

ANTICIPATION IN THE STRUCTURE OF PSYCHOLOGICAL MECHANISMS OF DEVIANCE: ANALYTICAL RESEARCH REVIEW

Anna I. Akhmetzyanova¹, Tatiana V. Artemyeva¹, Irina A. Nigmatullina¹ and Alla A. Tvardovskaya¹

At the present stage of psychology and pedagogy development one of the urgent tasks is the study of the basic directions, trends and priorities of research on the study of specific psychological anticipation indicators of children with disabilities in national and world science. The urgency of this problem is related to the need to explain the psychological content of socialization processes disorders in the preschool and early school age. The aim of this study is analysis of studies on the neurophysiological, psychophysiological basis of anticipation, anticipation role in providing cognitive mental processes, anticipation development in ontogenesis, features of probabilistic forecasting in health and disease. The analysis of studies revealed the following differences: on the one hand, of the behavioral disorders problem in children with disabilities in preschool and early school age (types, forms, clinical and psychological aspects, etc.) as well as the problems of deviant behavior in adolescents (approaches, theories, phenomenology, typology, factors) and, on the other hand, undeveloped mechanisms and factors in the transformation of abnormal behavior into the deviant one. The role of anticipation phenomenon in these age-related mechanisms, which great importance is proved in relation to deviations in adolescents and adults is not studied; the relation of anticipation to the formation of a latent deviance in disontogenesis is studied even in a lesser degree. The results of the comparative analysis let the authors conclude that the study of the anticipation phenomenon and its role in the structure of behavioral disorders in children with disabilities is an important and unsolved scientific problem for psychology.

Keywords: anticipation, deviancies, children with disabilities, dysontogenesis.

INTRODUCTION

The relevance of the problem of studying the phenomenon of anticipation specifics in pre-adolescence is related to the urgent need to explain disorders of socialization processes in preschool and early school age. In norm genesis socialization is provided by the inclusion of a child in a variety of activities specific for pre-school and primary school age and by development of the appropriate set of regulatory tools.

Behavioral deviations are studied insufficiently through the prism of deficiency of age regulatory tools of activity, communication and knowledge, defining the specifics of failure in solving the age problems by a child at each stage of development. The large number of age-related problems in pre-school and primary school age in particular determines the diversity of specific configurations of such failure; to an even greater extent it relates to the diversity of disontogenesis. This

¹ Institute of Psychology and Education, Kazan (Volga region) Federal University, Kazan, Russia, E-mail: ah_anna@list.ru Anna.Ahmetzyanova@kpfu.ru

makes it necessary to search integrative structures that would reflect the emerging inconsistency of a preschooler in further threat of socialization disorder and development of deviations. The phenomenon of latent deviance which acts as deviations premorbid can be considered as an integrative formation. In the study of psychological content of latent deviance is the importance of the anticipation phenomenon research, which can be considered as a significant indicator of deviations in adolescents and adults. The study of anticipation in children with certain types of developmental disorders suggests its heuristic possibilities for the study of psychological mechanisms of deviancy.

The study of anticipation in the structure of latent deviance does not currently present only the research problem, but a social mission of scientists, designed to warn the initial process of the deviant behavior formation in children with disabilities, including lower risks of occurrence in adolescence and early adulthood the destructive and deviant behavior. The solution of this problem allows us to designate indicators, predictors of deviations in the preschool and early school age in children with disabilities and to model, predict success of socialization processes.

LITERATURE REVIEW

The problem of anticipation is integral in all the problems of psychological science. The phenomenon of anticipation was seen from different angles, and received different names: "setting" (Uznadze, 2001), "the model of future" (Bernstein, 1991), "operational presetting" (Tikhomirov, 1995), "acceptor of actions results, anticipatory reflection" (Anokhin, 1978), "probabilistic forecasting" (Feigenberg & Ivannikov, 1978), "nervous model of stimulus" (Sokolov, 2010).

In recent decades, thanks to the work of domestic and foreign scientists: Brushlinskii (1978); Lomov & Surkov (1980); Sergienko (1997); Feigenberg (1986); Nadin (2015); Kinsbourne (2009) the problem of probabilistic forecasting and anticipation is actively developed.

According to B.F. Lomov and E.N. Surkov's (1980) definition, "anticipation is the ability to act and to make certain decisions with a certain time and spatial prediction for the expected future events".

E.A. Sergienko (1997) understands anticipation as "a universal mechanism of human mental organization, including selectivity and prediction of events in the interaction with the environment".

Thus, in the result of the comparative analysis, the authors concluded that anticipation is a specific cognitive-regulatory process, which is based on the integral mechanisms of the brain work. The range of "resolution" of anticipatory processes, their efficiency by certain criteria is always based on the analysis and synthesis of the past experience, constant comparison of current events with them and, most importantly, at the selective information extraction from memory. In this regard, the most important characteristic of anticipation as a process should be considered

not only its advanced - temporary effect, but also the maximum elimination of the uncertainty in decision-making. In other words, anticipation is not only spatial and temporal advance, but also some degree of completeness and accuracy of prediction (Bauer, 1985). Anticipatory effect is the result of maximal increase of the “determined part” of a decision-making act and continuous verification of “the probability part of the prediction”. This implies that the probabilistic prediction, particularly constructed mainly with account of only the frequency of events is only one aspect of anticipation process.

Science studied in detail the following aspects of the anticipation problem: neurophysiological, psychophysiological bases: Anokhin (1978), Bernstein (1991); Rusalov (1979), the role of anticipation in providing cognitive mental processes (Brushlinskii, 1978); Borisova & Volovikova (2012); Tikhomirov (1984); Shiyan (1999); Feigenberg (1986); Osnitsky (2010); specific probabilistic forecasting in health and disease (Feigenberg, 1977); Peresleni (1976, 1982); Gul'dan (1985); Mendelevich (1995, 2000, 2002); the development of anticipation in ontogenesis (Sergienko, 1997); Regush (1997); the role of anticipation in the thought process (Lisichkin, 1972); operators anticipation (Plokhikh, 2002); Rusalov (1979); communicative anticipation of teachers (Batrachenko, 1991). The most studied to date are anticipatory abilities in schizophrenia (Mendelevich, 2002), in organic disorders (Skidanenko, 2003), in osteochondrosis (Demakina, 2004; Mendelevich, 2002; Solovjeva, 1996); neuroses and neurosis-like states Solovjeva, 1996; Abitov, 2007); epilepsy (Skidanenko, 2003); personality disorders (Uzelevskaya, 2002; Korn *et al.*, 2014); social phobia (Mills, Judah & Lechner, 2014); speech development disorders (Akhmetzyanova, 2004), with motor disorders in children (Bernstein, 1991).

Analysis of conceptual approach in studying the notion of “Anticipation”

The most important stage in the development of the concept of “anticipation” is the study of the animals and humans behavior. I.P. Pavlov introduced the term “preventive operations” as a signaling (or proactive) on upcoming events of the outside world. This feature of the conditioned reflex is the most critical biological factor. It is because the animals have the ability to prepare by a signal for the upcoming unfold events progressive evolution is possible (Pavlov, 1973).

B.G. Ananjev stressed the diversity of anticipatory mechanisms. It is anticipation that ensures the formation and programming of behavior and activity, it is included in the decision-making processes, monitoring and communicative acts, as any act of communicating with other people always inevitably involves anticipatory processes. In studies of sensory organization of a man carried out by B.G. Ananjev and his colleagues, it was found that anticipation acts as a kind of “connecting-link”, providing the transition from sensation to perception, from perception to idea and from idea to thought (Ananjev, 1997).

Further development of the preventive activity value for evolution belongs to P.K. Anokhin (1978) in his theory of functional systems. P.K. Anokhin defines anticipation as the foresight of the action results, which is a universal brain function, warning of any kind of error that is the commission of acts that do not meet the goal; he singled out anticipatory reflection as a universal property of living. Anticipatory reflection that emerged in the course of evolution develops, becomes more complicated, giving rise to more advanced forms of organisms adaptation to the changing world (Anokhin, 1978). N.A. Bernstein (1991) considered active behavior as the process of solving a specific task by the body acting in the form of the “model of the required future.” Particular attention N.A. Bernstein gave to the role of a programming apparatus of the brain. This apparatus constructs a model of not only what is happening at the current moment, but what has to happen. He called this kind of brain activity a “look ahead” or “extrapolation of the future”, “anticipation” (Bernstein, 1991).

In the late 70-ies of the last century in cognitive psychology U. Najsser (1981) formulated the idea of a universal principle of anticipation, which is the basis of interaction of organism and environment. As a basic concept in the individual cognitive activity U. Najsser singled anticipatory, forestalling schemes. In the concept of U. Najsser, as well as in the theory of P.K. Anokhin, anticipation is seen as a universal property in a cycle of interaction of the organism with the environment (Najsser, 1981, 2014).

In their works B.F. Lomov and E.N Surkov (1980) single out three important functions in the process of reflection of the world that anticipation performs as an inherent property of the psyche. The first is that the anticipation is constant forestalling, foresight and expectation of certain events. This reflects the cognitive function of mental reflection. The second is the regulatory aspect of anticipation, which is manifested in readiness to events, forestalling behavior and action planning. Finally, the third aspect of anticipation is any kind of communication, interaction between people, the willingness to obey social norms, the ability to immediately recognize emotional states of other people - all this is a manifestation of the communicative function of mental reflection in anticipation. Cognitive, regulatory and communicative functions of anticipation are inseparable, united in any act of human behavior. The level of anticipation indicates the level of the mind development in general (Lomov & Surkov, 1980).

On the basis of the tasks typology, defining certain actions and criteria used by people when making decisions B.F. Lomov and B.F. Surkov (1980) identified several levels of anticipation by the degree of complexity: 1) sub sensory, 2) sensorimotor, 3) perceptive, 4) the level of concepts, 5) speech – reflective (verbal and logic). The names of the levels generally reflect their cognitive function. Sub sensory level is that of unconscious nervous - muscular presets and movements.

Sensorimotor level is that at which the anticipatory effect is an expression of relatively elementary temporal-spatial detection, differentiation and forestalling of the stimulus. Perceptive level is characterized by a certain complication of the mental processes integration used in the local anticipatory schemes in the form of secondary imagery - ideas that allow imagining the possible reactions, the result in accordance with a predetermined criterion. It corresponds to the stage of concrete - creative thinking of a child. And finally, the most difficult speech – reflective (verbal and logic) level of anticipation is mainly that of abstract operations. It is associated with greater complexity of the mental processes integration and the emergence of other, better forms of anticipation. At this level more in-depth and broad generalization as well as classification of cases, due to the increasing influence of semantic factor using external and internal speech becomes possible (Lomov & Surkov, 1980).

The authors of the proposed concept stress that it does not provide the levels isolation from one another, but their necessary interrelationship. Anticipation is regarded not only as a temporal-spatial forestalling, but also as the degree of completeness and accuracy of the forecast. Therefore, anticipation can not be reduced to probabilistic forecasting. Such an understanding of the interaction between two related processes of anticipation is close to the concepts of N.A. Bernstein (1991). Many provisions of the anticipation theory by B.F. Lomov and E.N. Surkov (1980) have a lot in common with the idea of the anticipation process, proposed by J. Linghart (1970).

Considering the laws of human teaching, J. Linghart emphasized that anticipation is the most important moment in the cognitive studies. Considering the place of anticipation at various levels of evolutionary behavior J. Linghart distinguished anticipatory reaction of the following types: a) preparatory (preliminary stage of anticipation); b) reaction with temporal advance; c) target concept; d) mental activity plan. The author noted that anticipatory processes act as a driving link mechanism of mental regulation of behavior and activity. It is anticipation that ensures the target formation, planning and programming of behavior and activity, it is included in the decision-making processes, monitoring and communicative acts. The notion of anticipation includes that of selective and directive behavior. If the selective behavior as a form of anticipation is expectation of possible events, the question arises on how it is related to the effects of temporal - spatial expectation of events, i.e. chronological nature of anticipation? The assumption that events anticipation in time and space is the indicator of readiness to form anticipatory schemes of information selection in the environment has been proven by numerous experiments. Major studies of probabilistic forecasting were carried out by I.M. Feigenberg (1986), his colleagues, students and followers (Feigenberg & Ivannikov (1978); Kitaev-Smyk (2004); Shiryaev (1986); Akopov & Sluchevsky (1981).

Probabilistic forecasting, for the most part built with account of only the frequency of events is only one of the sides in the process of anticipation. Simulation of the future by an individual differs significantly from simulation of the present: it can not be the same degree of certainty. Based on the information of the present situation, given by the organs of sense, and using collected in a certain way information about the past (memory), the individual can only simulate the future with some degree of certainty. Thus, the essential feature of the prediction is its probabilistic character. The ability to compare incoming information about the present situation with the information of the past experience stored in the memory and on the basis of all these data to construct a hypothesis about upcoming events, attributing to them a particular probability, was named probabilistic forecasting (Bleicher, Crook & Bokov, 2002).

Probabilistic forecasting is a part of the problems system, the development of which was started by N.A. Bernstein. Basic research of probabilistic forecasting was carried out by I.M. Feigenberg, his colleagues, students and followers. "Probabilistic forecasting can be of different nature (depending on which sides of the "future" it relates to" (Feigenberg, 1986). The nature of the probabilistic forecasting is associated with such moments of the individual's activity as his needs, objectives, ability to influence the environment and his position in it, ability to influence the course of events, to plan and implement the targeted actions. From the I.M. Feigenberg's point of view in human activities there are practically no situations in which probabilistic forecasting would not play a significant role. The ability for probabilistic forecasting is the result of biological evolution in the probability organized environment. The main function of probabilistic forecasting, which is forestalling events in the environment, is achieved through advance preparation for possible actions, and in some cases, through implementing appropriate actions.

I.M. Feigenberg (1986) singled out two types of predictive behavior. The first one is a conditioned response, where probabilistic forecast is clearly defined. The second type is the orientation reaction - under uncertainty probabilistic forecast. In a situation of uncertainty forecast the body undergoes reaction of "general mobilization", which can be illustrated by the behavior of the animal at an unexpected stimulus. Evolutionary-biological sense of the probabilistic forecast organization with the presence of a threshold is obvious: with almost boundless number of alternative situations the body as though simplifies the complex picture of the environment (Feigenberg, 1986). For him some simplified model of the environment with only a few alternatives, predicted probability of which is greater than the threshold, becomes urgent. In the works of I.M. Feigenberg and others it is shown that the estimated response associated with the operation of the instrument of the probabilistic forecasting plays a crucial role in adaptive changes in the body under conditions when the statistical structure of the signal system is characterized by large entropy (Feigenberg, 1986).

Thus, control of behavior, as a form of voluntary regulation in humans, has its roots in the fundamental property of the psyche - anticipation, i.e. in forestalling behavior. Thus, we can consider the ontogeny of behavior control, according to the well-known thesis of “unity of consciousness and activity” by S.L. Rubinstein, as an example of effect of external causes through internal development conditions (Rubinstein, 1998). In the framework of the well-known psychological theories it is proved that an adequate anticipation of the future is only possible on the basis of accumulated and saved by an individual adaptation experience to changing environmental conditions, which, in turn, is probabilistic in nature. It was found that the condition for the successful adaptation of the individual is capability of anticipation as the ability to reflect the patterns of the environment in the structure of the past experience, to form behavioral strategy, anticipating the course of events (Brushlinskii, 1978); Mendelevich (2002); Sergienko (1997).

Analysis of the current state of the basic anticipation regularities formation in human ontogenesis

Of particular interest in accordance with the logic of our study are data provided on the anticipation formation in human ontogenesis. As shown by genetic studies, the establishment and development of the ability to foresee the course of events and to act predictively is a long and controversial process. J. Bruner found that in the first 3 or 4 months a child, along with the development and tapping the items in the “small” space and in connection with the development of special motor coordination of eyes, head and body relative to the visible objects forms elementary anticipatory reactions (Bruner, 1998). From J. Bruner’s studies it is clear that some elements of temporal anticipation of a child are interwoven in sensorimotor schemes of his actions and serve as one of the essential mechanisms of their “integrity” and “co-ordination”.

Meanwhile, according to A. Wallon, spatial and temporal anticipations of a more or less mature form are possible only at the stage of a child’s development, when he starts to use in his activities secondary images - ideas.

Analysis of the problem of anticipation in ontogenesis draws our attention to the fact that the process of maturing and consolidation of anticipation in ontogenesis is performed according to the laws of psyche maturing (Sergienko, 1998). In her works E.A. Sergienko (1998) carries out theoretical and experimental analysis of basic anticipation forms at the early stages of human ontogenesis. The author analyzed the theoretical and experimental approaches to the problem of anticipation, revealed the specific phenomena of anticipation in the early periods of the child’s development.

Thus, according to E.A. Sergienko (1998), elementary forms of anticipation are already represented in perceptive behavior of an infant. They are manifested in selective perception, in anticipatory effects of simple sensorimotor reactions, in

forestalling perceptive events, in the “imagination” of the existence of an invisible object, of the metric of space and the laws of the object movement. In his development an infant improves anticipatory processes due to the rapid development of the perceptive reflection abilities. The fact of selectivity of the moving object and the advanced development of basic anticipation forms in continuous movement as compared to the discrete stimulation confirms the existence of the general anticipatory schemes of continuum space through which the perception is detailed.

Anticipation is complicated and constantly evolved in the course of a child’s ontogenesis manifesting itself in various forms. “In human life there is no such a period when one was completely deprived of anticipatory schemes” (Sergienko, 1989).

The early ontogenesis stage, up to 2 months marks activation of innate behavioral programs, environmental analysis, the preference of environmentally significant parameters of the environment. For example, A. Fils noted the ability of infants (36 hours of life) to distinguish and imitate the facial expressions (happiness, sadness, joy) (Sergienko, 1989). T. Bauer (1985) discovered the ability of 20 day old infants to anticipate the subject appearance on the screen (in the form of tachycardia if the object did not appear for a long time).

According to J. Piaget research results, a two year old child during the formation of ideas is able to search for the missing object. According to the author, anticipatory images of a child already contain a familiar situation or an object, and with varying degree of accuracy immediately anticipate unperceived events or objects (Piaget, 1978). With the development of the child’s psyche previous levels of anticipation do not disappear, but are included in a qualitatively new integration scheme.

According to G.K. Ushakov anticipatory mechanisms in the form of a child’s active ability to anticipate events, are formed under adequate development only after 11-13 years. In particular, according to the author, it can be assumed that the circumstances adversely affecting the mechanisms of anticipation include improper upbringing in the family (e.g. overprotection, anxiety - mistrust) that interferes with the process of necessary skills formation in a child: psychological stability, ability to anticipate certain events (Ushakov, 1987). The emergence of the ability to anticipate events in adolescence and subsequent expansion, strengthening of anticipation is an indication that this process is carried out under the general laws of psyche maturing. In this case, the effect of adverse internal and external circumstances in the early stages of development, causing retardation of anticipation formation can lead to total or partial asynchrony of mental activity due, in particular, to the lack of anticipation (Ushakov, 1987). Anticipation of speech activity was repeatedly considered in the works of I.A. Zimnyaja (1973, 2001).

Different directions are developing diagnostic tools: a methodology to identify willingness (tendency) of adolescents to implement various forms of deviant behavior (Klejberg, 2003); the teachers’ map of observations of the manifestation

of deviant behavior among adolescents (Maisak, 2003); technique of “anticipatory consistency (predictive competence)” (Mendelevich, 2002); a range of social and psychological adaptation SPA by K. Rogers, R. Diamond in adaptation of T.V. Snegireva (1978); methods of studying personality of a maladapted teenager and his environment of Yu.B. Klejberg (2003); the map of socio-pedagogical observation to identify the level of social development of maladaptive adolescents by S.A. Belicheva (1994) and others.

In the context of the well-known psychological theories it is proved that an adequate anticipation of the future is only possible on the basis of accumulated and saved by an individual experience of adaptation to changing environmental conditions, which, in turn, is probabilistic in nature. It was found that the condition for successful adaptation of an individual is the ability to the anticipation as the ability to reflect environmental patterns in the structure of the past experience, to form behavioral strategy, anticipating the course of events (Brushlinskii, 1978; Mendelevich, 2002; Sergienko, 1997).

METHODOLOGICAL FRAMEWORK

The methodological basis of the study were:

- points of system-functional approach of anticipation as a phenomenon that permeates all levels of psychic reflection of reality and have a multi-level structure laid down in the works of P. K. Anokhin (1978); N. A. Bernstein (1991); B. F. Lomov, E. N. Surkov (1980).
- basic points of cultural-historical theory of mental ontogenesis by L.S. Vygotsky (2005).

RESULTS AND DISCUSSION

All the analysis of studies on the phenomenon of anticipation shows that the latter, as though permeates all forms and levels of psychic reflection of reality. It emerges as a systematic integral process, formed in the real human activity and is an important component of the activity regulation mechanism (including behavior in general). In our understanding of anticipation as the inherent properties of mental reflection process it includes not only the effect of temporal-spatial forestalling of events, but also the selectivity of environmental impacts, direction of activity, behavior in age-specific activities.

Nevertheless, the problem of anticipation in disontogenesis, in different conditions of age-specific activities, as a characteristic of latent deviance remains insufficiently studied. The problem of anticipation in the study of psychological content of latent deviance has not received proper scientific interpretation, and psychological studies of anticipation, available to date relate mostly to adolescence and the youthful age. Anticipation in preschool and school age in terms of mental deficiency of disontogenesis was insufficiently studied both

theoretically and experimentally, although the importance of the problem is clearly understood.

The concept of deviation, as a violation of social norms (ethical, aesthetic, legal, etc.) arisen in sociology traditionally begins to be applied since adolescence. Adolescence is the age period, connected with the character formation, including initial manifestation of the evolving character accentuation. The basic research of deviation in adolescence is carried out in the framework of differential psychology, which studies the nature as a personality component, as well as clinical psychology, which considers the pathological character development (Lichko, 2010); Kovalev (1985); Rean (2013); Dalbert & Filke (2007). Different sociological and psychological deviations classifications typical of adolescents, as well as a variety of typology of character accentuation and psychopathy are developed (Smith & McCarty, 1996); Gannushkina (1999); Lichko (2010); Kovalev (1985). Accentuated or pathological character as an integral formation, representing a complex structure of emotional and volitional, motivational, communicative features is viewed as a determinant of dispositions to specific types of deviations (Gippenreiter, 1997; Rean, 2013; Kolominsky, 1997; Kolmogorova, 1999).

In the modern foreign studies anticipation is seen as an important component of high-level intellectual behaviors (conscious, intelligent behavior), significant in the successful training and overcoming behavioral disorders in 7-10 year old children with the HIA, (Jill Burgess, 2012); as the ability to assess increasing risk and the further possibility of changing the strategy of persons' behavior, depending on the intensity of anticipatory emotions and severity of risk (Sheeran, P., Harris, P.R., & Epton, T., 2014); as an opportunity to plan their own actions in relation to the actions of others in communication, as anticipation is an essential ability of the developing brain in children (Zmanovskaja, 2007).

It is shown that the formation of various forms of deviant behavior can be caused by difficulties, children and adolescents experience in the process of socialization. A large number of empirical studies is devoted to the interrelation of deviations with peculiarities of the parental and child or marital relations, family education and family situation in general, with school maladaptation, associated with insufficient educational activity and communication formation, relations among peers, the definition of subject characteristics of deviant behavior and other psychological and socio-psychological factors (Zakharov, 1988); Popov, 1991; Kondrashev & Buyanov, 1997; Korolenko & Dmitrieva, 2012; Kudryavtsev & Semenova, 2002; Vaske, 2009; Kiseleva, 2007; Surovegina, 2009; Akhmetzyanova, 2013, 2015; 2016); Tvardovskaiya, 2012; Artemieva, 2016; Nigmatullina & Artemyeva, 2015; Korn, Sharot, Walter, Heekeren, & Dolan, 2014; Sheeran, Harris, & Epton, 2014).

CONCLUSION

Based on the theoretical analysis of the anticipation problem development in health and disease it can be concluded that the probability forecasting is adaptive -

maladaptive in character, and in the mental or psychic incompetence anticipatory incompetence is observed either. However anticipatory activity of individuals with deviant behavior is deprived of the attention of psychological research. The authors proceed from the fact that knowledge of the characteristic manifestation of anticipation in important areas of the child's life in preschool and primary school age can reveal the hidden deviations, identify coping strategies in behavior and to apply effective methods of rehabilitation and correction in time.

Compared to the sociological, legal and psychological studies, our further study does not provide research of the deviant behavior forms, but determining the specifics of anticipation in children and adolescents with disabilities in the structure of latent deviation. An important aspect is the age and psychological character of the study, carried out in the field of correctional psychology.

Acknowledgments

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

The research was carried out with the support of the Russian Foundation for Basic Research and the Government of the Republic of Tatarstan within the framework of the research project 17-16-16004 "Prognostic competence of younger schoolchildren with disabilities in the prevention of deviations"

Reference

- Abitov, I.R. (2007). Anticipacionnaja sostojatel'nost' v strukture sovladajushhego povedenija (v norme i pri psihosomaticeskikh i nevroticheskikh rasstrojstvah): Diss. kand. psihol. nauk. Kazan'.
- Akhmetzjanova, A.I. (2004). Osobennosti anticipacionnoj dejatel'nosti pri obshhem nedorazvitiu rechi u detej starshego doshkol'nogo vozrasta: Diss. kand. psihol. nauk. Kazan'.
- Akhmetzjanova, A.I. (2013). 'Sravnitel'nyj analiz pokazatelej anticipacionnoj sostojatel'nosti u detej s obshhim nedorazvitiem rechi i s normativnym rechevym razvitiem'. *Nevrologicheskij vestnik im. V.M. Behtereva*, XLV(1): 49-53.
- Akhmetzjanova A.I. (2015). 'Anticipation and Prediction Interrelation Neuropsychological Mechanisms at Youthful Age'. *The Social Sciences*,10: 399-401.
- Akhmetzjanova A.I. (2016). 'Anticipatory competence and ability to probabilistic forecasting in adolescents: Research results'. *International Journal of Environmental and Science Education*, 11(8):1923-1932.
- Akhmetzjanova A.I. (2016). 'The theoretical analysis of views on anticipatory function of mental reflection development'. *Mathematics Education*,11(4): 683-694.
- Akopov, A.Ju., Sluchevskij F.I. (1981). 'Prognosticheskaja dejatel'nost' cheloveka v odnoznachno-determinirovannyh sredah v norme i patologii'. *Voprosy psihologii*, 3: 119-123
- Anan'ev, B.G. (1997). O problemah sovremennogo chelovekoznanija. Moskva: Nauka.
- Anohin, P.K. (1978). Filosofskie aspekty teorii funkcional'noj sistemy. Moskva: Nauka.

- Artemyeva T.V. (2016). 'Normative Behavior of Adolescents with Intellectual Disabilities: a Qualitative Study'. *International Journal of Environmental & Science Education*, 11(7): 1551-1558.
- Batrachenko, I.G. (1991). Psihologicheskij analiz anticipacii v pedagogicheskom obshhenii: Diss. kand. psihol. nauk, Kiev.
- Baujer, T. (1985). Psihicheskoe razvitie mladenca. Moscow: Progress.
- Belicheva, S.A. (1994). Preventivnaja psihologija. Moscow: Konsorcium «Social'noe zdorov'e Rossii».
- Bernshtejn, N.A. (1991). O lovkosti i ee razvitii. Moskva: Fizkul'tura i sport.
- Blejher, B.M., Kruk I.V., Bokov S.N. (2002). Klinicheskaja patopsihologija: Rukovodstvo dlja vrachej i klinicheskikh psihologov. Moscow: Izdatel'stvo Moskovskogo psihologo-social'nogo institute.
- Borisova, A.M., Volovikova, M.I. (2012). Psihologo-mirovozzrencheskie funkcii prazdnika v rossijskom obshhestve. Psihologicheskie problemy sovremenogo rossijskogo obshhestva. Moscow: Izd-vo IP RAN.
- Bruner, Dzh. (1998). Psihologija poznaniya. Za predelami neposredstvennoj informacii. Moscow: Progress.
- Brushlinskij, A.V. (1978). Problema razvitija i psihologija myshlenija. Moskva: Nauka.
- Burgess, J. (2012). 'The impact of teaching thinking skills as habits of mind to young children with challenging behaviours'. *Emotional and Behavioural Difficulties*, 17(1): 47-63.
- Dalbert, K., & Filke, E. (2007). 'Belief in a Personal Just World, Justice Judgments, and Their Functions for Prisoners'. *Criminal Justice and Behavior*, 34 (11):1516-1527.
- Demakina, O.V. (2004). Osobennosti formirovanija klinicheskikh projavlenij osteohondroza pojasnichnogo otdela pozvonochnika v zavisimosti ot parametrov anticipacionnoj dejatel'nosti pacijenta: Dis. kan. med. nauk. Kazan'.
- Fejgenberg, I.M. (1986). Videt', predvidet', dejstvovat'. Moskva: Znanie.
- Fejgenberg, I.M., Ivannikov, V.A. (1978). Verojatnostnoe prognozirovanie i prednastrojka k dvizhenijam, M.: Izd - vo Mosk. gos. un -ta.
- Fejgenberg, I.M., Zhuravleva G.E. (1977). Verojatnostnoe prognozirovanie v dejatel'nosti cheloveka. Moskva: Nauka.
- Gannushkin, P.B., Ovcharenko, V.I., Lejbin, V.M. (1999). Antologija rossijskogo psihoanaliza. Moscow: Moskovskij psihologo-social'nyj institut.
- Gippenrejter, Ju.B. (1997). Obshhat'sja s rebenkom. Kak? Moskva: CheRo.
- Gul'dan, V.V. (1985). Motivacija protivopravnyh dejstvij u psihopaticeskikh lichnostej: Dis. d psihol. nauk. Moskva.
- Kinsbourne M. & Scott J. (2009). 'Embodied Anticipation: A Neurodevelopmental Interpretation'. *Discourse Processes*, 46: 103-126
- Kiseljova, O.V. (2007). 'Vlijanie lichnostnyh osobennostej na vybor koping-strategij u podrostkov s narushenijami i bez narushenij povedenija'. "Izvestija Rossijskogo gosudarstvennogo pedagogicheskogo universiteta imeni A.I.Gercena. Aspirantskie tetradi". SPb.9: 6-10.
- Kitaev-Smyk, L.A. (2004). Psihologii i koncepcii stressa. Psihologija sostojanij. Hrestomatija. Moskva: PER SJE: SPb.: Rech'.

- Klejberg, Ju.A. (2003). Psihologija deviantnogo povedenija. Moskva: TC Sfera.
- Kolmogorova, L.S. (1999). 'Stanovlenie psihologicheskoj kul'tury shkol'nika'. *Voprosy psihologii*, 1:83-91.
- Kolominskij, Ja.L. (1997). Diagnostika i korekcija psihicheskogo razvitija doskol'nikov. Minsk: Universitjeckae.
- Kondrashev, M.Ju., Bujanov, M.I. (1997). Ot odinochestva k obshheniju, ili kontraktologija, Moskva: Rossijskoe obshhestvo medikov-literatorov.
- Korn, C.W., Sharot, T., Walter, H., Heekeren, H.R.,&Dolan, R.J. (2014). 'Depression is related to an absence of optimistically biased belief updating about future life events'. *Psychological Medicine*, 44: 579-592. doi: 10.1017 / S0033291713001074
- Korolenko, C.P., Dmitrieva, N.V. (2012). Addiktologija: polnoe rukovodstvo. Moskva: Akademicheskij proekt; Gaudeamus (Psihoterapevticheskie tekhnologii /pod red.prof. V.V. Makarova).
- Kovalev, V.V. (1985). Semiotika i diagnostika psihicheskikh zabojevanij u detej i podrostkov. Moskva: Medicina.
- Kudrjavcev, I.A. (2002). 'Smyslovaja sfera nesovershennoletnih s psihicheskimi rasstrojstvami, sovershivshih nasil'stvennye pravonarushenija'. *Psihologicheskij zhurnal*, 23 (3): 54 -57.
- Lichko, A.E. (2010). Psihopatii i akcentuacii haraktera u podrostkov. Sankt-Peterburg: Rech'.
- Lingart, J. (1970). Process i struktura chelovecheskogo uchenija. Moskva: Progress.
- Lisichkin, V.A. (1972). Teorija i praktika prognostiki. Moskva: Nauka.
- Lomov, B.F. (1980). Anticipacija v strukture dejatel'nosti. Moskva: Nauka.
- Lomov, B.F., Surkov, E.N. (1980). 'Anticipacija v strukture dejatel'nosti'. *Psihologicheskij zhurnal*, 1(6): 162-165.
- Majsak, N.V. (2003). Lichnostnye osobennosti mladshego podrostka s deviantnym povedeniem. Avtoref. diss. ... k.ps.n. Moskva.
- Mendelevich, V.D. (1995). 'Psihotravma, lichnost' i nevrozogenez (anticipacionnyj podhod)' . *Social'naja i klinicheskaja psihiatrija*, 3: 12 -16.
- Mendelevich, V.D. (2000). 'Nevroticheskie mnesticheckie fenomeny v strukture anticipacionnyh mehanizmov nevrozogeneza'. *Rossijskij psihiatricheskij zhurnal*, 1:18 - 21.
- Mendelevich, V.D. (2002). Anticipacionnaja sostojatel'nost' v strukture lichnosti podrostkov s deviacijami v povedenii. *Kongress po detskoj psihiatrii: Materialy kongressa*. Moskva: MEDpress.
- Mills, A.C., Grant, D.M., Judah, M.R.,&Lechner, W.V. (2014). 'Consequences of anticipatory processing on cognitive symptoms of social anxiety. *Anxiety*'. *Stress and Coping*, 27: 394-409.doi: 10.1080/10615806.2013.866229
- Nadin, M. (2015). 'Anticipation: Learning from the Past The Russian/Soviet Contributions to the Science of Anticipation'. Springer International Publishing, Series Volume 25; 520 DOI 10.1007/978-3-319-19446-2
- Najsser, U. (1981). Poznanie i real'nost'. Smysl i principy kognitivnoj psihologii. Moskva: Progress.
- Nigmatullina I.A. & Artemyeva T.V. (2015) 'Integration of Educational and Research Activity of the Federal University Students, Studying in the Approach «Special (Speech Pathology) Education'. *The Social Sciences* 10(2): 76-80.

- Osnickij, A.K. (2010). Psihologicheskie mehanizmy samostojatel'nosti. Moskva; Obninsk : IG-SOCIN.
- Pavlov, I. P. (1973). Dvadcatiletnij opyt ob"ektivnogo izuchenija vysshej dejatel'nosti (povedenija) zhivotnyh. Moskva: Nauka.
- Peresleni, L.I. (1976). 'Osobennosti verojatnostnogo prognozirovanija u detej v norme i patologii'. *Voprosy psihologii*, 2:113 -123.
- Peresleni, L.I. (1982). 'Issledovanie prognosticheskoj dejatel'nosti dlja harakteristiki urovnja umstvennogo razvitija detej'. *Defektologija*, 6: 11 – 17.
- Peresleni, L.I. (1982). 'Pojavlenie prednastrojki v dinamike vyzvannoj aktivnosti i vremeni reakcii u detej'. *Zhurnal vysshej nervnoj dejatel'nosti*, 32 (2): 209 – 217.
- Piazhe, Zh. (1978). 'Anticipirujushhaja dejatel'nost'. *Ekspierimental'naja psihologija*, 6: 43-46.
- Plokhij, V. V. (2002). 'Vremennoj parametr anticipacii v processe slezhenija za dvizhushhimsja ob"ektom'. *Psihologicheskij zhurnal*, 23 (2): 47-54.
- Popov, Ju.V. (1991). Granicy i tipy samorazrushajushhego povedenija u detej i podrostkov. Samorazrushajushhee povedenie. Sb.nauch.tr. L.: Izd-vo in-ta im. V.M. Behtereva.
- Rean, A.A. (2013). Psihologija lichnosti. Sankt-Peterburg: Piter.
- Regush, L.A. (1997). Psihologija prognozirovanija: sposobnost', ee razvitie i diagnostika. Kiev: Vishha shk.
- Rubinshtejn S.L. (1998). Osnovy obshhej psihologii. Sankt-Peterburg: Piter. – Kom.
- Rusalov, V. M. (1979). Biologicheskie osnovy individual'no-psihologicheskikh razlichij. Moskva: Nauka.
- Sergienko, E.A. (1989). 'Genesis of the elementary forms of anticipation in infants'. *Abstract of 10th Biennial meeting of ISSBD. Jyvaskyla:387*.
- Sergienko, E.A. (1997). Anticipacija v rannem ontogeneze cheloveka: Dis. ... dok - ra psihol. nauk v forme nauchnogo doklada. Moskva.
- Sheeran, P., Harris, P.R., &Epton, T. (2014). 'Does heightening risk appraisals change people's intentions and behavior? A meta-analysis of experimental studies'. *Psychological Bulletin*, 140: 511-543. doi: 10.1037/a0033065
- Shestopalova, L.F. (2003). 'Cennostno-smyslovaja sfera lichnosti so specificheskimi rasstrojstvami i sklonnost'ju k protivopravnomu povedeniju'. *Psihologicheskij zhurnal*, 3: 66 –71.
- Shijan, I. B. (1999). 'Predvoshishhajushhij obraz v strukture dialekticheskogo myshlenija doskol'nikov'. *Voprosy psihologii*, 3: 57-66.
- Shirjaev, D.L. (1986). Psihofiziologicheskie mehanizmy verojatnostnogo. Latv. NII jesperim. i klinich. mediciny. Riga: Zinatne.
- Skidanenko, T.V. (2003). Pogranichnye psihicheskie rasstrojstva pri jepilepsii i ih svjaz' s anticipacionnymi osobennostjami psihicheskoj dejatel'nosti: avtoreferat kandidata medicinskih nauk. Kazan'.
- Smith, S.K. & McCarty, C. (1996). 'Demographic Effects of Natural Disasters: A Case Study of Hurricane Andrew'. *Demography*, 33 (2): 265-275.
- Snegireva, T.V. (1978). Process social'no-psihologicheskoy adaptacii v uslovijah specializacii uchebnoj dejatel'nosti (na materiale fiziko-matematicheskikh shkol): avtoref. dis. ... kand. psihol. nauk. Psihologicheskij institute. Moskva.

- Solov'eva, S.L. (1996). 'Osobnosti kommunikativnoj dejatel'nosti detej s obshhim nedorazvitiem rechi'. *Defektologija*, 1: 62-67.
- Surovegina, M.A. (2009). Vlijanie materinskogo otnoshenija na formirovanie gotovnosti k addiktivnomu povedeniju u mladshih podrostkov s zaderzhkoj psihicheskogo razvitija: dissertacija ... kandidata psihologicheskikh nauk. Nizhnij Novgorod.
- Tikhomirov, O.K. (1984). Psihologija myshlenija. Moskva: Academia.
- Tikhomirov, O.K. (1995). Ponjatie «cel'» i «celeobrazovanie» v psihologii. Hrestomatija po pedagogicheskoj psihologii. Moskva: Academia.
- Tvardovskaja, A.A. (2012). 'Psihologicheskie osobnosti agressivnyh projavlenij doskol'nikov s detskim cerebral'nym paralichom'. Cb. nauchnyh trudov VI Mezhdunarodnoj nauchno - prakticheskoj konferencii. Kazan'.
- Ushakov, G.K. (1987). Pogranichnye nervno – psihicheskie rasstrojstva. Moskva: Medicina.
- Uzelevskaja, A.Je. (2002). Vzaimosvjaz' prognosticheskoy (anticipacionnoj) kompetentnosti s klinicheskimi formami, vyrazhennost'ju i stepen'ju kompensacii lichnostnyh rasstrojstv: avtoreferat kandidatskoj dissertacii. *Kazan'*.
- Uznadze, D.N. (2001). Psihologija ustanovki. Sankt-Peterburg: Piter.
- Vaskje, E.B. (2009). 'Psihologo-pravovaja ocenka bespomoshhnogo sostojanija nesovershennoletnih poterpevsih ot seksual'nogo nasilija'. *Juridicheskaja psihologija*, 3: 17-25.
- Vygotsky, L. S. (2005). Thinking and speaking. Moscow: Pedagogics.
- Zakharov, A.I. (1988). Nevrozy u detej i podrostkov: Anamnez, jetiologija i patogenez. Leningrad: *Medicina*.
- Zimnjaja, I.A. (1973). Uprezhdajushhij sintez i verojatnostnoe prognozirovanie v rechevom povedenii. Moskva: Academia.
- Zimnjaja, I.A. (2001). Lingvopsihologija rechevoj dejatel'nosti. M.: Mosk. psihologo-social'nyj in-t; Voronezh: NPO «MODEK».
- Zmanovskaja, E.V. (2007). Deviantologija (psihologija otklonjajushhegosja povedenija) : uchebnoe posobie dlja studentov vysshih uchebnyh zavedenij. Moskva: Rech'.