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Psychophysiology of individual behavior in economic choice

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Abstract: This article describes the concept of economic man, his behavior reflected in his economic relations, and his psychophysiological foundations. In particular, the associative cortex selects or forms an action program to achieve a goal decided by a person, as a result of its operation, the actions aimed at directly satisfying the need are activated, in the process of behavior, the cortex of the large hemispheres is divided into 11 areas and 52 cytoarchitectonic areas, as well as the brain. several types of rhythmic components are discussed according to frequency and amplitude of both visual and computer-assisted EEG analysis.

Keywords: need, purpose, motive, economic activity, behavior, "economic man", economic thinking, decision-making, cerebral hemispheres, Brodmann areas. hierarchical level of human actions.

Introduction

In recent years, considering families as the main consumers and carrying out effective research on their structural changes and constant determination of consumption parity has been recognized as an urgent issue in our country. It is worth mentioning that in August of this year, the prices of goods and services in the consumer sector increased by 0.5% on average, and according to the statistics agency, in August 2024, the prices of goods and services in the consumer sector increased by 0.5% on average. The annual growth rate of prices in the consumer sector (compared to August 2023) was 10.5%. In August 2024, as part of the consumer price index, it was observed that the prices of food products increased by 0.3% on average, non-food goods by 0.8% and the prices of paid services to the population by 0.4% on average. To make these calculations, more than 120,000 prices were recorded at more than 10,000 sales points and service facilities. The prices of 420 types of food and non-food products and 90 types of services were monitored. According to the results of the 2021 global stage of the International Comparison Program on May 31, 2024, according to the purchasing power parity of Uzbekistan in 2021: - gross domestic product will be 285 billion US dollars; - GDP per capita was 8,162 US dollars[17]. These purchases are definitely connected with the economic decision-making and behavioral characteristics of consumers. It is precisely in this regard that local scientists have not conducted enough research on the social psychological aspects of consumer behavior. Especially in the processes of digital and global transformation of the consumer market, there is a lack of experience in the use of models that psychologically evaluate and forecast trends in consumer behavior. However, M. Ziyaeva [6], a scientist from Uzbekistan,

conducted a study on the process of developing a model of consumer behavior for the formation of marketing strategies. In the research conducted by J. Jalilov [5], the main focus was consumer-oriented motivation theories, and as the main object of research, industrial markets, that is, consumers in the B2B sector, were studied. Accordingly, the research of consumer behavior in the market of consumer goods of Uzbekistan and the improvement of its scientific methodical foundations should be considered as an actual research. At the current stage, global transformations have occurred in them, which are able not only to change the market of goods and services, but also to change it, taking into account the specific characteristics of the consumer environment of society.

Literature Review

From birth to the end of life, a person carries out a number of economic relations, engages in various activities, these activities are not separated from the economy, the child understands the economic relations in society through play activities, in educational institutions, along with mathematics, mother tongue, literature, they get acquainted with the basics of economic knowledge, and labor activity goes along with production, service provision, conclusion of contracts based on economic relations with a number of enterprises, their actual process. The great economist A. Smith, who understood this process, formulated the concept of "economic man". According to his teaching, an economic person is a creative subject of the market economy who has freedom of choice and is able to make optimal and rational decisions based on his goals, interests and needs [3] is That is, as an economic person, it reflects a person who operates with his economic behavior in any type of activity. Economic consciousness and behavior cause a person to engage in a certain economic activity, this activity encourages people to acquire economic knowledge, and finally to perform work based on economic culture. Economic consciousness is a complex psychological structure, which is formed directly from the influence of economic situations and conditions on the consciousness, outlook and motives of a person. The result of the competition is calculated by calculating the profit and loss, comparing the spent (power, time, ability, money) and the obtained results (earned salary, profit). As simple as it may seem, these economic processes are difficult, mysterious and require specific scientific research. According to Bentham, any human activity is aimed at increasing his well-being. Action is performed by a person (person) on the basis of achieving a balance between pleasure and pain. The value of the damage or loss is based on their strength, duration, materiality or suspicion in the person. Pleasure and punishment affect not only the material but also the mental values of a person. Bentham does not describe the structure of human activity, but evaluates it according to the following components: the action itself (movement), its purpose, conditions, awareness, as well as the motive of the person. According to Bentham, motive is one of the elements of light activity, which means the thinking of existence and represents everything that "may lead to the origin of any action or even its prevention" [1].

Professor V. N. Druzhinin considers economic behavior to be the behavior of people who have the opportunity to make economic decisions, as well as the determinants and consequences of these decisions [9].
Economic behavior is the character, appearance, methods and means of economic activity of citizens, employees, managers and production teams in various conditions of lifestyle and economic activity. It is determined by directions and factors [8].
Internal factors based on personal attitude to each person include:
- type of person;
- education and training;
- social and life institutions;
- flexibility;
- communicativeness;
- competitiveness;
- personal, professional, social and emotional intelligence.
External factors:
- system of regulation by the state;
- the state of civil society;
- legal base;
- tax system;
- social policy;
- cultural and educational policy.

The above factors affect the economic, political, social and cultural relations in society and form the economic consciousness of individuals and various societies, which in turn determines their economic behavior.

Economic behavior of a person in market conditions is expressed in moral - ethical motivation, concern for personal needs and private property.
It should be said that the economic behavior of business entities depends on a number of objective and subjective reasons.
Objective reasons include:
- the current system of state regulation;
- current legislation;
- state of the economy;
- social policy and lifestyle;
- policy in the field of education, science, culture, health care;
- the level of confidence in the economic policy of the state, executive and state structures at different levels.

And subjective reasons come from the manufacturer himself:
- material;
- spiritual;
- intellectual and cultural;
- intellectual-social (change of image, changes, consequences).

The above-mentioned characteristics determine various aspects of human economic behavior motivation, for example:
- orientation of values;

- spiritual mood;
- material mood;
- need for justice;
- charity;
- the desire to express oneself;
- curiosity;
- attention to education;
- expansion of scientific, cultural and intellectual potential;
- striving for success;
- leadership;
- striving for dominance;
- a sense of superiority over others;
- adventure;
- image preservation;
- reputation - attention;
- ambition;
- personal interest
- jealousy;
- egocentrism;
- the thirst to be rich;
- enjoyment;
- fear of a decrease in the level of well-being.

In this regard, it is appropriate to talk about economic thinking. After all, economic thinking is important in economic behavior, and its essence occupies a large place in the works of L.S.Blyakhman. L.S.Blyakhman economic thinking is "the process of reflection of economic relations in the human mind, assimilation of economic knowledge by them and manifestation of economic activity in their mind" [2] . focusing on the fact that it is divided into the following three main parts: understanding the essence of economic activity; mastering generalized information about the reflection, types and laws of social production; the transformation of theoretical ideas into practical actions is represented by the application of economic thinking to the activity.

We can show the following as components of economic thinking of a person: economic man; economic consciousness and behavior; economic activity; economic education; economic culture. The harmony of these parts of economic thinking depends not only on the economic situation of society, but also on its social structure.

According to M.Weber, "type of economic behavior, national culture, reasonableness of behavior, social stereotypes influence the emergence of traditional type of economic behavior. The world of human emotions predetermines the affective type of economic behavior of a person". Undoubtedly, the subject of economic behavior is a person, that is, the interests and motives of people, their activities are not limited to profit, but also affect many aspects of spiritual life, culture, education and social psychology (personal self-awareness, reputation in society) , not to contradict the main economic goal and ultimately

contribute to its achievement, behavior is a form of activity determined by the individual [4].

Methodology

As the theoretical and methodological basis of this article, I.M. Sechenov and I.P.Pavlov's sreceptor and reflector theory of noise, A P.K.Functional system theory on Anoxinand K.Brodmann's cytoarchitectonic theory of the cortex of the cerebral hemispheres, published literature and scientific articles, analyzed the opinions of scientists, and organized observation of processes. Also, logical, comparative and comparative analysis, analysis and synthesis, induction and deduction, space and time methods were used in the development of some recommendations on the topic.

Analysis and results

If we evaluate any behavioral action (including those based on psychological and social needs) based on deep biological processes, changes in the parameters of the internal environment (osmotic pressure, glucose concentration, hydrogen ions, temperature, etc.) stimulate the activity of the motivational centers of the hypothalamus and contribute to the specific formation The primary basis for adding is a referral mechanism. It is the limbic system, which leads to the formation of adequate reactions from internal organs (vegetative reactions), as well as the emotional background associated with the presence of a negative unsatisfied need. The strength and dynamics of motivational drive depends on the presence or absence of a releaser (English release - freedom, lightness), that is, an external factor that facilitates the development of motivation due to a certain need (for example, a buffet against the background of a need for food) or its pressure (for example, a very unpleasant information) is significantly affected. For example, when we look at the psychophysiological process of behavior, the motivational drive that reaches the frontal cortex becomes a conscious decision, the goal of the activity. Here the motivational drive related to psychological and social needs is “ripened”. Obviously, the perceived goal can often be achieved in different ways. The selection or formation of the action program is carried out by the associative cortex. The exact implementation of the received program begins with the motor cortex, as a result of its operation, actions aimed at directly satisfying the need are activated. When there is a need for food, it is a search for food in one way or another (buying, grabbing) and as the final act of acquiring it. The need is satisfied, the behavioral action is completed. This completion is the basis for awakening a certain center of satisfaction (pleasure), which leads to the removal of previously formed negative states and the development of positive feelings in relation to the satisfaction of the need. In addition, this specific purposeful activity normalizes the strength of the internal environmental factors that initially initiated this activity, thereby opening up the possibility of performing other modality behaviors associated with other needs. [11]. The mechanism of these processes was discovered in 1909 by the German neurologist K. It is represented by Brodmann's division of the cortex of the large hemispheres into 11 regions and 52 cytoarchitectonic areas. Cortical areas or Brodmann areas are divided into 3 areas. Primary areas: consists of projection type cells, connecting the centers of the cortex with the periphery. For

example, the front and back central foci, the visual center in the nape of the neck, the auditory center in the temporal area, and the filtering and taste centers on its medial surface are primary areas. These are called core centers of analyzers. All primary areas are described on the basis of the somatotopic principle and are specialized to perform a specific function. For example, optical signals - 17, sound signals - 41, general sensory impulses - 3, 2 and 1 come to the fields. Movement-related impulses are formed in area 4 and then transmitted to the periphery.

Secondary fields: these fields are located next to the primary fields and consist of projection-associative cells. The signals received in the primary fields are transmitted to the secondary fields, where they are complexly analyzed and synthesized. For example, area 17 sees an object, but does not recognize what it is, while areas 18 and 19 have the characteristic of object recognition. Therefore, when the 17th area is damaged, cortical blindness develops, and when the 18th and 19th areas are damaged, visual agnosia develops. So, the 17th field is responsible for seeing, and the 18th and 19th fields are responsible for knowing what you see.

Tertiary fields: consist only of associative neurons and are located in areas bordering several analyzers in the cortex. Tertiary areas occupy almost half of the cortex and connect different functional systems with each other. Areas where tertiary fields are located are called associative areas or centers of the cortex. They consist of stellate cells with short protrusions. Associative areas are present in the anterior and posterior parts of the large hemisphere. The front one is located in the prefrontal area of the cortex, the back one is located at the junction of the temporal, parietal and occipital lobes (TRO - tempora-parieto-occipitalis). Highly complex intellectual operations are carried out precisely in tertiary fields. Speech and other conscious processes characteristic only for humans are associated with the activity of these associative centers. Animal brains do not have a tertiary field [7].

In the process of behavior, the brain is both visually and with the help of a computer programAccording to the frequency and amplitude of the EEG analysis, the following types of rhythmic components are distinguished:

Rhythmic Components in EEG Analysis

EEG analysis identifies various rhythmic components:

1. Alpha rhythm is the most common rhythm with oscillations (frequency) of 8-13 Hz and amplitude of 50-100 μV. It is an activity observed in a state of peace, wakefulness, meditation and prolonged monotony. It first appears in the occipital regions of the brain and may spread to other areas of the brain over time.

2. Beta rhythm - oscillations (frequency) 5-30 μV. The amplitude is in the range of 14-30 Hz. It is manifested in the frontal or frontal areas, but due to various types of intense activity, it spreads to other areas of the brain with a sharp increase.

3. Gamma rhythm - the oscillations (frequency) are higher than 30 Hz, and the amplitude of the oscillations does not exceed 15 μV. This is observed when solving tasks that require maximum concentration.

4. Theta rhythm has a frequency of 4-8 Hz and an amplitude of 20-100 μV (and more). This is most evident in the hippocampus. It increases in search-related behavior, emotional-emotional arousal stages (P.V.Simonov, 1979).

5. Delta rhythm consists of high-amplitude (hundreds of microvolts) waves with a frequency of 1-4 Hz. This occurs during natural and drug-induced sleep, as well as during EEG registration from cortical areas bordering the tumor.

6. My-rhythm (rolandic or archaic form) - recorded in the rolandic groove. It is close to the alpha rhythm in frequency and amplitude, but differs in the form of waves with rounded peaks (similar to arches); this is rare. It is associated with tactile and proprioceptive stimulation and the imagination of movement. This is often expressed in blind people.

7. Kappa rhythm - similar in frequency to alpha rhythm, it is recorded in the temporal areas during mental activity by pressing the alpha rhythm in other places. Alpha -, mu - and kappa rhythms belong to the same frequency category of EEG rhythms [10].

The problem of hierarchical organization of human actions in the context of active adaptive behavior was discussed by the famous Russian physiologist N. A. Widely covered and developed in the works of Bernstein, he developed a theory of levels of action. By sublevels, he understood the morphological divisions of the nervous system - the back, medulla oblongata, subcortical centers and cortex of the large hemispheres. Each level has its own type of action. Total N. A. Bernstein identified five levels: A, V, C, D, E [10].

1. A level - rubrospinal, evolutionarily the oldest and formed earlier than others. In humans, it does not have the meaning of independence, but determines the tone of the muscles and, together with other levels, participates in ensuring any movements.There are also some forms of activity that are carried out only at the expense of this level (trembling of fingers from cold, grinding of teeth). This level begins to work from the first weeks of infancy

2. Level V is called the thalamopallidar level, and it provides processing of musculoskeletal receptor signals that report the relative position of body parts. This level is involved in complex types of processes, organizing actions that do not require taking into account the specific features of the external space. These can be voluntary movements of the face and body - mime and pantomime, freestyle gymnastics, etc. This level begins to develop from the second half of a child's life.

3. Level C is defined as the spatial field level or pyramidal level. Receives information about the state of the external environment from extroreceptive analyzers. Therefore, this level is adapted to the spatial properties of objects - their shape, position, weight and other propertiesis responsible for building floors. Among them are all types of movement (movement), fine motor skills of hands, etc. This is the level at which the cortex and subcortical structures are involved. Therefore, its development begins very early and continues from the first year of life to adolescence.

4. Level D- level of subject actions. It works with the obligatory involvement of the cerebral cortex (parietal and premotor zones) and ensures the organization of movements with objects. This is a specific human level of motor

activity organization, as it includes all kinds of instrumental and manipulative actions. A characteristic feature of this level is that they take into account not only spatial characteristics, but also correspond to the content of the object's use. These are not just simple movements, but more than that, because the motor programs used here consist of mutually flexible and complementary joints.

5. Level E- this is the highest level of movement organization, provides intellectual motor movements: the work of the articulatory apparatus in sound speech, hand movements during writing, as well as symbolic or coded speech movements (sign language, from the deaf and dumb, Morse code). The neurophysiological mechanisms of this level are provided by the high integrative capabilities of the cerebral cortex. Therefore, the maturation of the cerebral cortex is very important for its functioning.

That being said, it's like thispsychophysiological processes of behavioris studied on the basis of various psychophysiological methods. Physical reactions and cognitive processes in the world of interaction are left on the periphery of psychological science and everything else is often drawn as a distraction. Usually, the autonomic nervous function can be used as an objective index of mental processing, but the reaction is classified as an interesting epiphenomenon, rather than an emotional one. Tem ne menee, functional influence of two-way communication, my mind and body have been recognized for a long time and I have results for takikh oblastey, kak psychosomatic medicine. Damasio and his colleagues observed this area in patients with brain damage and healthy people, which led to the formulation of the hypothesis of a somatic marker: cognitive processes, such as decision making, are directed to the central feedback loop and reactive bodily excitation (Damasio and others,1991; 1994, 1999). And finally, the comprehensive understanding of neural, cognitive and affective processes should be recognized as an integration of mental and physical processes. I need a complex research approach, including such methods as functional visualization of the brain and detailed autonomic monitoring, as well as animal research and clinical observation [15].

Most of the visceral signals that shape behavior, cognition, and perhaps emotion remain undetected. Techniques such as human neuroimaging provide valuable insights into the brain basis of perception, thought, feeling, and action, but these mental functions have largely been considered in isolation from the physiological state of the body. However, experimental information from studies of autonomic psychophysiology, nutrition and metabolism, osmoregulation, and psychoneuroimmunology is converging. Identifying the neural circuitry that represents internal state paves the way for a more comprehensive understanding of how visceral signals shape human cognition and behavior.

The brain depends on the physiological state of the body in two ways. First, the brain requires appropriate conditions (physiological context) for effective biological functioning. Second, the brain receives and responds to continuous dynamic feedback of afferent visceral signals (informational context) that shape its operational functioning. The latter is classical interoception, i.e., the encoding and representation of internal bodily signals that communicate the physiological state of

the body (Craig, 2002). Interoceptive information is transmitted centrally by cranial and spinal nerves and by direct sampling of blood-borne chemicals in specialized brain structures. This information is comprehensive, encompassing multiple classes of signals with different response time patterns (including hormonal, immunological, metabolic, thermal, nociceptive, and visceromotor). These parameters are encoded in a set of brain regions in a way that enables dynamic interaction and integration with top-down expressions of perceptual expectancy and volitional control of action[14].

Physiological measurements take many forms, ranging from blood flow or neural activity in the brain to heart rate variability and eye movements. These measurements can provide information about processes including emotion, cognition, and the interactions between the two.

It is important to note that in studying the relationship between physiology and overt behavior or mental events, psychophysiology does not attempt to replace the latter with the former. For example, happiness is a state of pleasant satisfaction associated with various physiological measures, but these physiological measures cannot be said to be happiness. We can infer a person's cognitive or emotional state from his or her self-report, physiology, or overt behavior. Sometimes we are primarily interested in inferences about internal events, and sometimes we are primarily interested in the physiology itself. Psychophysiology considers both types of goals. For example, an overview of several popular psychophysiological methods is provided, although it is far from exhaustive. Each method may draw on a wide range of data analysis strategies to provide an even more comprehensive set of tools. The psychophysiological methods discussed below focus on the central nervous system. Structural magnetic resonance imaging (sMRI) is a noninvasive technique that allows researchers and clinicians to view anatomical structures inside a person. The participant is placed in a magnetic field that can be 66,000 times stronger than the Earth’s magnetic field, causing a small fraction of the atoms in his or her body to align in one direction. The body is then exposed to pulses of low-energy radio frequencies, which are absorbed by the atoms in the body, causing them to tip over. When these atoms return to their aligned state, they release energy in the form of harmless electromagnetic radiation, which is measured by a machine. The machine then converts the measured energy into a three-dimensional image of the tissue inside the body. In psychophysiological studies, this image can be used to compare the sizes of structures in different groups of people (for example, are the areas associated with pleasure smaller in people with depression?) or to improve the accuracy of spatial locations measured by functional magnetic resonance imaging (fMRI).

Functional magnetic resonance imaging (fMRI) is a technique used to measure changes in tissue activity, such as measuring changes in neural activity in different areas of the brain during thinking. This technique is based on the principles of sMRI and also takes advantage of the property that when neurons fire, they use energy that must be replenished. Glucose and oxygen, two key components for energy production, are supplied to the brain from the bloodstream as needed. Oxygen is transported through the blood byhemoglobin, which contains oxygen-

binding sites. When these sites are saturated with oxygen, it is calledoxygenated hemoglobinWhen all the oxygen molecules are released from a hemoglobin molecule, it is known asdeoxygenated hemoglobin. When a set of neurons begins to fire, the oxygen in the blood surrounding those neurons is consumed, causing a decrease in oxygenated hemoglobin. The body then compensates by providing plenty of oxygenated hemoglobin in the blood surrounding the activated neural tissue. As activity in that neural tissue decreases, the oxygenated hemoglobin level slowly returns to baseline, usually within a few seconds. fMRI measures the change in oxygenated hemoglobin concentration, which is known as the signal, blood oxygen level dependent (BOLD). This leads to two important facts about fMRI. First, fMRI measures blood volume and blood flow, and from this we infer neural activity; fMRI does not measure neural activity directly. Second, fMRI data are usually poorlytemporary resolution(measurement accuracy with respect to time); however, when combined with cMRI, fMRI provides excellentspatial resolution(the ability to distinguish one object from another in space). The temporal resolution of fMRI is typically on the order of seconds, while its spatial resolution is on the order of millimeters. In most cases, there is an inverse relationship between temporal and spatial resolution—one can increase temporal resolution at the expense of spatial resolution, and vice versa. This technique is valuable for identifying specific brain regions that are associated with different physical or psychological tasks. In clinical practice, fMRI can be used prior to neurosurgery to identify areas associated with language so that the surgeon can avoid these areas during surgery. fMRI allows researchers to identify differential or convergent patterns of activation related to tasks. For example, if participants are shown words on a screen and are asked to indicate the color of the letters, are the same brain regions recruited for the task, whether the words have emotional content or not? Does this relationship change in psychological disorders such as anxiety or depression? Is there a different pattern of activation even in the absence of obvious differences in performance? fMRI is an excellent tool for comparing brain activation across different tasks and/or populations.

Electroencephalography (EEG) is another method for studying brain activation. This method uses at least two and sometimes up to 256 electrodes to measure differences in electrical charge (voltage))between pairs of points on the scalp. These electrodes are typically attached to a flexible cap (similar to a swimming cap) that fits over the participant's head. From the scalp, the electrodes measure the electrical activity that naturally occurs in the brain. They do not introduce any new electrical activity. Unlike fMRI, EEG measures neural activity directly, rather than a correlate of that activity.

Electrodes used in EEG can also be placed in the skull, directly on the brain itself. This application, called electrocorticography (ECoG), is commonly used before medical procedures to localize activity, such as the source of epileptic seizures. This invasive procedure allows for more precise localization of neural activity, which is important in medical applications. However, it is generally impractical to open up a person’s skull for purely research purposes, and instead

electrodes are placed on the participant's scalp, resulting in a non-invasive method of measuring neural activity.

Because of this electrical activity must pass through the skull and scalp before reaching the electrodes, localization of activity is less precise when measured from the scalp, but can still be within a few millimeters when localizing activity that is close to the scalp. One of the main advantages of EEG is its temporal resolution. Data can be recorded thousands of times and seconds, which allows researchers to document the data, which is produced by me in milliseconds. Analysis of EEG usually involves changes in the amplitude or frequency components of the recorded EEG on a constant basis or averaged by magnetoencephalography (MEG) - another simple method of non-invasive measurement of neuronal activity. The flow of electrical charge (current) associated with neural activity creates very weak magnetic fields that can be detected by sensors placed near the participant's skull. The number of sensors used ranges from a few to several hundred. Because the magnetic fields of interest are so small, special rooms shielded from environmental magnetic fields are required to avoid contamination of the measured signal. MEG has the same excellent temporal resolution as EEG. In addition, MEG is not as susceptible to distortions from the skull and cranium. Magnetic fields are able to pass through hard and soft tissue relatively unchanged, thus providing better spatial resolution than EEG. The analytical strategies of MEG are almost identical to those used in EEG. However, the recording apparatus of MEG is much more expensive than EEG, so MEG is much less widely available.

EEG and MEG are excellent for investigating the temporal dynamics of neural processes. For example, if someone reads a sentence that ends with an unexpected word (e.g., Michelle goes outside to water the book), how long after reading the unexpected word does he or she recognize it as unexpected? In addition to these types of questions, EEG and MEG techniques allow researchers to examine the extent to which different parts of the brain "talk" to each other. This allows for a better understanding of brain networks, such as their role in different tasks and how they may function abnormally in psychopathology.

Positron emission tomography (PET) is a medical imaging technique used to measure processes in the body, including the brain. The technique relies on a positron-emitting tracer atom that is injected into the bloodstream in a biologically active molecule such as glucose, water, or ammonia.Positron— is a particle very similar to an electron, but with a positive charge. One example of a bioactive molecule is fludeoxyglucose, which acts similarly to glucose in the body.

Fludeoxyglucose will concentrate in areas where glucose is needed — typically areas with higher metabolic demands. Over time, this tracer molecule emits positrons, which are detected by a sensor. The spatial location of the tracer molecule in the brain can be determined based on the positrons it emits. This allows researchers to build a three-dimensional image of the areas of the brain with the highest metabolic demands, typically those that are most active. PET images typically represent neural activity that has occurred over tens of minutes, which is very poor temporal resolution for some purposes. PET images are often combined with computed tomography (CT) images to improve spatial resolution, down to a

few millimeters. Tracers can also be incorporated into molecules that bind to neurotransmitter receptors, allowing researchers to answer some unique questions about how neurotransmitters work. Unfortunately, very few research centers have the equipment needed to produce the images or the specialized equipment needed to create the positron-emitting tracer molecules that typically must be produced on-site.

Transcranial magnetic stimulation (TMS) is a non-invasive technique that inducesdepolarizationorhyperpolarizationneurons near the scalp. This method is not considered a psychophysiological method because the independent variable is physiological, not dependent. However, it falls under the definition of a neuroscience method because it deals with the function of the nervous system and can be easily combined with traditional psychophysiological methods. In TMS, a coil of wire is placed just above the participant's scalp. When electricity flows through the coil, it creates a magnetic field. This magnetic field passes through the skull and scalp and affects neurons near the surface of the brain. When the magnetic field is rapidly switched on and off, a current is induced in the neurons, causing depolarization or hyperpolarization depending on the number of pulses of the magnetic field. Single- or paired-pulse TMS depolarizes site-specific neurons in the cortex, causing them to fire. If this method is used on the primary motor cortex, it can cause or block muscle activity, such as causing a finger to twitch or preventing someone from pressing a button. When used on the primary visual cortex, this technique can produce sensations of flashes of light or disrupt visual processes. It has proven to be a valuable tool in studying the function and timing of certain processes, such as recognition of visual stimuli. Repeated TMS produces effects that last longer than the initial stimulation. Depending on the intensity, coil orientation, and frequency, neural activity in the stimulated area can be either weakened or strengthened. When used in this way, TMS can investigateneural plasticity, that is, the ability of connections between neurons to change. This has implications for the treatment of psychological disorders, as well as for understanding long-term changes in neuronal excitability [16].

Conclusions and recommendations

So, at present, the constituents of the single functional system of the brain structure have been recorded, and the excitation of this system increases the probability of repeating the behavior. According to this feature, the system is called a reinforcement system. Its activity is based on many types of adaptive behavior of humans and animals, in which, after achieving a positive result, the organism remembers the path to it and tends to repeat it over and over again, for example, people sow bread first and harvest it later; they work for the enterprise because they receive a monthly, reward incentive for it; experiences, because they express their thoughts in life and experience a great sense of pleasure in all their actions. And in order to experience these positive experiences again and again, they repeat a sequence of actions that end with pleasant feelings. It is advisable to study this by experts based on various psychophysiological methods.

In humans, a stimulus can be understood as a mechanism that turns into a signal aimed at a specific goal in a person and ultimately leads to an economic

choice and effort. As a mechanism, it is possible to take "need - motivation - interest - goal - activity" as a basis. Because of the basis all actions begins with needs and is manifested as "needs - motivation - interests - purpose". Based on it, choice and consumption are realized and it happens in the form of a chain of "needs - motivation - interests - goal - activity - result - consumption".

We know that one of the main tasks of economics is to explain, predict and regulate human behavior during economic activity. And this understanding of human behavior makes it possible to develop measures that effectively regulate the activity of any economic agent.

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