

Human Development Across the Lifespan: Psychological Perspectives on Physical, Social, and Cognitive Growth



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Abstract

Background: The article analyses the psychological aspects of human development across different life stages, from childhood to old age. The changes that occur during maturation and ageing are examined at biological, psychological, and social levels. It is important to maintain a clear and logical structure when discussing such complex topics.

Methods: The literature data was studied and analysed using theoretical research methods. The inductive method was employed to systematize the data obtained, and the deductive method was performed to generalize them.

Results: During ontogenesis, individuals develop not only as organisms but also as personalities and conscious social beings. Therefore, it is necessary to consider their psychological development in various spheres, including physical, cognitive, and social aspects. Physical development is determined by changes in organ sizes, body shape, brain structure, sensory capabilities, and motor skills. Cognitive development encompasses all mental abilities and psychological processes, including the specific organization of thinking. Social development is characterized by a combination of personality traits and social skills. It is important to note that this development occurs simultaneously and interdependently in all three spheres.

Conclusion: In the psychological development of individuals, various stages are distinguished. The sequence of these stages is predictable and irreversible. Although individual variations in the course of these periods are possible, they are characterized by certain regularities and psychological peculiarities. Knowledge of these regularities and peculiarities can contribute to the harmonious development of individuals and ensure their psychological well-being throughout life.

Keywords: personal success, psychological development, social development, cognitive development, age psychology.

Introduction

Individual human development, or ontogenesis, is a continuous process of natural morphological, biochemical, and functional changes from birth to death. This process is characterized by distinct periods or stages, each of which is defined by the individual's relationship with their environment and their physical and psychological state. As a biosocial being, it is necessary to assess the relationships

within society, including the environment in which a person grows up, studies, and lives.

The development of the psyche at each stage is unique, with its own peculiarities. Understanding these peculiarities can contribute to the harmonious development of a person and ensure their mental well-being throughout life.

Literature review

Development is a philosophical category that pertains to processes of movement, maturation, change, and formation. In psychology, the term “development” refers to changes over time in the body's structure, the characteristics of the psyche (such as consciousness, self-awareness, emotional-volitional and motivational spheres, and intellect), and the behaviour of individuals due to biological processes occurring in the organism and the influence of the surrounding environment (Mudrak, 2023; Mikhalchenko, 2017). In most cases, these changes result in increased complexity of the body's systems. The term “psychological development” refers to the necessary and sequential changes in the human body, associated with specific life stages, that lead to higher levels of activity and improved function and structure (Havryshchak, 2010; Mikhalchenko, 2017).

As previously mentioned, ontogenesis distinguishes specific age ranges (periods) with relative chronological boundaries due to various factors that can influence human development. A comprehensive approach to periodization of the life course is necessary, considering different criteria for determining age, including chronological, physiological, psychological, and social factors. Thus, although there are unified general regularities of development, including a single plan for the sequence of developmental stages and transitions from one period to another, the age boundaries of each developmental period have pronounced individual variations and are therefore approximate (Tokareva & Shamne, 2013).

In 2015, the World Health Organization (WHO) reviewed the periodization of human life due to the increase in average life expectancy and the growth of the population aged over 60 (Ageing and health, 2022; Alexus, 2022; Tovt & Jugan, 2020).

According to the WHO, human life consists of the following periods:

- 1) childhood, which in turn is divided into:
 - newborn period - up to 1 month of life;
 - infancy - up to 1 year of life;
 - early childhood - 1-3 years;
 - preschool age - 3-6/7 years;
 - primary school age - 6/7-10 years;
 - adolescence - 11-17/18 years;
- 2) adult life, which is also divided into:
 - young age - 18-44 years;
 - middle age - 45-59 years;
 - old age - 60-74 years;
 - senile age - 75-89 years;
 - long-livers - over 90 years.

Although this periodization is an internationally accepted standard, some researchers argue that it was developed without considering the objective regularities of physiological and psychological

development throughout life. Specifically, they note that there is rapid growth in youth, gradual development in adulthood, and further gradual ageing of the human organism (Dyussenbayev, 2017).

Psychological development is influenced by both biological (natural) and social factors (related to living conditions, education, and upbringing). Through learning, upbringing, life circumstances, skill mastery, and scientific and technological advancements, individuals develop into personalities (Barchiy & Voronova, 2019). Engaging in creative activities gradually transforms individuals into subjects of cognition, communication, learning, and work. L. S. Vygotsky posits that higher mental functions, including language, voluntary memory, and logical thinking - which are exclusive to humans - develop solely through communication in specific social conditions (Havryshchak, 2010).

The fundamental property of the human psyche, activity, mediates the influence of environmental and biological factors. It ensures the expression of biologically inherent traits, the ability to correct certain natural biological defects, and the selectivity of human interaction with social influences. The effect of development is closely linked to the support and successful implementation of human activity (Havryshchak, 2010; Ushakova, 2015).

In the psychological development of individuals, various stages are identified. The sequence of these stages is predictable and irreversible. Although each stage has its own regularities and psychological features, individual variations are possible.

Development is generally a gradual and calm process, but there are occasional “leaps” or “age crises” that can make it crisis-prone. Crises during a person's transition from one age period to another are common. This transition involves the breakdown of the old way of interacting with the world and the formation of a new one. This can cause significant psychological difficulties for the individual, such as loss of interest and disruption of previously established relationships and inner life. It can also affect the social environment. It is important to acknowledge that the transition may not always be immediately apparent and can occur gradually over time. The process of development involves a conflict between old and new forms, where the former must give way to the latter (Ushakova, 2015).

According to Havryshchak (2010), individuals experience major crises during infancy, at 3 years old, during adolescence, in midlife, and in old age. These crises involve a restructuring of the individual's relationships with others, making them difficult for all parties involved. In contrast, minor crises occur at 1-year-old, 7 years old, and at 17-18 years old. These crises are driven by an increase in the individual's abilities and independence, but do

not involve significant changes in their relationships with society. As a result, they tend to proceed more calmly for both the individual and their surroundings.

In ontogenesis, an individual's development occurs not only as an organism but also as a conscious social being. Therefore, it is necessary to consider the psychological development of individuals in various spheres, including physical, cognitive, and social. The physical sphere is determined by the development of the nervous system, changes in organ size, body shape, brain structure, sensory abilities, and motor skills. The cognitive sphere includes all mental abilities and processes, including the organization of thinking (Tokareva & Shamne, 2017; Ushakova, 2015).

The psychosocial sphere is characterized by the combination of personality traits and social skills. This is a description of an individual's typical style of behaviour, emotional response, perception, and reactions to social reality at each age. It is a correlation between the process of development and internal

conditions (Tokareva & Shamne, 2017; Ushakova, 2015). It also encompasses the requirements, behavioural norms, and nature of relationships typical for each age period.

Applied methods

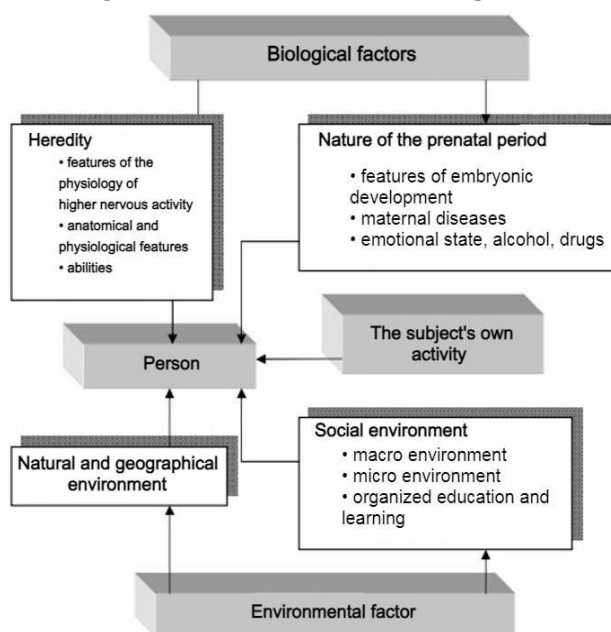
The purpose of the study is to uncover the psychological aspects of human development across the lifespan, including physical, social, and cognitive development in various age periods.

The literature data was studied and analysed using theoretical research methods. The inductive method was employed to systematize the data obtained, and the deductive method was performed to generalize them.

Results and discussion

As mentioned earlier, the main factors influencing development are biological and environmental, the interaction of which occurs through the activity of the individual (**Figure 1**).

Figure 1: Factors of Mental Development



Source: Tokareva and Shamne (2013)

Biological factors determine development according to the genetic code and a sequence of pre-programmed changes and include:

- heredity – anatomical and physiological characteristics of an individual, peculiarities of the functioning of his or her higher nervous activity, and predispositions that add to the originality of the development process;
- the course of the embryonic period – the mother's illnesses before and during pregnancy, the nature of her diet, the presence and duration of stress, the use of certain substances (alcohol, drugs, medicines, nicotine) by the pregnant woman;

- the birth process.

Environmental factors include:

- natural and geographical factors that indirectly affect human development, namely: traditions and customs of the geographical area or region in which a person is growing up;
- socio-cultural, which directly affect development. These include culture, education and upbringing system inherent in a certain socio-cultural environment: macro environment (society in all its manifestations) and micro environment

(family, microgroup, friends, immediate environment).

The relationship between biological and environmental factors is not fixed and varies at each stage of ontogenesis for each individual mental function (Tokarev & Shamne, 2013). Development during the prenatal period is primarily biological, while postnatal development is mainly influenced by the environment. However, human development does not fit entirely into either of these categories. It involves the interaction of biological and social elements, with the balance of their influences varying significantly for each individual in different age periods.

Human development is determined by a combination of biological and social factors. It includes needs, motives, behaviour, communication, cognition, self-awareness, self-discovery, self-evaluation, and self-consciousness.

Development occurs in anato-mo-physiological, psychological, and social directions, which are interconnected. Anato-mo-physiological changes involve the enlargement and development of the musculoskeletal system, nervous system, and internal organs. Psychological changes include cognitive development and the formation of personality traits. Social development is associated with the acquisition of social qualities necessary for life in society. Human development in physical, cognitive, and psychosocial aspects occurs simultaneously and interdependently. Changes in one sphere lead to changes in others (Tokareva & Shamne, 2017; Ushakova, 2015).

This research examines the various aspects of human life during different age periods. *In the neonatal period*, which is the first month of life, infants remain biologically dependent on their mothers as they are unable to satisfy their needs independently. At this stage, anato-mo-physiological development is still ongoing, with all organs and systems being undeveloped but continuing to develop. Although a newborn's brain weighs only a quarter of an adult's brain, it contains the same number of neurons. However, the brain is functionally immature, with a predominance of lower brain regions responsible for basic life functions. Reflex activity occurs through genetically predetermined reflexes associated with satisfying organic needs such as breathing, circulation, feeding, and protection. The social aspect of development is characterized by complete dependence on adults. In terms of psychological development, it is worth noting the formation of conditioned reflexes, auditory and visual focuses, and the "alertness complex" as a reaction to adults, which is often considered as the first act of behaviour and communication (Aksyonova et al., 2019).

During the first year of life, infants undergo intensive physical development. Their weight triples, height

increases by almost half, and there are changes in the proportion of head and body size. Additionally, the first deciduous teeth appear. The central nervous system also develops rapidly during this period. Connections between neurons are formed, and there is myelination of motor reflex pathways and the visual analyser, which increases the speed of impulse transmission. Furthermore, the number of glial cells in the brain increases. Innate reflexes typically disappear as skills such as standing and walking are acquired, allowing for greater mastery of space. Social development still relies on cooperation with adults, but this is achieved through direct-emotional communication as specific means of influence, including speech, are still inaccessible. Communication with adults stimulates the child's activity, promoting the development of sensations, perception, motor skills, thinking, and speech. When communicating with infants, it fosters intensive cognitive activity, interest in the surrounding world, and mastery of visual, manual, and oral cognitive actions such as fixing gaze, examining objects, touching them with hands, grasping and holding objects, and sucking toys (Aksyonova et al., 2019; Carroll & Traylo, 2019; Peculiarities of the mental development of a newborn child, 2011).

During early childhood (1-3 years), physical development is characterized by rapid brain development, including the formation of connections between neurons, differentiation of brain cells, and myelination of motor pathways in the central nervous system. Additionally, there are changes in body proportions due to rapid elongation of the lower body. Children also master the skill of walking and develop locomotor skills such as running and jumping. During this period, children become less dependent on adults and start to interact with other important figures, such as kindergarten teachers and nannies, who provide examples of how to interact with objects and explore the world around them. Children actively participate in creating their own cultural and natural environment, often working together with other children to develop communication and social skills. At this stage of development, communication is primarily situational-business. The formation of object actions is closely linked to the child's communication with adults. The leading activity during this stage is object-manipulative activity, which aims to master object actions. The child focuses on the actions themselves, manipulating objects rather than playing with them. Toys are objects that represent certain aspects of the adult world and simplify adult actions, allowing them to "come to life" and have their own existence. During this period of psychological development, speech plays a crucial role in communication and understanding the speech of others. It is a prerequisite for the intensive development of perception, thinking, and

understanding of the surrounding reality. By the end of this period, the child can distinguish and oppose their independent actions from joint actions with the adult, thus demonstrating their growing independence (Aksyonova et al., 2019; Carroll & Traylo, 2019; Havelko, 2019; Peculiarities of mental development in early childhood, 2011).

During the preschool age (3-6/7 years), children experience a deceleration in their height and weight growth rate, a shift in their centre of gravity due to changes in body proportions, the conversion of cartilaginous tissue to bone, the transition from deciduous teeth to permanent teeth, and an increase in physical strength. During brain development, the size of the brain gradually approaches that of an adult's brain. At the same time, new interneuronal connections are formed and existing ones are strengthened. The cortex of the large hemispheres becomes capable of controlling the action of subcortical centres, which allows for the emergence of voluntary actions. Hemispheric specialization also occurs, and handedness is determined. The child's exploration beyond the family world, establishment of new relationships with the adult world, development of the ability to identify with other people, acquisition of various forms of communication, and learning of behavioural norms characterize social development. Play is a unique form of activity during this period. It contributes to the development of thinking, imagination, and personality socialization through actions and experiencing feelings on an imaginary level. Drawing, sculpting, and construction stimulate the development of the sensory sphere, motor coordination, and fine motor skills of the hands. At this stage, a child's behaviour transitions from being impulsive and situational to being personality-mediated by certain ideas or images. Attempts to generalize their own experiences lead to a gradual shift from associative to logical reasoning. During this period, children learn and internalize social and ethical norms, values, and humane relationships. In the second half of this period, they develop self-esteem and self-criticism based on their primary emotional self-perception ("I am good") and rational evaluation of others' behaviour (Aksyonova et al., 2019; Carroll & Traylo, 2019; Mental development of children of primary school age, 2011; Social Development in Preschoolers, 2021).

The lower school age, which spans from 6/7 to 10 years, is characterized by significant variations in the nature and pace of changes in body size and proportions. During this period, there is a reduction in subcutaneous fat layer, especially in boys, and an increase in the length, width, and thickness of muscles. The skeletal system still predominantly consists of cartilaginous tissue, but skeletal maturation continues, and the transition from deciduous to permanent teeth progresses. Despite a

shift in the balance between excitation and inhibition in favour of the latter, there is still a predominance of excitement, resulting in impulsivity and a high level of motor restlessness. Brain development continues as the frontal lobes increase in size and become more functionally mature. Hemispheric lateralization becomes more pronounced and evident, and the maturation of the corpus callosum is completed, allowing for increased cortical control over emotional and instinctive reactions. An important characteristic of this age period is the readiness for schooling, which is a complex formation that requires a sufficient and necessary level of the child's mental development, which usually includes 3 aspects:

- intellectual maturity, which consists in the ability to differentially perceive figures and background, concentrate attention, think analytically, memorize logically, sensorimotor coordination, the ability to reproduce a sample, and make fine hand movements;
- emotional maturity, which is manifested by a decrease in impulsive reactions and the ability to perform a not very attractive action or task for a long time;
- social maturity, which is characterized by the child's need to communicate with peers, the ability to subordinate their own behaviour to the laws of children's groups, and the ability to play the role of a student (Psychological characteristics of preschool age, 2011).

In the social sphere, there is a need for the formation of relationships related to socially useful activities. The child acquires new rights and responsibilities, and their behaviour should conform to a system of rules. Violation of these rules entails accountability. During this period, the child becomes involved in the societal labour force, developing diligence and a taste for work. During this period, there is a shift from role-playing games with elements of learning to educational activities with elements of play. The child's mental development is characterized by volition in behaviour and other mental processes, such as attention, memory, and thinking. Furthermore, the child becomes capable of recognizing and justifying their actions, as well as explaining their activities. They also gain awareness of their personal relationship to the world and themselves. Successful progression through this stage allows the child to develop a sense of competence, confidence in their abilities, and the capacity to act on par with others. However, an unfavourable outcome may lead to the formation of feelings of inadequacy (Carroll & Traylo, 2019; Psychological characteristics of preschool age, 2011).

Adolescence (11-17/18 years) is a period of physical development characterized by sexual maturation.

This leads to the restructuring of the child's body, including intense skeletal growth, development of body mass, muscle, and adipose tissue, maturation of internal organs, formation of gender-specific body build, development of secondary sexual characteristics, high hormonal activity, emergence of sexual behaviour, and the establishment of gender roles. The brain undergoes its main structural and functional changes during this period, reaching its final weight and volume. Adolescents experience a psychological crisis during this age period, which is characterized by the breakdown of their old structure of personality, emotional experiences, values, and inner world. The psychological sphere encompasses two main formations: self-awareness and a sense of adulthood. These formations are manifested in a constant effort to assert oneself as an adult in relationships. Although education remains the primary activity of adolescents, intimate personal communication with peers gradually becomes the main motive. Additionally, new motives emerge, such as "liking" or "disliking" academic subjects, affection or aversion to school, and evaluation as a result of monitoring their activities (Developmental psychology, 2015; Psychological features of adolescent age, 2016).

The psychological characteristics of communication and relationships between adolescents and their peers include a desire to belong to a peer group, extending communication beyond school life, the emergence of relationships, new interests and activities, the importance of personal qualities such as knowledge, honesty, and courage, orientation towards peer demands and considerations, formation of like-minded groups, the emergence of reference groups, seeking friendships, and the appearance of mutual interest between boys and girls leading to concerns about appearance. It is important to note that communication with peers should not overshadow education and relationships with family members. Among the psychological characteristics of communication and relationships between adolescents and adults are conflicts that arise when the correction of relationships with adults lags changes in personality development, reluctance of adolescents to accept unequal relationships, demands for independence, respect, trust, and limitations of adult rights, as well as the expansion of their own rights (Psychology of adolescence, 2011).

Adolescents' cognitive processes are voluntary and improve sensory perception, enabling more complete, detailed, systematic, and sequential perception. Logical thinking emerges, meaningful logical memory forms and increases in volume, becoming more controllable. Conceptual thinking and abstract thinking also develop. The text appears to meet the desired characteristics and is free from errors. Therefore, no changes have been made to the

original text. Speech is a multifaceted tool that serves as a means of communication, a method of acquiring knowledge, an instrument of creation and expression of the emotional-volitional sphere, and an object of study (Psychology of adolescence, 2011; Psychological features of adolescent age, 2016).

Adulthood is defined by the WHO as beginning after the age of 18, and the developmental process during this stage differs somewhat from that in childhood. Changes in behaviour, thinking, and personality in adults are only slightly determined by specific changes in the body and chronological age. Instead, they are largely influenced by personal, social, and cultural events or factors. The positive resolution of conflicts and difficulties becomes the basis of adult activity (Tokareva & Shamne, 2017).

Young adulthood, typically defined as the period between 18 and 44 years of age, is characterized by the attainment of peak physical development. During this time, individuals typically experience optimal sexual and physical maturation, and enjoy better health and resilience than in earlier or later stages of life. During young adulthood, individuals face the task of forming a family, establishing their family life, asserting themselves in their chosen profession, identifying themselves professionally, and defining their role in society. The creation of a family is a significant social responsibility during this period, and the primary focus is on professional development. The psychological characteristics of the youth period include a desire for self-expression, the development of an individual lifestyle, the realization of individual life meanings, and the development of personal, cultural, moral, and spiritual values (Tokareva & Shamne, 2017).

Middle age, defined by WHO as the period of middle adulthood or maturity, typically occurs between the ages of 45 and 59. On one hand, all body systems reach their optimum function, but physical decline may also begin to show, such as reduced visual acuity, menopause, and prolonged motor and sensory reaction times. In the social sphere, this is the time for individuals to fully realize their professional and creative potential, as well as their self-actualization in family relationships and society. Maintaining a connection with elderly parents involves sharing memories, regular communication, and mutual assistance. The primary activity during the maturity period is professional work. Intellectual abilities are primarily influenced by attitudes towards life, personal qualities, plans, and values. Although cognitive processes may slow down compared to younger individuals, thinking efficiency is generally higher in mature age (Tokareva & Shamne, 2017; Developmental psychology, 2015; Sydorenko et al., 2023).

Late maturity or old age is classified into three categories: elderly age (60-74 years), old age (75-89 years), and longevity (over 90 years). The boundary

between middle age and late maturity is not always clear and depends on individual characteristics, retirement, and the end of active professional activity. There are three main development scenarios: longevity, change of leading activity, and preservation of professional activity (Developmental psychology, 2015; Kovalenko et al., 2021; Vinokur, 2020).

The physical aspect of ageing is characterized by the maturation of all organs and systems of the body, weakening of sensory functions, deterioration of health, fatigue, decreased work capacity, and inability to integrate individual behavioural modes. The cognitive sphere is marked by a reduction in overall intellectual activity and the capacity to absorb new information. However, sensory and operative memory are minimally affected, and theoretical memory (memory for distant events) is almost entirely preserved. Mechanical and associative memory decline, while logical memory remains intact. Elderly individuals often rely on logical connections as the foundation of their memory, which can lead to a greater sense of wisdom. This cognitive property is associated with experience and is based on a crystallized, culturally conditioned intellect. It is an expert knowledge system that is oriented towards the practical aspects of life, enabling informed judgments and useful advice on vital issues (Tokareva & Shamne, 2017). In the social sphere, individuals initially maintain contact with work colleagues, which gradually decreases over time. This is replaced by communication with close relatives, children, grandchildren, and friends of pensioners or other younger people. Acceptance of one's own old age is the result of actively rethinking life attitudes and values (Kovalenko et al., 2021; Marchenko & Boychenko, 2017; Tokareva & Shamne, 2013).

Conclusion

Throughout a person's life, they go through different stages of development, each with its own unique interactions with the environment, including society, and physical and psychological characteristics.

Psychological development can be observed in three areas: physical, social, and cognitive. These areas are interconnected, and changes in one area can affect the others. Therefore, a comprehensive and integrated approach is necessary when studying psychological development.

Psychological development occurs uniquely in each period of life and is characterized by its own peculiarities. Knowledge of these characteristics can contribute to the harmonious development of a person and ensure their mental well-being throughout life.

Further research into the characteristics of physical, cognitive, and social development and their

interactions in different age periods is a promising direction for research.

Conflict of interest

The authors affirm that they have no conflicts of interest to disclose.

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