of air and water pollution, the risk of becoming a victim of crime, the probability of a car accident, terrorist threats, etc.), information and dynamic loads (factors that are associated with the need to receive, process, and respond to multiple stimuli coming from the external environment in a short period of time), social crowding (factors that stimulate the emergence of a subjective feeling of a lack of freedom in social interaction because of multiple contacts in the urban environment and social obligations prescribed by the existence of expectations in relation to people as townspeople), transport risks (factors that are a result of the interaction of the individual and public transport), orientation problems (difficulties in the allocation of the functional areas of the space, the unclear structure of the city or part of the system of streets, disorientation in specific places of the city), indifference (factors that encourage a sense of loneliness and insecurity while being in a crowded urban environment), migration risks (interactions with nonresident and foreign nationals newly arrived in the city), the homogeneity of the visual environment (factors related to the monotony of the external elements of the urban environment) (Kruzhkova, 2014).
- The values questionnaire of S. H. Schwartz (Bogomaz & Litvina, 2015) for the construction of a values-based personality profile. This checklist is based on the theory of basic values of Schwartz (1992) and is adapted for Russian sociocultural conditions (Schwartz, Butenko, Sedova, & Lipatova, 2012). It consists of 57 statements by a hypothetical person. Respondent estimates the similarity with the man himself, as described in the text and expresses the degree of his agreement with the statements on a 6-point scale from 1 (not at all like me) to 6 (very much like me). The results are grouped into 19 values, which are a guide to building human behavior. They differ from each other in the direction and focus of the underlying basic individual or group needs. Diagnosis is carried out according to the following scales: independence (actions), independence (thoughts), stimulation, hedonism, achievement, power (resources), power (dominance), reputation, safety (public), security (personal), conformism (rules), conformism (interpersonal), traditions, modesty, kindness (duty), kindness (concern), universalism (concern for others), universalism (care about nature), universalism (tolerance).
- The scale of identification with a city of M. Lalli (Miklyaeva & Rumyantseva, 2011). The scale consists of 20 statements to which the respondent expresses agreement or disagreement on a Likert scale from 1 (disagree) to 5 (strongly agree). Approved methodologies are arranged in five semantic blocks that are the basis for the interpretation of results, which are the external value of total attachment with the past, the perception of intimacy, and goal-setting (Lalli, 1992).

For the statistical analysis of the results of the study the IBM SPSS Statistic 19 package of was used. In order to solve the research problems the following analyses were applied:

- Descriptive statistics that reflect the general trends of the studied parameters of the respondents
- Comparative analysis (Student's t-Test for independent samples) to detect statistically significant differences between subgroups in the main sample
- Linear regression analysis to determine the value of predictors of the subjective evaluation of the urban environment by the respondents
- Pearson correlation analysis to identify the structure of the relationship of components of the subjective evaluation of the urban environment by the respondents

Results

Assessment of the value orientations of young people in the subgroups native and newcomers allowed us to allocate their value priorities and differences in life benchmarks (Table 1).

	Native	residents	Newcomer residents		
Indicators	Average mean	Standard deviation	Average mean	Standard deviation	
Independence (actions)	3.569	0.948	3.525	0.894	
Independence (thoughts)	3.497	0.914	3.577	0.850	
Stimulation	3.301	0.928	3.318	0.918	
Hedonism	3.610	1.007	3.564	0.908	
Achievement	3.166	0.883	3.214	0.829	
Power (resources)	2.559	1.164	2.524	1.107	
Power (dominance)	2.369	1.181	2.376	1.140	
Reputation	3.598	0.965	3.615	0.935	
Safety (public)	3.235	1.052	3.382	0.934	
Security (personal)	3.389	0.977	3.507	0.883	
Conformism (rules)	2.705	1.113	2.836	1.051	
Conformism (interpersonal)	2.805	1.066	2.913	0.963	
Traditions	2.837	1.111	3.026	1.014	
Modesty	2.938	0.959	3.026	0.875	
Kindness (duty)	3.813	1.051	3.883	0.947	
Kindness (concern)	3.911	0.940	3.960	0.975	
Universalism (concern for others)	3.241	1.017	3.372	0.940	
Universalism (care about nature)	2.775	0.998	2.886	0.985	
Universalism (tolerance)	3.131	1.043	3.238	0.957	

Table 1. Average means of the values of natives and newcomers

In general, the value profiles of the newcomers were more pronounced than those of the native respondents. Nevertheless, there was an overall trajectory of this profile in both groups. The leading value was goodwill in both its individualized focus on a sense of duty and its social focus on concern for one's group and its members. Also, the young people were focused on the freedom to define their own actions, and they expressed the desire for pleasure and a sense of gratification; for them the image of themselves that they broadcast into the surrounding social space is significant. Overall, this finding corresponds to the age-related goals of youth (Huhlaeva, 2002). Young people are focused less on their impact in relation to others. They have no sense of the possibility of using tools or instruments to control others through personal influence (authority, power, status, etc.) or any other material and social resources.

Estimates of the relationship to the urban environment in the contrasting groups of native young people and newcomers were detected by comparative analysis using the parametric Student's t-Test for independent samples. These comparative results are presented in Table 2.

	Value en Taml ef		Average value, mean		
Indicators	Value on the t-Test	Level of significance	Native residents	Newcomer residents	
Information and dynamic loads	2.638	0.008**	0.962	0.826	
Social crowding	3.200	0.001**	1.090	0.928	
Orientation problems	2.486	0.013*	1.137	0.994	
Indifference	2.284	0.023*	1.922	1.778	
Migration risks	6.252	0.000**	1.901	1.411	
Homogeneity of the visual environment	4.094	0.000**	1.161	0.895	
Safety (public)	-2.375	0.018*	3.234	3.382	
Security (personal)	-2.033	0.042*	3.389	3.507	
Traditions	-2.870	0.004**	2.837	3.026	
Universalism (concern for others)	-2.159	0.031*	3.241	3.372	
Affection	9.668	0.000**	3.882	3.294	
Connection with the past	10.396	0.000**	3.340	2.716	
Perception of proximity	3.522	0.000**	3.223	3.001	
Targeting	-3.299	0.001**	2.908	3.178	

Table 2. Results of comparative analysis on the Student's t-Test

* p < 0.05; **p < 0.01.

Of the 32 variables, 14 (44% of the possible differences in all studied traits) were found to be statistically significant. This result confirms the contrast in the studied groups with respect to the system of individual life guidance, attitude to the city, and perception of the stress factors that exist in it.
Based on these results, we hypothesized that native and newcomer residents of the city have different value-semantic frameworks that determine the perception of risks and stress factors in the urban environment and the value of this perception for individual, underlying identification with the city. This assumption was verified by regression analysis for each group of respondents. The results are shown in Tables 3–6.

	Features and elements of the regression model					
Depen- dent va- riables	F-crite- rion	Significance level of the reliability models	General explanation by model variance	Elements of the model	Factor β	Significance level of the elements of the model
External	14.765	0.000**	12%	Safety (public)	0.142	0.011*
value of				Security (personal)	-0.118	0.032*
the city				Conformism (rules)	0.155	0.006**
				Traditions	0.195	0.000**
Affection	14.896	0.000**	17.2%	Independence (actions)	-0.153	0.006**
				Hedonism	0.114	0.047*
				Power (resources)	-0.117	0.016*
				Reputation	0.118	0.035*
				Safety (public)	0.244	0.000**
				Traditions	0.192	0.000**
Connec- tion with	8.598	0.000**	9.1%	Independence (thoughts)	-0.113	0.044*
the past				Hedonism	0.135	0.019*
				Power (resources)	-0.115	0.021*
				Traditions	0.185	0.001**
				Universalism (care about nature)	0.157	0.002**
Percep- tion of	18.886	0.000**	14.9%	Independence (thoughts)	-0.147	0.003**
proxi-				Safety (public)	0.215	0.000**
mity				Traditions	0.202	0.000**
				Universalism (care about nature)	0.109	0.036*
Targeting	15.041	0.000**	14.9%	Power (resources)	-0.103	0.024*
				Safety (public)	0.182	0.001**
				Conformism (rules)	0.182	0.001**
				Traditions	0.179	0.001**

Table 3. Regression models of the determination of values in relation to the city in the sample of native residents

 $^{*}p<0.05;\,^{**}p<0.01.$

	Features and elements of the regression model					
Depend- ent vari- ables	F- crite- rion	Significance level of the reliability models	General explanation by model variance	Elements of the model	Factor β	Significance level of the elements of the model
Real	6.831	0.000**	7.3%	Achievement	0.139	0.017*
risks and				Power (resources)	-0.123	0.015*
threats				Security (personal)	0.136	0.018*
				Modesty	-0.162	0.003**
				Universalism (care about nature)	0.145	0.008**
Informa- tion and	12.841	0.000**	10.6%	Independence (thoughts)	-0.166	0.004**
dynamic				Traditions	0.104	0.045*
10843				Kindness (concern)	-0.218	0.000**
.				Universalism (care about nature)	0.143	0.006**
Social	9.075	0.000**	5.9%	Hedonism	-0.119	0.028*
crowding				Kindness (concern)	-0.173	0.002**
				Universalism (care about nature)	0.112	0.024*
Trans-	4.938	0.008**	2.2%	Hedonism	-0.153	0.005**
port risks				Achievement	0.140	0.010*
Orien-	5.934	0.000**	7.6%	Hedonism	-0.162	0.006**
tation				Achievement	0.249	0.001**
problems				Conformism (rules)	-0.174	0.007**
				Traditions	0.127	0.028*
				Kindness (concern)	-0.186	0.002**
				Universalism (care about nature)	0.119	0.030*
Indiffer-	10.291	0.000**	6.7%	Achievement	0.197	0.000**
ence				Power (resources)	-0.144	0.004**
				Universalism (care about nature)	0.119	0.017*
Migra-	4.734	0.009**	2.1%	Reputation	0.124	0.013*
tion risks				Universalism (tolerance)	-0.124	0.013*
Homoge-	6.065	0.000**	5.3%	Achievement	0.152	0.020*
neity of				Conformism (rules)	-0.153	0.012*
environ-				Kindness (concern)	-0.210	0.000**
ment				Universalism (care about nature)	0.198	0.000**

Table 4. Regression models of the	e perception of stress	s factors in the urbar	n environment in the
sample of native residents			

p < 0.05; p < 0.01.

	Features and elements of the regression model					
Depend- ent vari- ables	F- crite- rion	Significance level of the reliability models	General explanation by model variance	Elements of the model	Factor β	Significance level of the elements of the model
External value of the city	13.360	0.000**	3.8%	Power (dominance) Safety (public)	0.159 0.108	0.000** 0.005**
Affection	8.881	0.000**	2.6%	Power (resources) Universalism (care about nature)	0.111 0.114	0.004** 0.003**
Connec- tion with the past	6.770	0.000**	5.8%	Independence (thoughts) Hedonism Traditions Kindness (concern) Universalism (care about nature) Universalism (tolerance)	-0.162 0.102 0.089 -0.128 0.101 0.091	0.001** 0.022* 0.032* 0.011* 0.020* 0.037*
Percep- tion of proxi- mity	10.561	0.000**	4.5%	Power (resources) Universalism (care about nature) Universalism (toler- ance)	0.096 0.135 0.089	0.012* 0.001** 0.032*
Targeting	15.605	0.000**	4.5%	Hedonism Conformism (rules)	0.132 0.161	0.001** 0.000**

Table 5. Regression models of the determination of values in relation to the city in the sample of newcomer residents

p < 0.05; p < 0.01.

According to Table 3, the identified models had a high percentage of explained variance, which allows us to speak about the axiological basis of native young people in relation to the city. The most frequently identified determinants of attitude toward the city were the value of safety (public) and the value of traditions. Both values are socially oriented and require the maintenance and preservation of socio-cultural foundations to ensure the stability of society.

According to Table 4, the regression models that explain the assessment of risk in the urban environment by native residents in general have small dispersion loads, but one of the most powerful models is the information and dynamic loads presented in the city. Here, the high dynamics of life in the city, the richness of its information environment, become annoying, and these negative assessments factor into the prevalence of a conservative and traditionalist orientation. Curiously, one's allegiance to one's own group significantly reduces the intensity of the negative assessment of the urban environment; this reduction is a consequence of the effect of in-group favoritism.

According to Table 5, the identification with the city among young newcomers was weakly determined by their values, as confirmed by the low regression weights of the models. Various predictors in the derived structures characterized the high degree of differentiation of axiological factors.

In Table 6, the most axiological determinants of the presence of stress factors were the indifference of the inhabitants of the city to each other and the presence in the urban environment of real risks and threats to human life and health. In most of the models, a significant predictor of the presence of stressors in the urban environment was favoring the value of universalism (tolerance). A lack of readiness for understanding and accepting those who are different increases the sensitivity of a young person to the negative aspects of life in the city.

Features and elements of the regression mod					nodel	del		
Depend- ent vari- ables	F- cri- terion	Significance level of the reliability models	General explanation by model variance	Elements of the model	Factor β	Significance level of the elements of the model		
Real	13.533	0.000**	10.9%	Power (dominance)	-0.122	0.001**		
threats				Security (personal)	0.125	0.005**		
				Traditions	0.106	0.013*		
				Kindness (duty)	0.168	0.000**		
				Universalism (care about nature)	0.090	0.031*		
				Universalism (tolerance)	-0.213	0.000**		
Informa- tion and dynamic loads	11.387	0.000**	7.9%	Conformism (interpersonal)	0.093	0.025*		
				Traditions	0.097	0.020*		
				Kindness (concern)	-0.274	0.000**		
				Universalism (concern for others)	0.111	0.025*		
				Universalism (tolerance)	-0.103	0.024*		
Social crowding	9.285	0.000**	5.3%	Conformism (interpersonal)	0.087	0.036*		
C C				Kindness (concern)	-0.207	0.000**		
				Universalism (concern for others)	0.111	0.025*		
				Universalism (tolerance)	-0.127	0.006**		

Table 6. Regression models of the perception of stress factors in the urban environment in the sample of newcomer residents

	Features and elements of the regression model					
Depend- ent vari- ables	F- cri- terion	Significance level of the reliability models	General explanation by model variance	Elements of the model	Factor β	Significance level of the elements of the model
Trans-	4.634	0.001**	2.7%	Stimulation	-0.105	0.017*
port risks				Conformism (rules)	0.090	0.027*
				Kindness (duty)	0.140	0.002**
				Universalism (tolerance)	-0.102	0.020*
Orien- tation	6.755	0.000**	3.9%	Conformism (interpersonal)	0.084	0.043*
problems				Traditions	0.141	0.001**
				Kindness (concern)	-0.126	0.002**
				Universalism (tolerance)	-0.093	0.032*
Indiffe-	12.003	0.000**	11.2%	Stimulation	0.092	0.039*
rence				Power (dominance)	-0.130	0.001**
				Conformism (interpersonal)	0.084	0.045*
				Kindness (duty)	0.134	0.003**
				Universalism (concern for others)	0.132	0.007**
				Universalism (care about nature)	0.093	0.034*
				Universalism (tolerance)	-0.118	0.010*
Migra-	12.351	0.000**	5.3%	Achievement	0.103	0.016*
tion risks				Safety (public)	0.130	0.002**
				Universalism (tolerance)	-0.221	0.000**
Homoge-	8.906	0.000**	3.9%	Safety (public)	0.100	0.029*
neity of the visual				Traditions	0.117	0.005**
environ- ment				Kindness (concern)	-0.182	0.000**

p < 0.05; p < 0.01.

Studying the structural integrity and objectivity assessments of the urban environment by native youth and newcomers shows the differences in the relationships of positive and negative assessments (Figure 1).



Figure 1. The relationship between identification with the city and subjective assessments of stress factors in the urban environment by native and newcomer respondents. A thin solid line shows a positive correlation at p < 0.05; a thin dotted line shows a negative correlation at p < 0.05; a fat dotted line shows a negative correlation at p < 0.01.

The newcomer residents demonstrated orthodox attitudes toward the urban environment: positive identification with the city was inversely proportional to the negative assessment of stressful aspects of its life. Native residents are freer and have independent systems for positive and negative assessments of the urban environment.

Discussion

The orientation of modern cities toward innovation and the formation of the global image of the city is not fully correlated with the value orientations of the young people living in them. In our study, for the younger generation the most important value that determined their behavior was giving priority to decisions in one's own group and in the wider social community. This value corresponds with the objectives of youth, which are implemented by means of social identification (Popova, 2005) through the transfer of the characteristics of group members to the individual. The association of youth within a community (or subculture) or their adherence to other social groups (online communities, political and social associations) often occurs spontaneously and in opposition to society as a whole, that gives rise to dangerous tensions in urban society and limits the prospects for the development of individuals and cities in a changing world (Simonova, 2010). The association of youth from diverse communities would be advisable as it would be more effectively in accordance with the objectives of the city. The desire of young people to be accepted and useful and to realize themselves as full members of a group can be the basis for active participation in voluntary activities, youth work, or other governmental, socio-oriented urban-development projects.

The associated dominant values of young people living in a megalopolis are personality-focused and conflict with the dominant, socio-focused values. The choice between individual and group interests is exacerbated when there are real or potential feelings of physical threat or of a threat to the social status of the individual. According to research data (Kruzhkova, 2014), about 30% of young people living in large cities are experiencing acute stress from the environment. It is obvious that their assessment of the urban environment is orthodox and stochastic; it is not dependent on the actual situation or on young people's emotions and current relationship with the environment. This assessment can lead to impulsive acts, illconsidered decisions, a tendency to interrupt activities, and, as a result, difficulty in attaining self-realization in the environment of the megalopolis.

In our study, intensity in the expression of values was more characteristic of the newcomers to the city than of the native residents. The newcomers' focus on security, traditions, ideas regarding ecology, justice, and tolerance underlined their more vulnerable position in the new-for-them environment of the megalopolis. Their demonstration of their openness to a new society and desire to be useful to it created a kind of adaptation resource for conflict-free entry into the environment of the city. This positive perception of the megalopolis meant that the young newcomers were less concerned than the natives about the presence of stress factors in the urban environment and assigned them less importance as a personal threat. However, adverse events that occur to a person directly can begin to determine the general attitude toward the city and its subjective assessment. Thus, newcomers were seen in a large number of correlations both of the subjective evaluation of the negative factors of living in the city and of the positive trend to identify with it (Table 6).

For the native residents another mechanism in the formation and evaluation of the image of the city was typical: negative situations distanced them from the processes of identification with the city. At the same time, for the young native people the obstacle to maintaining a positive image of the city was the indifference of the inhabitants of the megalopolis toward others; this attitude violates several basic needs of any person. The native residents were aware that in an emergency in an urban environment they must rely on themselves and not on the aid of others; this situation creates a zone distancing them from the environment of the city, but not in their dominant value orientations or in the difficult implementation of the development prospects of the city (Chernjavskaja, 2011).

The value determinants of the assessment of the environment of the big city in the native young people more often had a social focus, which indicates that the more people are included in a social community and the more comfortable they are in it, the more they have a positive image of the city and are willing to identify with it. Young people usually do not seek to dominate in this environment or to manage it; they are often more willing to act as executors than as initiators of changes. They are comfortable within the environment of cities, and their focus on goodwill and hedonism minimizes the sharpness of the perception of potential risks present in it.

The young newcomers had a quite different position: for them, individualistic orientation values ensured the formation of a positive image of the city as a potential location for their personal self-realization. Such young people are more ready to accept the role of managers, leaders, and initiators of innovative processes in an urban environment than native young people. However, the intensity of this group's perception of risk increased under the influence of the rules and regulations that the young people had to comply with in order to integrate into the community. This load of social expectations made them more sensitive to the social, informational, dynamic, and physical stress factors of the urban environment.

Conclusions

First, the megalopolis had one of the most attractive living environments for these young men and women not only because of the localization of very comfortable living conditions but also because of the concentration of opportunities for personal self-realization, which is so relevant to young people. These youth were focused more on the process of social identification with the city and the search for social groups, which provide a sense of security and acceptance, than on the choice of individual strategies to realize their potential.

Second, the image of the city was different for native and newcomer young people. The young men and women born in the big city, on the one hand, gave a more objective assessment of it, pointing out both the pros and the cons of living in the city. The young newcomer residents, on the other hand, to a lesser extent considered the city an environment for the realization of their abilities. Their assessments of the urban environment were more situational and based on their personal experience, but they considered it an environment that promotes self-realization.

Third, the appeal of the megalopolis had different axiological foundations for native and newcomer young residents. For the first group the city was a familiar environment with prime opportunities for social interaction; for the second group it was a competitive environment that required adaptation and maximum realization of personal opportunities. For the newcomer young people, who were coming from a more active position in life, the city posed new challenges in the implementation of its development strategy.

Fourth, thus, the study of the axiological foundations of the subjective assessment of the environment of a megalopolis by different categories of young people living in it seems to be promising; it is in demand for the implementation of administrative functions for the development of human capital and for forming optimal migration policies in a region. In addition, research in the field of the environmental psychology of a city is quite rare in domestic science and does not allow us to form a comprehensive picture of the interaction between the urban environment and the people living in it. The present study is one of the fragments in the formation of a relatively new direction for Russian research.

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Sociometric status of Theatre College students and its relation to their personal characteristics and educational activities

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This article presents the results of a study of sociometric status and its relation to personal characteristics and educational activities conducted on 96 first-year and 52 second-year students at the Moscow Theatre College. The sociometric study included three sets of questions combining the everyday life and communication of a student: educational activities, leadership and interpersonal communication. To determine the diagnostics of personality characteristics, Cattell's multiple-factor personality questionnaire 16 PF was used.

The comparative analysis of the group unity sociometric index has shown that there is more mutuality in the choices dealing with interpersonal communication than in the choices dealing with professional activities. The grades that teachers give in actor training appear as a steady focus that determines the degree of leadership/reject not only in the professional but also in the social and interpersonal spheres. The high level of motivation (energy and determination) captured by Cattell's factor test Q4 is one of the most significant qualities that determines the number of choices in various spheres of student activity (mastering the profession, leadership qualities and interpersonal communication).

Keywords: sociometric status, actor's talent, personal characteristics, psychology of the actor, professional education

Introduction

Psychological research that deals with the personality and professional peculiarities of an actor typically aims at studying two primary spheres. The first sphere of research is aimed at specific physical functions such as the cogitation, will, imagination, memory and emotional spheres (Drankov, 1973; Natadze, 1972; Simonov, 1962; Tal'yan, 1966). The second research area involves personality structure and its peculiarities such as the motivational, self-construction, skills and professional orientation spheres (Galkina, 2011; Kochnev, 1983; Malevski, 1998;

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Popova, 2004; Roslyakov, 1992; Fishman-Borisov, 2005). Giving weight to the works mentioned above, we concluded that the most effective approach to studying an actor's gift would be a complex approach. This approach would combine creative skills diagnosis with analysis of personal and psycho-physiological peculiarities of an individual as well as the specific character of his or her professional activities (Groisman, 2007; Rozhdestvenskaya, 2005; Sobkin, 1984; Sobkin, Feofanova, 2012).

Activity analysis of the actor's profession is primarily found in research based on the study of art, which looks at the variety and peculiar properties of some dramatic psychotechnics and their pedagogical aspects (Chekhov, 1999; Ershov, 2010; Gracheva, 2005; Knebel, 2005; Koshevaya, 2009; Stanislavskii, 2012; Tabakov, 1986;). It is important to mention that educating an actor is "projecting activity onto the layer of its acquisition" (Davydov, 2010). Thus, it is possible to examine the structure and peculiar properties of the acting profession on *a wider scale*. One of the most interesting phenomena to look at, in our opinion, is the personality change of actors-to-be (students) at various steps of mastering the profession. Several of our previous works involved analyzing those personality changes (Sobkin, 1984; Sobkin, Feofanova, 2012).

Notably, the process of educating an actor is triggered by the general sociocultural context. Broadly speaking, this context determines the general path of an actor's personality formation. Of primary importance here are the plot and subject matter of a piece of fiction, which are offered to the students in the process of work.

Specific organization of the educational process involves active cooperation and participation of teachers and students in discussing up-to-date social problems, politics, details of their own lives and interpersonal conflicts. They also talk about literary works, cinema, music pieces, etc. A large part of creative exercises and tasks based on extracts of classic and modern drama is dealt with by students themselves; thus, they are expected to choose partners and organize work on their own. In this regard, intra-group relationships of actorsto-be seem to be vitally important. The peculiarities of these relations result in general productivity and success in the work, atmosphere and psychological climate of the group.

The personality traits of each student (emotionality, sociability, urge to dominate, etc.) influence the intra-group relationship in a meaningful way. In the phase of short listing during entrance examinations, a number of personality traits and accentuations play a major part (Sobkin, Feofanova, 2012). Those traits are sociability, openness, courage, high-level emotional response, conformism, and readiness to cooperate and participate in group activities. These personal peculiarities are professionally important and fundamental for a future actor. Furthermore, those qualities take a great toll on the relationships inside the group and create a unique communicative situation because an actor's education suggests constant group work and cooperation. A question arises at this point: how can a study group (usually consisting of 24 students) with similar personality traits function in an effective way? In this respect, classic socio-psychological scenarios dealing with the study of small groups are considered. Those are formal and informal leadership and the dependence of intra-group status on personality traits and success in educational activities. These aspects are discussed in this article.

Method

The research of intra-group relationships was conducted using sociometry methods among the students of the Moscow Theatre College under the direction of O. Tabakov. A total of 96 first-year students (in 2010, 2011, 2012 and 2013) and 52 sophomores (in 2010, 2011, 2012) participated in the research. The students were offered various communicative and relationship situations in which they had to note the three most preferable fellow-students for cooperation.

The situations offered to the students during the sociometric research are analyzed below. They fall into three major groups, combining the everyday life and communication of a student: educational activities, leadership and interpersonal communication.

The striking feature of an actor's education is that that he or she does not only have to study professional disciplines such as actor's skills, scenic speech, stage movement, dance and vocals but also each student must study a range of general education subjects, such as history, mathematics, and the Russian language, etc.. Moreover, these two groups of subjects differ considerably in formatting of classes, teaching methods and quantity of study hours. Professional subjects are typically taught in an informal and creative game-like manner, where a teacher-student personal contact prevails, whereas general education subjects are taught in the classic format of a school lesson. To get the overall picture of the relationship inside those two types of educational situations, we posed two major questions to the students: "What fellow-student would you most likely ask for help in preparing for a general education subject?" and "Who would you most likely practice a sketch or prepare an extract with?" The work on extracts and sketches is one of the major educational activities in the first and second years, which is why we offered it as a sociometric question.

The second important sphere of intra-group relations between actors-to-be is leadership. Two primary directions are outlined in this case. On the one hand, the role of a group monitor, who is responsible for the communication with teachers and college administration on organizational topics, is important. On the other hand, the skills of organizing and self-organizing are vital because students often receive individual tasks from teachers, performing that is only possible in small or large groups. To discover the most appropriate candidates for being a monitor, the following question was asked: "What fellow-student do you think would be the best monitor?" Analyzing the students' answers lets us learn the attitude to the present monitor and see his or her possible "competitors." The second question addresses discovering students with leadership qualities: "What fellow-students do you think have the most developed organizational skills?"

The third series of questions touch upon interpersonal communication and students' affections. We also posed two questions to the informants. The first question addresses finding out the most authoritative and valued members of the group ("Who would you ask for advice in a difficult situation?"); the second question reveals each student's level of popularity ("Who would you like to spend a day-off with?").

Results

Sociometric index analysis among first- and secondyear students of the Theatre College

The first step of the students' sociometric peculiarities research was the analysis of sociometric indexes, which shows the level of unity and togetherness in a group. The group unity index is referred to as Iguand; the level of relationship well-being is referred to as Irw. Group unity index, showing mutuality of choices in the group, is calculated as the ratio of the sum of mutual positive elections in the group to the maximum possible number of positive elections: the higher its number, the more mutual choices were made (Moreno, 2001; Volkov, 2002). The index of relationship well-being is calculated as a ratio of the number of leaders (more than 6 choices) and preferable members (3-6 choices) to the number of neglected (1-2 choices) and rejected (no choices) members. A low level of the index means a predominance of people with lower status in the group and small number of leaders. A high level of the index is characterized by predominance of "stars" and favored members of the group (Moreno, 2001; Volkov, 2002).

The calculation of those indexes was conducted for two questions: "Who would you like to spend a day-off with?" and "Who would you most likely practice a sketch or prepare an extract with?" We chose those questions because, in our opinion, they capture two different aspects of group relationship. The question about a dayoff is aimed at finding out preferences in an informal setting, whereas the question about a sketch addresses the relationship in a professional setting. The results are shown in Table 1.

Table 1. Group unity index (I_{gu}) and index of relationship well-being (I_{rw}) for the question	s
"Who would you most likely practice a sketch or prepare an extract with?" and "Who would	ł
you like to spend a day-off with?"	

Years	Group U	nity Index	Index of Relationship Well-Being		
-	A Sketch	A Day-Off	A Sketch	A Day-Off	
1st year	0.23	0.36	0.44	0.49	
2nd year	0.26	0.46	0.50	0.57	

As the table suggests, the group unity index in the question about a sketch is much lower than in the question about a day-off. This result proves that *mutual-ity* in an informal setting is more frequent than in a formal one. We consider that the tendency is rooted in the fact that mutual choices in an informal setting are brought about by interpersonal affections. The nature of choices is different for a professional setting—students tend to choose most talented and "strong" peers, lowering the chance of mutuality because the number of leaders in a professional setting is low.

Despite these differences, it is worth pointing out that the index of relationship well-being is rather high for first- and second-year students in both informal and professional spheres. The index tends to grow in the second year.

Sociometric links of Theatre College's firstand second-year students

Examination of the correlational analysis results of linking sociometric status indexes in various spheres of student's social activity is the next subject considered. Those spheres are as follows: helping in educational subjects, working on a sketch together, choosing a monitor, demonstrating organizational skills, asking for advice in a difficult situation and spending a day-off together (Figures 1 and 2).

For the sample of first-year students (N=96), the correlation is significant at the 0.01 level if its value is greater than 0.26, and it is significant at the 0.05 level if its value is greater than 0.22. For the sample of second-year students (N=52), the correlation is significant at the 0.01 level if its value is greater than 0.36. Note that a rigorous statistical evaluation of the above correlation is difficult, and the results should be considered as trends.

As Figure 1 shows, the largest numbers of links are found in status position distributions on the following topics: sketch, asking for advice and organizational skills. Notably, these are interconnected and capture the similarity of the group members' status positions in demonstrating various types of social activity. It is also significant that personal authority is connected to leadership qualities ("organizational skills"), success in professional setting ("a sketch") and personal affections of the students ("a day-off").





Note: a solid line shows positive links, the correlations of which are significant, p=.01.

It is worth mentioning that the choices of the most interesting and amiable fellow-students for a "day-off" correlate with their professional appeal ("a sketch") and general authority ("asking for advice"), whereas their leadership qualities ("organizational skills") do not play a significant role in this case. Additionally, the connection between the good organizational skills of a monitor and the number of choices he or she received was confirmed. However, the results suggest that the role of a formal leader (monitor) is not connected to the number of choices in other areas of activity.

Moreover, it is worth mentioning that the position "help in general education subjects" does not have any significant correlations with other spheres of social activity. This fact points to the conclusion that educational activity in general subjects is neither connected to professional activity nor to personal relations.



Figure 2. Constellation of significant correlations in sociometric status indexes among the second-year students.

Note: a solid line shows positive correlations; a dotted line shows negative correlations; leader lines show new connections compared to Figure 1; the correlations are significant, p=.01.

Figure 2 shows the constellation of correlations in sociometric status indexes for various types of activity among the second-year students. The main structure remains unchanged (closely interconnected positions of "a sketch," "a day-off," "organizational skills" and "asking for advice"). However, the students' attitude towards choosing a monitor has obviously changed. Here, the social function of a monitor is not only connected to his or her organizational qualities (as in the first year) but also correlates to a person's general authority ("asking for advice").

Another important difference addresses the appearance of a negative link between "a sketch" and "help in general educational subjects." The results for the firstyear students suggested that general subjects are treated as a parallel type of activity, not connected to either professional or informal settings. The results for the second-year students, however, tend to show *the contradiction* between mastering the profession and being good at general educational subjects. The leaders in general education subjects, as a rule, fail to become leaders in mastering the profession. Note that the set of general subjects in the college is the same as 10-11 class regular schools and are invariant in the first and second year of study.

In our opinion, the results given above should be matched to general theorems focused on the peculiarities of developmental age at the stage of transition between junior and senior school. In senior forms, leadership zones are usually differentiated, forming a complex structure where "straight A" students rarely become informal leaders of the class, whereas the most amiable and interesting fellow-students tend to have lower grades. In our case, this well-known tendency is interpreted in reference to the dynamics of changing the major type of activity at various age stages (Elkonin, 1971). Thus, educational activity (junior school age) is succeeded by communication with peers at the teenage stage. The results we received for actors-to-be, at the same time, suggest that in the case of early professional training, the developmental age tends to move in a slightly different direction. Thus, professional success (a large number of choices in "a sketch") tends to be closely connected to informal leadership among peers. This fact proves that mastering the profession is a personally important and leading type of activity, while educational activities in terms of general subjects do not seem to be that important. All of these facts support the general trend of transition into a senior school age.

Connection of sociometric status to success in acting and personal qualities

The next step in our analysis was to discover the connections between the students' sociometric status, their personal peculiarities and their grades in acting. We chose the grades in "actor training" for two primary reasons. First, they have a greater personal value to the students; second, they are most responsible for a student's expulsion (i.e., they pose a threat to becoming a member of the group).

In the course of research, a correlational analysis was conducted that portrayed the links between students' sociometric status, grades in "actor training" and indexes of Cattell's multiple-factor personality questionnaire 16 PF, which describes communicative, intellectual emotional and regulatory peculiarities of a person (Kapustina, 2001; Cattell, 1970). Figure 3 shows the correlational links we obtained for the first-year students.

As Figure 3 suggests, Cattell's factor Q4 (tension) is positively connected to the positions focusing on informal leadership ("asking for advice," "a day-off"), professional success ("a sketch") and leadership qualities ("organizational skills"). It is worth mentioning that higher indexes of the factor showing a complex of the named personal characteristics become vitally important for achieving a higher status in all spheres of significant social activities among the first-year students.

Cattell's Q1 factor (radicalism) is another significant characteristic in informal communication sphere ("a day-off", "asking for advice"). It is understood as the urge for independence, autonomy and non-recognition of authority. In this case, the symptoms of radicalism may become valuable to teenagers due to the pecu-



Figure 3. Constellation of significant correlations in sociometric status indexes, grades in actor training and Cattell's test factors for the first-year students.

Note: a solid line shows positive correlations; a dotted line shows negative correlations; bold lines show that the correlations are significant, p=.01; narrow lines show that the correlations are significant, p=.05.

liarities of their developmental age because young people strive to find their place under the sun and their own ideologies (Erikson, 2006).

The number of choices in a key position, "a sketch", is negatively correlated to higher indexes of Q3 factor (self-control), which suggests that leaders in this sphere possess peculiar personality traits, such as impulsivity, lack of discipline and moodiness. As a rule, those who possess these qualities do not tend to have a leader's role in communication and, for the most part, remain passive but simultaneously emotionally free. However, the complex of the qualities addressed as low self-control may become an important characteristic in this stage of mastering the profession. Those qualities let students be sensible to the way others estimate them. This is important not only in a "student-teacher" relationship but also in the course of collective creative work where a student reacts on his peers' level of control.

The grades in actor-training are positively connected to the positions of "a dayoff," "asking for advice" and "a sketch". Thus, we can see that the grades teachers give do not only influence the professional success of a student ("a sketch") but also influence their interpersonal communication ("asking for advice," "a day-off"). Furthermore, higher grades in actor training have positive correlations with Cattell's factor N (diplomacy) and negative correlations with factor M (dreaminess). The positive pole of factor N captures such traits of character as breeding, cunningness, insight and caution. Cattell (1970) defined this as "Machiavelli's pole," which characterizes the ability to reflect another person's position during interpersonal communication. Lower diplomacy indexes suggest immediatism, natural behavior, openness and simplicity, whereas higher diplomacy indexes of insight and social sensitivity allow students to understand their teachers' instructions more precisely and more clearly perceive their characters' emotions.

As to factor M, people with higher M indexes tend to have a richer imagination and a more artistic perception of the world. On an opposite pole, there are realityoriented people who have practical minds. This tendency confirms our previous results (Sobkin, Feofanova, 2012) and could be interpreted as follows: in modern setting higher indexes of factor M (dreaminess) are manifested not only in the form of rich and well-developed imagination, but mostly point to a person's absorption into his inner illusions and patterns. The fact is also mentioned by the authors (Kapustina, 2001; Cattell, 1970). It usually stands in the way of students' perception of criticism and teacher's remarks as well as changing the direction of his or her creative work etc. (Sobkin, Feofanova, 2012).

Similar correlational analysis was performed using the results for the secondyear students. The analysis found a number of tendencies. During the first year of study, the central personality determining leadership in the fields of professional success and interpersonal relationships was Cattell's factor Q4 (tension); in the second year, it was not displayed as an important characteristic in various social positions. Furthermore, the significance of personality traits in sociometric status is declined in general: The correlations between sociometric indexes and Cattell's factors are nearly absent.

The grades for actor training in the second year, as in the first year, tend to be connected to a higher student's status in a professional setting ("a sketch") and in the sphere of interpersonal relations ("asking for advice," "a day-off"). This fact suggests that a mark given by a teacher is important not only for the professional status of a student but also for the sphere of his or her interpersonal relations in both the first and second years.

Conclusion

The results of the research lead us to conclude as follows:

- 1. The comparative analysis of the relationship well-being index among Moscow Theatre College's first- and second-year students has shown that a friendly atmosphere and a healthy psychological climate are typical in both professional and interpersonal settings.
- 2. The comparative analysis of the group unity sociometric index has shown that there is more mutuality in the choices dealing with interpersonal communication ("Who would you like to spend a day-off with?") than in the choices dealing with professional activities ("Who would you most likely practice a sketch or prepare an extract with?").

- 3. The correlational analysis has discovered a strong connection between the status positions inside the students' study groups in various spheres of social activity: mastering the profession, personal authority, organizational skills, and interpersonal relations. The complex of these connections takes place in both the first and second years of study.
- 4. The research has discovered a sticking change in the students' attitude towards a formal leader (monitor) by the end of the second year of study. Estimating his or her authority is influenced not only by organizational skills but also by personal authority among peers.
- 5. In the course of study, there appears to be a considerable difference in the students' attitude towards professional disciplines and general education subjects. Professional activities are treated as main and personally important, whereas general education activities are paid less attention to. Additionally, a student's success in the professional sphere is closely connected to his or her personal authority inside the group, leadership qualities and general appeal.
- 6. The grades that teachers give in actor training appear as a steady focus, which determines the degree of leadership/reject not only in the professional but also in the social and interpersonal spheres.
- 7. High level of motivation (energy and determination) captured by Cattell's factor test is one of the most significant qualities that determines the number of choices in various spheres of students' activity (mastering the profession, leadership qualities, and interpersonal communication).

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