ABSTRACT
The purpose of this article is to discuss the possibilities of supporting the process of creativity in the period of middle childhood. The main part of the article focuses on the description and conditions of this process from a developmental perspective. It presents the normative development of cognitive processes, such as: perceptual skills, management functions, memory, thinking, cognitive representations, as well as their correlations with the phenomenon of creativity in pre-school children. The summary includes contextual conditions of the development of creativity. It indicates a potential inherent in the environment, as well as challenges and opportunities for pre-school education in the 21. century.

**Key words:** cognitive processes, child development, Piaget, Wygotski

INTRODUCTION
This article conducts a review of modern literature on widely understood creativity in the perspective of its development in the middle childhood, because this period is a time of dynamic and intense changes in many areas: cognitive, motor, social, as well as emotional.

If they are developed from early childhood, it is expected that these competences may become unquestionable advantages affecting further life. These
premises have persuaded the researchers to actively search for innovative solutions, both in the scope of research methods and in the development of these functions.

CONDITIONS FOR CREATIVITY FROM INDIVIDUAL PERSPECTIVE

In the classic scope, the conditions of creativity as a process or as a development effect are searched in the bio-psychological characteristics of individuals. Characteristics of a creative individual include its genetic, cognitive, emotional, as well as personality conditions\(^1\). It is also necessary to add an individuals’ current state and the occurring physiological processes, such as: level of neurotransmitters or experienced emotional states, which modify the manner of receiving reality and modulate cognitive processes (Lewis, Havid-P-Jones, 2005, Panksepp, 1998, Reykowski, 1970).

In the developmental context, the traditional approach assumes that thinking is the most important cognitive process affecting creativity. According to Guilford’s theory, the criteria used to assess the intensity level of creative skills include: fluency, flexibility and originality of thinking. The concept developed by Guilford, widely recognised as extremely important for the development of science and research on creativity, was further developed by Torrance with an additional criterion – elaboration (Nęcka, 2005). According to the author, this concept includes diligence and details of the product, the measure of which is the number of individual elements or details that make up the idea.

At this point, it seems necessary to stop and reflect on classic concepts of the development of thinking by Wygotski (1967) and Piaget (1970), as well as their relations with creativity. The first of them assumes that the child’s development is focused on formulation of scientific concepts, recognised by the creator of this theory as the best organised mental structures (Kielar-Turska, 2011). At the same time, the term concepts is defined as “a manner in which the world is represented in our mind”, in other words, a certain equiva-

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\(^1\) Guilford (1966) was one of the first scholars, who wanted to measure individuals’ potential for creativity. Among other researchers dealing with this subject, Kim (2006) and Zeng, Proctor and Solveroly (2011) are worth mentioning.
lent of sets of real or abstract objects (Nęcka, Orzechowski and Szymura, 2006). Wygotski indicates that the functioning of the above-mentioned concepts is affected by verbal definition, which in an appropriate, well-defined teaching system strives to the concrete. At the same time, he points out that ordinary phenomena tend to develop without a fixed system and tend to generalisation, which differentiates the existence of spontaneous concepts. According to the described concept, the change in the way of thinking lasts from early childhood to adolescence, including specific three levels of development (Kielar-Turska, 2011). It begins with syncretic thinking, resulting from the child’s previous, fairly negligible experience, based on undifferentiated, compilation and global creation of concepts. Subsequently, comprehensive thinking develops at pre-school age, which is characterised by sensibility and objectivity. In this period, a child, having regard to objectively existing relations between objects, generalises uniform objects into a specific group, creating so-called complexes. By taking into account the order of the occurring changes, Wygotski distinguishes 5 stages of comprehensive thinking. Starting from the association complex, through the collection complex, the chain complex, the diffusion complex and concluding with pseudo-concepts. It is characteristic that initially, during the building of a complex, a child refers to any relation created on the basis of subjective impressions. In the second phase, it goes on to create generalisations resulting from a specific experience, known collections of things, then it develops the ability to create chain complexes, allowing for the transfer of meaning between the links of the chain. In the fourth stage, there is some kind of diffusion and the criterion for selection of the given elements to the group is changed. In the last phase of comprehensive thinking, a child reaches the pseudo-concept, i.e. named complex that is created on the basis of objective and permanent properties. These pseudo-concepts that dominate in the middle childhood seemingly resemble proper concepts, which, according to Wygotski, constitute the final, third level in the development of juvenile thinking. However, they are unconscious, often erroneous and result from superficial and external traits of the objects. The climax of the development consists in the creation of the so-called true concepts, which are based on the processes of analysis, synthesis, but above all on generalisation of the material. According to Wygotski, the development is stimulated by interactions between biological and environmental processes, which determine the pace and path of competences developed by a child and an adult (see: zone of the nearest development).
Piaget’s concept of cognitive development is based on the assumption that intelligence is associated with the mechanism of adaptation (also at the biological level). Its development is carried out due to structuring and re-structuring of cognitive processes. The process of adaptation in cognitive categories denotes balancing of assimilation and accommodation processes, in which the ability to match increases thanks to the increasing complexity and stability of cognitive structures. In accordance with the abovementioned concept, a child is an active creator of its own development, resulting from the continuous creation of new cognitive structures, referred to as schemes, which condition adaptation to the environment (Bee, 2004). In other words, these schemes constitute an internal representation of specific physical or mental activities that change into more complex, more numerous and varied ones in the course of a person's life. These changes occur with the participation of two processes: assimilation and accommodation (Bee, 2004). The first one is based on adaption of new experiences or information to the already possessed schemes. The second one is defined as the component “by which the entity modifies existing schemes, in order to match them to new experiences, or creates new schemes, if the existing schemes are no longer able to deal with the acquired data”. Moreover, in accordance with Piaget’s theory, all children go through universal stages of cognitive development, which occur in a specific order and which result from qualitative changes in the way of thinking (Bee, 2004). The first one, which is called the senso-motoric stage, lasts up to the second year of life, when a child exercises its reflexes and manipulations supporting or repeating sensations that are interesting to a child (practical intelligence). The second one, which is called preoperational stage, covers the age from 2 to 6 years old, when a child begins to use symbols, experiments on objects in a purposeful manner, as well as consciously plans its activities using representations of objects for this purpose (representative intelligence). Subsequent stages include: stage of specific operations – from 7 to 12 years old, when a child performs manipulations of an increasingly reversible nature on the representations of specific objects and when it can simultaneously capture many properties of the object; stage of formal operations, which are characterised by hypothetical-deductive thinking, abstract thinking and meta-thinking, developed from the age of 12. The above-mentioned four stages, whose timeframes determine only an approximate age, are of course dependent on the individual experiences and predispositions of a child.
Conditions and development of creativity in the period of middle childhood

Followers of Piaget’s way of thinking indicated the need to introduce a stage characterising even more complex cognitive structures and it was called the stage of post-formal thinking. During this period, a child develops such traits of thinking as: relativism – understanding that knowledge depends on subjective experiences and points of view, dialectics – treating reality as the concept characterised by constant variability, contradictions and divergence – creative thinking.

GENERAL CHARACTERISTICS OF COGNITIVE DEVELOPMENT OF A CHILD IN THE PERIOD OF MIDDLE CHILDHOOD

When entering into the pre-school period, which is also known as the middle childhood period, a child shows great interest in the surrounding world and people. Increase in motor skills and a strong need to move, referred to as “hunger of movement”, are characteristic at this stage of development (Kielar-Turska, 2011), and they allow children to explore the surroundings, as well as reach the objects that arouse their curiosity. In the described pre-school period, the children’s cognitive abilities develop intensively, which according to Nęcka (2005) constitute “the basic component of the creative process”. Significant changes occur in perceptual skills, management functions, memory, thinking, as well as in the image of the world, i.e. cognitive representation (Kielar-Turska, 2011). Children enter into the so-called pre-reading stage, in which there is a noticeable increase in the correct recognition of colours, letters of the alphabet, numbers, realistic shapes and geometrical shapes – although children still exhibit difficulties in determination of the size, proportions and components of objects. At this stage, auditory sensitivity also increases, particularly phonemic and musical hearing. Also, children begin to be aware of the place and time.

It is worth noting that during this stage, there is an intense development of abovementioned management functions, which “enable planning, initiating and managing goal-oriented actions in an organised and thought-out manner” (Kielar-Turska, 2011). Young people develop skills by means of managing attention and memory abilities. There is also a noticeable increase in the rate and efficiency of information processing, which results in greater efficiency of the operational memory. Moreover, representations of events start to assume
the form of scripts. Through exploration, playing, drawing, monologues and dialogues, children develop various memory strategies, such as: repeating, grouping and elaboration.

Pre-school age is also a time of evolution in the way of thinking – from dependent thinking, from current sensorimotor experiences to the thinking that is more based on mental representations of events (Kielar-Turska, 2011). In his concept, Piaget equates the pre-school age with preoperational thinking, which is characterised, among others, by: the lack of logical operations, centration – i.e. concentration on a single perceptual factor and childish egocentrism, i.e. perceiving itself as the main point of reference, focusing on itself.

Nevertheless, along with their development, children begin to move away from the literal approach to the observed reality. In their thinking, they use mental images that are copies of reality, which derive from the imitation of patterns during their absence (Kielar-Turska, 2011). Symbolic and imaginative thinking surface, while the prevailing thinking activities include: classification, comparison and sequencing of objects.

Contemporary considerations of theoreticians and researchers dealing with subsequent cognitive function, the issue of cognitive representations captured as the mental equivalent of objects, both real and unreal objects, which may include an object, person, category or relation (Nęcka et al., 2006), led to interesting conclusions. Contrary to earlier theories by Piaget, it is believed that children are capable of social decentration, more rapid departure from realism and adoption of other people’s perspective, already in the period of middle childhood.

Broader perspective on this subject is provided by studies in the field of child theories of mind defined as “cognitive constructs (concepts) regarding unobservable states of mind (impressions, experiences, desires or beliefs), which are used by a child in the course of predicting and explaining the behaviour of other people” (Trempala, 2012). In accordance with these concepts, a milestone in the development is the age of 4, when a young person begins to differentiate reality from its beliefs about it. Shortly afterwards, a child notices that these beliefs may not be true, begins to understand metaphors and jokes. Therefore, a thesis may be formulated that a young person in the pre-school period is capable of a certain form of childlike logical thinking.
CREATIVITY AND THE PERIOD OF MIDDLE CHILDHOOD

In light of the presented theories and normative developmental achievements in the course of middle childhood period, it can be concluded that in the pre-school period, which is characterised by dynamic changes in cognitive functioning, a child amazes with its curiosity of the world, proficiency and creativity in the processing of reality. By being able to use a rich imagination, as well as a skill of transforming the material, a child is able to change the meaning of objects, entities, events and to create countless ideas and concepts (Plóciennik, 2011). Studies on thinking and learning at this age indicate quickness in the acquisition of knowledge and the ability to fantasise and improvise (Kielar-Turska, 2011). Therefore, it is hard to disagree with the conclusion of these studies indicating that a child has natural potential to be creative. According to Gardner (2002), the level of development of this natural predisposition depends on the environment surrounding a given young person. Therefore, it is very important to involve the society in the shaping of optimal conditions, enabling full use of talents, skills and passions in preschoolers (emphasised in the described concepts, e.g. Wygotski and Rhodes). Premises derived from the reports of practitioners and educators, emphasising the ineffectiveness of traditional education methods, e.g. omitting the development of significant cognitive processes, among others, perception and divergent thinking (Plóciennik, 2011) – encouraged the researchers to actively seek innovative solutions, both in education and in attempts to operationalise the creative process and creativity (e.g. Gardner’s programme, Kopik and Zator-ska, 2010).

While moving away from traditional teaching methods, there was an emphasis put on new technologies, such as: television, computers, video games, smartphones, etc. that accompany children every day, both at home and at school. This subject has been controversial for a long time and it raises many questions: what influences positive or negative, what are the benefits of modern technological gains on the development of young people. It is currently impossible to provide an unambiguous answer to this question, as well as to similar questions, which is confirmed by studies in this field that often contain inconsistent information (e.g. Onofrei, 2015; Rondon, Sassi and de Andrade, 2013; Wolfe and Flewitt, 2010). For example, in their analysis, Kirkorian, Wartell and Anderson (2008) noticed that exposure to television during the first few years of life may be associated with worse cognitive development. On
the other hand, they indicate that conclusions from other studies clearly show that a well-designed and age-adapted educational television show or game may be beneficial for pre-school children. More and more often, it is also highlighted that new technologies are useful in the diagnostic process and in the course of therapy, because they create opportunities for working with persons with specific learning difficulties (e.g. Kowaluk-Romanek, 2014; Mascia, Agus, Fastame, Sale and Pessa, 2015; Pyżalski and Klichowski, 2014).

CONCLUSIONS

A review conducted in this article, which covered individual conditions of creativity development in children in the period of middle childhood, indicates the important role of comprehensive support and development of the pre-schooler’s potential. The level of development of the natural predisposition, which is creativity, depends on the environment surrounding young people and their interaction with it. Thus, the observation that it is necessary to examine and diagnose, and particularly support the natural creative potential of a human being by shaping the correct conditions and possibilities inherent in the environment, seems to be right.

Contemporary upbringing and pre-school education should focus on the exceptionality and uniqueness of each individual (Włodarski, Hankała, 2004). In the course of becoming an ally of creativity, it is necessary to take care of the child’s mental hygiene (sleep, diet), as well as take care of the possibility of experiencing positive affection. Moreover, it is necessary to put emphasis on the development of cognitive functions, i.e. thinking, attention or memory of particular individuals. In the course of keeping up with the rapidly changing reality, in which a young person grows up, it is also important to adequately modify, enrich and modernise the methods of work.

Also, it seems justified to carry out a longitudinal study in the future regarding the correlation between the functioning of children’s cognitive processes and creativity, as well as the impact of various psychopedagogical interactions that change the environment of their development.
REFERENCES:


