

Motivation and Self-Regulation Research: Historical Background, Methodological Considerations, and Future Prospects

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Abstract

The article deals with the history of research on the psychology categories of motivation and self-regulation. The purpose of the article is to analyze motivation and self-regulation studies, as well as identify current and future issues for further research. It is deemed relevant due to the need to identify the issues of concern in studying motivation and self-regulation within current and future research. The novelty consists of the comprehensive review and analysis of all successive stages of motivation and self-regulation studies, based on which we formed the vectors of development and prospects of research in this field in the future.

Keywords: human behavior, humanistic psychology, labor activity, motivating factors, motivation, motivation of learning, personality psychology, self-regulation.

Introduction

Modern psychology defines motivation as a pulse that sets the target and line of behavior and acts on people at the conscious and subconscious levels. Besides, it is an act or process of stimulating others to take efforts to achieve the goals of a group or organization, an individual's readiness to take physical or mental efforts to achieve the goal or outcome. Self-regulation is the impact on one's behavior through self-control, self-assessment (assessment of information obtained as a result of self-control), and self-improvement (rewarding oneself for due behavior and goal achievement) (Vygotskiy, 1983; Yaroshevskiy, 1997).

When studying the concepts of motivation and self-regulation, one can encounter critical theoretical and methodological issues. Firstly, it happens because the need to apply them in practice requires studying the nature of human behavior and relevant instigating factors. Another problem of theoretical studies is the need for identifying the interconnections of the internal motivating factors of the person and actions determined by the person's psychics orientation to external (social) interaction. Being interconnected elements of psychology, motivation and self-regulation have been raising people's interest since ancient times. Nowadays, they remain relevant in the context of the psychology of human personality.

Methodology

The study was conducted by analyzing and synthesizing publications on the psychology of human personality and allied disciplines. This review allowed us to conduct a comprehensive analysis of the problem from different angles and single out a systematic approach to further

research of motivation and self-regulation. In order to determine the promising lines of research, we used the prediction and hypothesis methods. The research results were formulated using the method of generalization of theoretical conclusions.

Review of Motivation and Self-Regulation Studies

Early attempts to study human motivation

The first known attempts to study human motivation were found in Aristotle's works (384–322 BC). In particular, he equated motivation with a moral evaluation of deeds. He also believed that drives associated with a goal, in which a specific subject is represented as an image, can have a positive or negative value for the person himself (Shchukina, 2018).

Among the researchers of the beginning of the Early Modern Period, special mention should go to Benedict de Spinoza (1632–1677), who admitted affects, including both physical and mental drives, to be the driver for behavior. When such a drive is conscious, it becomes the motivation driver of the personality (Hunt, 2009).

Motivation by instincts: the psychoanalysis-behaviorism dilemma

The early twentieth century became a new critical stage in the study of personality psychology areas, such as motivation and self-regulation. In that period, Sigmund Freud (1856–1939) studied human instincts and touched upon the issue of human motivation factors. According to him, any human activity is driven by instincts, including the motivational component of his actions and drives. He also noted that the source of human behavior is energy; it can change shape, but its volume is

permanent. The basis of such energy is the neurophysiological state of anxiety generated by the physiological needs of the person. Reasoning from this fact, Freud asserted that the motif of human behavior is the reduced level of stress caused by anxiety (Halperin and Zhdan, 1992).

A significant contribution to the development of motivation theories was made by behaviorism scholars: Ivan Pavlov (1849–1936), Edward Lee Thorndike (1874–1949), John Broadus Watson (1878–1958), Burrhus Frederic Skinner (1904–1990). Their theoretical studies approached human behavior based on the stimulus-response model. They believed that by studying motivation and self-regulation, psychological science studies the human needs and drives of physiological origin. The motivation was categorized as a physiological mechanism, and factors of motivation and self-regulation were either rejected or could manifest themselves as several simple affects (Halperin and Zhdan, 1986).

In the early 1930s, Kurt Lewin (1890–1947), representing the gestalt school of psychology, developed a new theory of motivation, which defined human activity as a function of personality. He applied the notion of quasi needs and intentions, determined the pattern of goal formation and goal achievement drive as elements of human achievement motivation. Typical attributes of studies conducted by Lewin and his followers (Ferdinand Hoppe and Tamara Dembo) were the conceptual theories of motivation, which were related only to humans (Lewin, 2001).

Humanistic theory: studies of human needs

Abraham Maslow (1908–1970) developed and described in detail a theory of individual's motivation-the hierarchy of needs (Maslow's pyramid). The author categorized and grouped human needs in the following order: physiological; safety; love/belonging; esteem; self-actualization; cognition and understanding; and aesthetic needs.

Maslow asserted that the sequence of needs cannot change and that the occurrence of motivation to achieve each subsequent need is possible only after the previous needs have been secured. The hierarchy of needs theory explains certain factors forming human motivation, but at the same time, scholars believe, it takes into account individual psychological features of the person and absolutizes the principles of the hierarchic structure of needs (Maslow, 2016).

David McClelland (1917–1998) developed the theory of acquired needs, in which he pointed out that there are basic motivational systems that originate from the natural needs of an individual and keep being developed throughout his life. Acquired needs include power, achievement, and affiliation. Unlike Maslow's hierarchy of needs theory, acquired needs are not structured, but mutually affect human behavior and motivation (McClelland, 2007).

Frederick Herzberg's (1923–2000) contribution to this discipline was his formulation of the theory of two-factor motivation and investigation of the motivational and demotivational factors of impact on a person. Two-factor motivation consists of hygienic factors (the factors whose presence does not leave a person dissatisfied, such as working conditions, job preservation, etc.) and motivating factors (the process and expected results of human activity). In his theory, Herzberg noted that diversity and creative tasks, recognition of the results of a person's work by other people is also important for motivation (Herzberg et al, 2007).

Clayton Alderfer (1940–2015) formulated the ERG theory, which was similar to Maslow's theory. He identified three groups of needs: existence (E), relations (R), and growth (G). According to Alderfer, this theory does not imply the satisfaction of a higher-order need after the

lower one, since the groups are not structured hierarchically, and each particular group of needs can be prioritized based on various external and internal factors (Alderfer, 1969).

Another representative of humanistic psychology was the American psychologist Carl Rogers (1902–1987), who concluded that the entire human activity and behavior are guided by a single main motive, the tendency to self-actualization. Motivation is the need for development and self-improvement, inherent in each person. Rogers' motivational concepts were an integral part of humanistic psychology – the so-called “third force”, which defended the importance of human potential, as opposed to psychoanalysis and behaviorism (Rogers, 1994).

Gordon Allport (1897–1967) continued the motivation studies from the standpoint of the active nature of a person who can influence his own life and ultimately control it. In particular, the scientist proposed the principle of functional autonomy of motives, which consists in the occurrence of acquired motives from their predecessors without being dependent on them functionally. According to Allport, a relevant motive will be functionally autonomous until the person obtains new goals, and then it disappears (Allport, 2002).

Cognitive psychology

Along with the formation and development of democratic institutions of post-industrial society, approaches to psychology research changed and improved. Expansion of the list of professions caused the need for more flexible approaches to studying employees' needs and their motivation to work in order to increase productivity and labor efficiency. A large number of theories and new approaches to the study of motivational and self-directing factors of human behavior and activity were developed in the second half of the twentieth century.

Studies of Heinz Heckhausen (1926–1988) stand out from the scientific developments of the said period. The process of motivation was considered as an assessment of factors, details that stimulate them, and the likelihood of their achievement, while motivation was treated as a purely cognitive process (Heckhausen, 2003).

The sociocognitive theory of Albert Bandura (born in 1925) assigns the decisive role in human motivation to the cognitive processes of psychology. It was argued that behavior and the implementation of specific activities by humans are possible even without remuneration, due to the phenomenon of self-efficacy (modeling behavior by tasks). The scientist also identified three elements of self-regulation: self-observation, self-assessment, and devotedness (Bandura, 1991).

Exploring the individual characteristics of motivation to determine the qualities of an individual that are formed in the process of socialization, Julian Rotter (1916–2014) introduced the concept of “locus of control” (Lat. *Locus* – place). The concept of locus of control is divided into two types: internal (achievements and failures of an individual due to internal resources) and external (achievements and results due to the external environment) (Rotter, 1966).

The Belgian researcher Joseph Remi Nuttin (1909–1988) proposed the theory of the formation, structure, and functioning of human motivation. The optimal state of the “personality – environment” system is equilibrium, the main engine of which is human motivation. Nuttin also noted that not only goals but also the process of achieving them are the motivating factors (Nuttin and Lens, 1985).

Procedural theories of motivation

American psychologist Victor Vroom (born 1932) developed the so-called “expectancy theory”, according to which a real immediate need is not the only condition for motivation. The scholar identified the

interconnection of the following three elements: labor costs (resources required for achieving the goal), outcome, valency (the expected degree of satisfaction or dissatisfaction with the outcome; it can be less or more than zero) (Vroom and Deci, 1992).

John Stacey Adams (born 1925) developed the equity theory, according to which social equality and equity are the main driving forces motivating employees to perform certain activities. In practice, the concept of this theory supported the employees' right for better remuneration and labor conditions (Adams, 1965).

In 1968, the American psychologists Lyman Porter (born 1930) and Edward Lawler (born 1938) proposed a new theory in their book *Managerial Attitudes and Performance*. The theory combined and supplemented the equity and expectancy theories. According to the concept of Porter–Lawler's model, motivation includes the functions of need, expectancy, and reward. In this theory, the main situational factors of motivation are the efforts taken, perception, outcome, reward, and satisfaction with the process (Lyman and Lawler, 1968).

Russell Barkley (born 1949), an American psychiatrist, who studied behavioral patterns in children, developed a model of executive functions of the nervous system, which was based on self-regulation. Among the main components of person's behavior, he primarily singled out the following ones: memory (opposing obstructive information), control of emotional responses (to achieve the targeted behavior), information analysis (to achieve goals). Changing the behavioral response to achieve a new goal or changing it is a higher-level ability that requires mobilizing the executive functions, including self-regulation, and accessing previous knowledge and experience. This system essentially allows people to self-regulate their behavior to support actions and problem-solving for specific goals. Thus, a deficient executive function hinders the person's ability for self-regulation to achieve goals (Barkley, 2014).

In the concept of internal motivation, Edward Deci (born 1942) attaches crucial importance to the internal psychological driving forces of a person, which he must timely feel and use appropriately for an effective outcome (Deci, 1971). Motivation only functions when the person permanently has freedom of choice. Stimuli in the form of contingent rewards should be used as additional recognition, and not as motivators.

Later, Deci, together with Richard Ryan (born 1953), developed the self-determination theory, which laid the foundation for understanding the aspects of the internal and external motivation of a person. This theory attaches importance to a social factor in the productive activity of an individual and his motivation. Besides, it distinguishes three basic fundamental human needs: the need for autonomy, for effectiveness, and for establishing relationships with other individuals. According to the authors of the self-determination theory, energy is an essential connection between self-regulation and subjective vitality, that is, the life force, as it allows the person to act autonomously (Ryan and Deci, 2000).

The processes of the formation of motive stages are dealt with in the research of the Russian psychologist Evgeniy Ilyin (1933–2015). In the *Motivation and Motives* (2000), he identified three main stages of motive formation:

- the emergence of the primary (abstract) motive (the need formation and motivation for searching);
- external or internal search activity (external, when a person finds himself in an unfamiliar environment or does not have the information necessary for making a decision; and internal, which is

the mental enumeration of specific objects that satisfy the need and conditions to obtain them);

- choosing a goal, and forming the intention to achieve it.

Specifically, these steps are somewhat cyclic than linear. Ilyin's contribution to the study of motivation also included determination of motivational formations that can reflect either human needs (interests, as a cognitive need, drives, desires, habits, and other needs) or intentions, i.e., motives that lack incentive power (motivational attitudes, dreams, personality orientation) (Ilyin, 2002).

Modern problems of psychology

Since the early 21st century, a form of learning – psychological motivational training – has been becoming increasingly widespread (Vandenbos, 2015). Motivational speeches and videos, for example, at TEDx conferences (Official site TED, 2019), also become a trend of today. Modern research is based on numerous theoretical and methodological achievements of almost a century-long study of motivation and self-regulation; therefore, there is a tendency to move from theories to the description of real cases and their application in specific situations.

Kou Murayama, while studying the motivation of students, concluded that not every type of motivation is equivalent to people. An educational experiment with students showed that the motivation to become proficient and skillful encourages the achievement of good results in the long term, as opposed to formal motivation (high scores), which helps to achieve short-term educational success (Scholer et al., 2018).

The Serbian scientists Ivanna Bozovic and Radovan Antonovic also touched upon the topic of research on motivation for learning in their papers. The results of their studies allow us to conclude that students believe that they can achieve their goals by increasing self-efficacy, and their perception of their competencies is high. The results indicate a high level of knowledge value as well as social goals for students. The conclusions show that not all teaching strategies are equally motivational; a large share of students is indifferent to specific teaching strategies (Bojović and Antonijević, 2017).

The role of motivation in the educational process was also investigated by psychologists Paul Howard Jones and Tim Jay. Approaching this issue from the position of cognitive neuroscience, they noted that the most effective motivation driver is the desire to achieve long-term goals (Howard-Jones and Jay, 2016).

The researchers on the regulation of motivation processes Abigail Scholer and David Millet argued that effective regulation of motivation assumes the knowledge of how different motivational states affect the effectiveness of specific tasks, positively or negatively. In their opinion, the effective regulation of motivation in the long term implies significant flexibility. Metamotivation is the recognition of the fact that the type and scope of motivation that best contributes to the achievement of goals in the modern context can differ from the motivational state that would suit best the preliminary context (Miele and Scholer, 2016).

Daniel Pink, a business consultant and motivational specialist who does not belong to the academic community of psychologists, approached motivation issues on the example of real business cases. In the book *Drive: The Surprising Truth About What Motivates Us*, the author developed a methodology and tools for creating one's motivation system. Pink said the following about motivation: "The secret to high performance isn't our biological drive or our reward-and-punishment drive, but our third drive – our deep-seated desire to

direct our own lives, to extend and expand our abilities, and to live a life of purpose” (Pink, 2013).

It is worth noting the research of motivation at the level of psychophysiology, conducted by John Salamone and Mercè Correa. These scholars showed the role of the neurotransmitter dopamine in behavioral functions related to motivation. For example, dopamine in human brain cells does not activate the primary motivation for food or appetite but is involved in other motivational processes, including behavioral activation, efforts, approach to behavior, sustainable task accomplishment, reflexive processes, and learning (Salamone and Correa, 2012).

Among the scientists who investigated the nature of human motivation for work, Robert Klonowski is worth noting. He conducted a regression analysis based on economic and cultural indicators, which demonstrates that the national level of labor motivation strongly correlates with cultural aspects, as well as economic development (Klonowski, 2011).

Development prospects of motivation and self-regulation studies

The main factor determining the approaches to and methods for studying motivation and self-regulation in the future is the development of digital and bioengineering technologies (Adjerid and Kellet, 2018). One of the promising areas in the study of motivation and self-regulation is the use of Big Data technology. In the long run, analysis of Internet search queries, as well as posts and clicks in social networking systems will enable accurate real-time determination of, for example, motivational components (needs, value orientations, worldview) of an individual or specific social category of people (Adjerid and Kellet, 2018; Kosinski et al., 2016; Kramer et al., 2014). In this case, the types of data, such as objective facts about personality and test results, will prevail (Nestik, 2017).

Thanks to Big Data, research can be prediction-oriented, resulting in a transformation from the interpretation of aggregated data to the prediction of patterns of human behavior and activity (Nestik, 2018). Application of the prediction method for the psychological processes of the individual's activities will become a useful practice for developing individual strategies for human self-regulation and strategies for achieving goals that contribute to motivation. Mathematical modeling, extensive use of artificial intelligence, and neural networks can be capable tooling for prediction and strategic planning (Boyatzis, 2015; Youyou et al., 2015).

Due to the development of artificial intelligence and bioengineering technology, the use of psychophysiological approaches to studying motivation and self-regulation will be relevant (Chicchi Giglioli et al., 2015; Sowden and Barrett, 2006). Biochips implanted in the human body and nervous system elements can change the patterns of human behavior, and, respectively, more advanced forms of control of motivation and self-regulation of activity will become possible (Kuznetsova and Skrylnikova, 2017). The functioning of the nervous system of a computerized person requires research that would be aimed at developing new motivational theories and models that can be used to develop integrated software for biochips.

Motivational theories based on the hierarchical structure of human needs (Maslow, Alderfer) should be reviewed and improved in connection with changes in value orientations of individual persons and humanity as a whole. There is a tendency towards the predominance of socially oriented goals over real ones; accordingly, it becomes possible to study the value orientations of both individual persons and social groups of people in real-time (Judge et al., 2010; Inglehart and Baker, 2000).

One of the areas requiring comprehensive research is the impact of motivation and self-regulation on procrastination. It is necessary to develop algorithms for active self-regulatory factors aimed at overcoming procrastination processes in human behavior and activity (Garzón-Umerenkova et al., 2018).

Summary

Our review of the motivation and self-regulation research history made it possible to understand that much attention has been paid to the study of these topics in psychology. It is also worth noting that serious research, focused on motivation and self-regulation, began in the twentieth century.

The history of motivation and self-regulation research can be conditionally divided into three main stages. At the first stage (the early twentieth century), motivation and self-regulation were considered from the standpoint of the reflexive and physiological approaches. Anthropological approaches mark the second stage; motivation and self-regulation were considered as cognitive functions of the personality, with a particular impact of behaviorism. At the third stage, which coincides with the emergence of the humanistic trend in psychology, motivation and self-regulation were studied in the context of identifying the factors affecting the behavioral patterns of a person and his labor activity.

The list of motivational factors tends to expand by both the number of items and quality (for example, value orientations). Regarding the development of motivation and self-regulation research in the future, it should be noted that the determining factor is the impact of digital and bioengineering technology.

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