

## Play, cognition and culture

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The psychological theories of play are generally independent from each other. Since most of these were generated in the 20th century, some of them simultaneously, they mostly dealt with different aspects of play. In this paper we present what we consider are common points of these theories, which can be called the *essence of play*. We highlight one of the most prominent theories of play, Piaget's epistemological approach of cognitive development, and elaborate on how it relates to other psychological theories of play. Play, cognition, and culture appear as important aspects in all of these theories so possible connections between these concepts are discussed. Finally we emphasize the relevance of further research on the play in autism.

*Key words:* play, cognitive development, culture, Piaget, autism

The scientific interest for play began in the 20th century, which largely determined the direction of research. As Erikson (1950/2002) writes, these theories are partial due to the cultural context. If we take a look at the history of changes in the concept of childhood, it is clear that the sharp separation between childhood and adulthood is a new point of view originating in the 18th century. Earlier it was considered that the adults played games, which would now be considered childish, and that children only imitated adults (Ariés, 1987). Most of the 20th century theories, especially the psychological ones, approach play from a developmental perspective, and contain the statement that play is a children's characteristic. But the question remains whether play should be considered only a child feature?

As Quine (1956, as cited in Kiss, 2005) proposed, if we want to examine a concept, we should first look at how it is used in the everyday language. This method is called semantic ascent. *Play* appears in a lot of metaphors, e.g., *play of light* or *play of colours*. Gadamer (2003) concluded that we use the word *play* to describe a "to and fro" motion which doesn't have an aim. Three aspects are included in this simple statement: the "to and fro", which indicates repetition; the motion, that is, the activity; and the aimless nature. All

these appear in the different play theories. Another important aspect to take into account is the linguistic relativity. Sapir-Whorf hypothesis states that language affects the way how we conceptualize the world (Holtgraves, 2008). When considering play in the light of this hypothesis, Huizinga (1938/1990) referred to the differences between the languages. The unified concept of *play* is a new phenomenon. In older languages there were more words for the concept of *play*, for example, in Greek and Chinese. In English there are still two different words, *play* and *game*, but for example in Hungarian there is only one word for both (*játék*). Some languages today also use only one word, for example, German, Russian, and French. Perhaps this linguistic characteristic also influences the way how scientists think about play.

### The beginning of scientific approach to play

The first one to scientifically approach human play was Huizinga (1938/1990). In his book *Homo ludens* he wrote about the origin of culture and he considered that culture was developed in the context of play (Huizinga, 1938/1990). This idea can be transferred to child development. As will be presented later in more detail when discussing psychological theories, many theorists link play to the cognitive processes. In accordance to Huizinga hypothesis, we can interpret this link also as the connection between culture and play: play is a context where the cognitive processes can be developed.

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Huizinga (1938/1990) also discussed other important aspects of play. He noted that both animals and humans play and that there is continuity from animal play to human play. He also considered play a meaningful function, i.e., one which can give meaning to physiological activities. He defined play as a free action which is voluntarily, free chosen, but in accordance with certain rules; its purpose is itself; it is associated with feelings of stress and pleasure; and it is perceived as different from everyday life.

After Huizinga's book the psychologists also began to deal with the theme of play. Generally the psychological theories of play are not independent but instead are a part of a comprehensive developmental framework. Groos (1898, as cited in Elkonyin, 1983) emphasized that play is observable in animals and humans too, and must be examined in the context of psychophysiological maturation. He considered play as preparation for adult life. In contrast, Buytendijk (1933, as cited in Elkonyin, 1983) rejected Groos's theory and highlighted that even the animals that do not have the opportunity to exercise instinctive behaviours during play-time can also perform these behaviours in their adulthood. Buytendijk suggested a developmental theory and explained play behaviour as one aspect of childhood dynamics. He stated that humans play because of youth, that is, that play is a child feature. Other important aspects of play he mentioned are that play is always playing with something and that play is associated to exploration.

Another important approach to play can be found in Hall's recapitulation theory of childhood development (published in 1904), which states that the ontogenetic development can be seen as the repetition of phylogenetic development. According to this theory, play forms appear in a certain order which imitates the emergences of the ancient activities in the history. This leads to the conclusion that contents of play are heritable, which we know is not entirely true seeing that the content of play varies due to the social and natural environment (Piaget, 1945/1999).

One other important perspective on play from this period is the psychoanalytic one. Although this perspective does not include cognitive developmental aspects of play, it is relevant culturally. The first analytic ideas about play can be found in Freud's work. At first he used play in therapy. He thought that children's play is similar to adult's free association, and that desires and conflicts appear in play whereby children become able to control the situations from their life that repeat in play. This approach generally emphasizes play's therapeutic effect (Millar, 1968/1973). This characteristic of play is strongly linked to social aspects, i.e., how important the early attachment is for the development of the ability to play (described below when discussing Winnicott's theory), but also to the fact that first social relationships evolve in the context of play. This aspect is the foundation of a therapeutic relationship with a child. In contemporary approaches the social and cognitive development are considered to be closely related, to which we return later

in the paper. But first we describe the best known cognitive play theory, the one by Piaget.

## PIAGET'S THEORY OF PLAY

Piaget (1945/1999) had an epistemological view on development. He developed a theory about the development of intelligence, which included a part about play. He assumed that development of play is parallel with the intellectual development. He discerned four main stages: sensory-motor, pre-operational, concrete operational, and formal operational stage. The cognitive skills change stage by stage continuously without leaps. This continuous development is an adaptation to the environment. The adaptation is realized in two processes, assimilation and accommodation. Assimilation is the process during which humans fit the new information into their own cognitive schemas, i.e., convert the world to themselves. Accommodation is the opposite process during which cognitive schemas are altered in accordance to the new environmental information, i.e., person changes to fit the world.

When the predominant process is assimilation, this can be defined as play, while predomination of accommodation results in imitation. Intelligence is when the two processes are in equilibrium. The ratio of these two adaptive mechanisms is the main driving force of development. In this interpretation play appears as an aspect of every activity. In fact in Piaget's explanation everything can become play. Piaget defines play as active repetition and experimentation, which intellectually leads to understanding of new situations and experiences. He tried to relate different types of play to the main developmental stages. He considered structural analysis to be the best approach to examine play forms and rejected the content differentiation because often it is not applicable to complex play forms. He discriminated three main types: *practice play*, *symbolic play*, and *play (or games) with rules*.

In the second sensory-motor substage the children's first play activities appear. This form is called practice play. There are no special behaviors, the children only practice the known activities in their idle time. These activities do not have aims, they are performed only because of the pleasure of function. These play forms occur in animal's behaviors too (Piaget, 1945/1999). The practice play also appears later in the life, but it is most common in the sensory-motor stage, because at this period there are a lot of new functions which can be exercised. Later these activities become boring and are integrated into intelligence. The novelty is important in these situations. These plays are close to exploration and actually exploration can be considered a part of practice play (Millar, 1968/1973).

These play activities continuously transform into symbolic play. In the earlier stage thinking and imaging can be the object of play – children practice the processes of think-

ing and imaging – but in this stage imagination becomes the instrument of play. Children are interested in the symbolic reality. They play with symbolic objects whose usual function is different from the one they use (for example, using a remote control as a phone). Pretend play and fantasy role play also belong to this type (Piaget, 1945/1999).

The last play form is related to rules. It can be called *play with rules* or *games with rules*. Here there appears the earlier mentioned problem of the use of different words for play. In English both words can be used in the expression of *play/games with rules*, while in French, as Piaget has written, there is only one word for play, *jeu*. In science *games* are generally used in mathematical and social theories, while *play* is used in the context of child development. This mixed English wording may indicate that there is a transition between play and social knowledge in this play form. Actually this play form is always social. The playgroup establishes a system with rules and the players must respect these. We can say this stage is the earliest children play games and it first occurs in the age between 4 and 7. In fact this play form is the sign of the end of children playing in Piaget's view (Piaget, 1945/1999).

#### THE RELATIONS BETWEEN PIAGET'S THEORY AND OTHER PSYCHOLOGICAL PLAY THEORIES

Perhaps Piaget's play theory is the best known in the field of psychology, even though many other views exist. It is true that Piaget had the most elaborated theory, but he had some contemporaries who also wrote about play from a theoretical viewpoint: Vigotsky, Erikson and Winnicott. While it is an interesting question why this research area was so popular in this period, our focus is on the more important question what kind of similarities exist between these play concepts.

An approach similar to Piaget is presented by Vigotsky (1933, as cited in Péley, 2003). Piaget and Vigotsky mainly dealt with cognitive development in all of their scientific work, but differed in some of the ideas. While Piaget suggested that cognitive development contributes to development of social skills, Vigotsky suggested the opposite direction. In his view, socialization facilitates cognitive development. But both of them agreed that social and cognitive development are interdependent (Lewis & Carpendale, 2002), which is also clearly manifested in play. So these two theorists highlighted that play is a phenomenon with which we can research social cognition.

Although Vigotsky did not have a separate theory about play, he expressed many views similar to Piaget's. Vigotsky also considered play as the center of development. He suggested that play is the context where consciousness can first change. In this context thinking and imagination can develop in parallel. By playing, children explore their environment and learn about the reality. Vigotsky said that children

are in a more advanced developmental stage while playing than during everyday functioning (Péley, 2003).

The other two theorists, Erikson and Winnicott, are psychoanalysts. They emphasize the self development more than cognitive aspects of play. They focus more on socialization and the cultural context. Erikson suggested that play is "the royal road to the understanding of the infantile ego at synthesis". He thought that play is an ego function, by which the self can coordinate somatic and social processes. So at the first it seems he did not emphasize the cognitive aspect, but rather the self development. But eventually he formulated a definition of play which implies an emphasis on cognitive. He defined play as an infantile form of a human skill, which enables learning by creating models, and experimenting and planning in order to control the reality (Erikson, 1950/2002). Therefore he also named play as the focal point of child development. The model creation he wrote about is similar to Piaget's adaptation theory. While experimenting with the environment, the children assimilate and accommodate the new information into their cognitive schemas, which can actually be considered a kind of a model about the reality.

Erikson also suggested developmental stages of play exist. First there is an auto-cosmic form, where the child plays with his own body. Then follows the microcosmic form, when some objects and people in the immediate environment are included in play. And finally in the preschool ages the macrocosmic form appears which is already a shared experience (Benedek, 2005). We can see that these forms are comparable to Piaget's developmental stages. In the practice play children generally use their own body, and practice activities with it. In symbolic play objects and peers are added to the situations, but play activities become really social only in the third stage. Erikson highlighted another aspect of play: the unlimited nature. In play children can overcome the temporal, space, and social limits (Erikson, 1950/2002). In Piaget's terminology, the children do not have limits, because they do not change their existing schemas to adapt to the environment, rather they fit the new information to these schemas.

Winnicott (1971/1999) also had a similar perspective about unlimited aspects of play. He said that play takes place in a potential space which is neither inside nor outside. He emphasized that space and time are important aspects of play and that these differentiate play from everyday actions. Similar to Piaget, he also criticized previous psychoanalysts because they dealt only with the content of play. Winnicott distinguished play and playing. He mostly discussed the action, playing. He maintained that playing is a basic child skill, and related to health. As the others already mentioned, he also noted that playing supports the development and the social relationships. This he considered important because of the therapeutic approach. Playing is a potential context, a playing field, where the therapeutic relationship can be established.

As compared to Piaget, Winnicott gave much more attention to the social aspects of play. In Winnicott's view the origin of play and also the effect of play have social characteristics. During early childcare the infants can experience trust in the mother. The size of potential space depends on this basic trust. So the mother's holding and handling skills determine the playing ability of the children. If the mother is available, sensitive, and responsive, the children become playful. When the symbiotic relationship is terminated, the infants become interpersonal, their potential space is formed, and they begin playing. This potential space creates the link between the inside and outside reality. As Winnicott wrote, this is the space of social cognition. But in this space the children can learn not only about the social aspects of world, but also about the whole external world. Although Winnicott did not write about cognitive development, some assumptions about it can be extracted from his theory. It is possible that the development of play is related to cognition and passes a determined order, as the infant's early experiences influence the quality and quantity of play forms.

Creativity and the cultural experience, which arise from the playing activity, can also be realized in this potential space of social cognition. Although he did not define culture precisely, this term, when used by him, indicated the inherited traditions, something which is shared between humans. In Winnicott's theory the process described by Piaget, where the predominance of assimilation is typical in the beginning of play, and later the equilibrium of the two adaptation processes increasingly becomes the feature of playing, is also present. This process results in creative and cultural behaviors, whereby people fit simultaneously the world to themselves and themselves to the world.

We tried to compare these theories to Piaget's epistemological view and to find similarities and differences between them. When we try to summarize these comparisons, two dimensions crystallize: one of them is the focus either on culture or evolution, and the other is the focus either on mental or neural processes. The first dimension indicates whether play is considered a universal phenomenon present among animals too, or whether it has uniquely human characteristics. However, the psychological theories don't necessarily reject the evolutionary origin of play, but they emphasize the particular role of play in the socialization process and the human cultural development. The second dimension contains the "hardware-software" problem, i.e., whether the different theorists deal with the neural background of play, or only focus on the mental cognitive processes. Usually an evolutionary perspective has a more neural aspect than a cultural one.

We can see that most of the presented theories are more cultural than evolutionary and include rather mental than neural processes. There are slight differences which we try to illustrate in Figure 1. In the space defined by the two dimensions the described theories, by Piaget, Vigotsky, Erikson, and Winnicott, are closest to each other. These four approaches cover the mental process-cultural part of play.

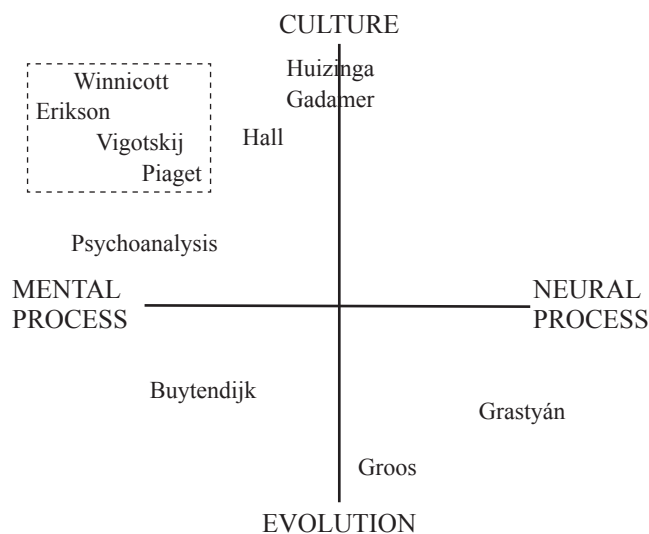


Figure 1. A possible interpretation of the connections between different play theories. Based on figures about the different possible approaches of the naturalistic view in "A természet és a lélek [The nature and the soul]" by C. Pléh, 2003, Budapest: Osiris Kiadó.

Before we discuss the relations between play, cognition, and culture, we will present an – at first sight - opposed theory about play, Grastyán neurobiological approach (Grastyán, 1985).

In his academic lecture, Grastyán (1985) wrote about the neurobiological aspects of play. However, although play is difficult to define and research from an evolutionary and neurobiological point of view, Grastyán demonstrated one possible way. In his initial concept he defined play as a behaviour that is without any reasonable benefit, spontaneous and repetitive, performed for its own sake. He considered the motivation for play. Every motivational behaviour contains pleasurable and aversive states. He showed that dorsal hippocampal theta wave activity correlates with exploratory behavior and orientation, and also with positive emotional states. His research on cats demonstrated that a minimum aversive state of tension is necessary for play activity. It was also his suggestion to also study play on an elementary level of neuronal integration. Eventually Grastyán gave a new definition: play is a function in which the organism sets its own barriers before reaching a desired natural or created target, and thereby creates a reproducible condition of the induction of intense pleasure.

#### THE CONNECTION BETWEEN PLAY, COGNITION, AND CULTURE

As we mentioned above, the psychological play theories are more cultural than evolutionary. The cultural aspect

of play appeared already in the early theories. For Huizinga (1938/1999) it was the most important feature in play. He wrote that “culture developed in the context of play”. This is a key statement. All the other theorists after him also referred to this: Hall in his recapitulation theory, Winnicott in relation with cultural experience, as well as Piaget. Piaget wrote about a fourth play form, called *creative, constructive play*, which is not similar to other forms and doesn't fit into the developmental stages. It links playing to non-playful behaviors, and it is not clear whether it can be considered play, imitation, or something else. Still this play form is based on the three others and is related to creativity and constructive activity (Piaget, 1945/1999). So the mentioned authors agree that culture can be traced back to play, but do not claim culture is equivalent to play. It is an interesting possibility that play is a key function in human cultural evolution.

Gadamer (1960/2003) also wrote about play and a segment of culture, namely the works of art. He suggested that only the spectator understands the full meaning of the theater play. He referred to Plato, who did not discriminate between life and theatrical tragedy and comedy, and commented there is no difference if the spectator understands the meaning of play. Gadamer wrote only about theater play, but we can extend this to the whole concept of play. The source of pleasure in theater play is the joy of cognition, as in play. We re-recognize something about us, or about the world, in play. Virtually we learn something new, which is a process related to cognition.

It is a difficult question what is the relation between the concepts of play and cognition. Play can be interpreted as an aspect of cognition, but if play is only a cognitive function, how can it help in the development of intelligence? Theories that include self development indicate another possible perspective where play is a wider concept than cognition. Actually we can say that play permeates our whole lives. It is related to many parts of it: development, learning, creativity, self concept, social skills, etc.

As Piaget said, everything can become play, it is one aspect of any activity. But we think play's main connection with cognition is through learning. Not only Grastyán and Piaget tried to link learning and play, but there is also an interesting newer concept, the surplus resource theory (Burghardt, 2005). It is an evolutionary approach whose essential statement is that play is necessary for learning new skills. In fact, during playing the child learns how to adapt to a new, variable environment. Burghardt emphasizes that this is especially true for animals whose ecology is variable or unstable. The important evidence for this is that exploration precedes play, and there is no clear boundary between them. Pellegrini, Dupuis, and Smith (2007) differentiate game and play also from an evolutionary perspective. They consider play as more closely related to exploration, and that it has a flexible feature, while in contrast game has a priori rules, which will ultimately be seen as cultural integration.

We suggest that in the context of culture, play is a context for learning and for the cognitive development. But the relation is two-way, namely cognitive abilities also determine what can be played and which play form is typical at an age.

#### FUNCTION OF PLAY IN AUTISM RESEARCH

Perhaps all of the abovementioned abilities are different in autism: the social dysfunction is one of the main features of the disorder, but there are also divergent learning skills (e.g., Dawson, Mottron, & Gernsbacher, 2008), and some researchers suggested that one of the key features is also the problem with self development (Frith, 2003). Therefore, it is possible a deviation in play activities also exists in autism. It is an interesting question how play appears in autism.

When researching autism, a special play form, called pretend-play, is the preferred area. Pretend-play is a kind of symbolic play during which the child plays with something the original function of which is not the same as the child's pretence (Kasari, Chang, & Patterson, 2013). But other aspects of play or a theoretical approach to play are almost completely absent in the research of autism. Williams and her colleagues (2001) summarized the few reviews about functional play in autism. The researchers usually compared intact functional play to reduced or absent symbolic play, but there aren't any clear differences. Williams and colleagues found in their research no quantitative difference between autism and control group in functional play, but there were qualitative ones. The autism group's play activity was less elaborated, less varied, and less integrated than that of the control. And the latest form, play with rules, is also of importance because of the use of play in interventions (Kasari et al., 2013). If we think that games can be used to develop cognitive and social functions in autism, we must presuppose that this last play form appears in autism or this is not applicable. The surplus resource theory considers play to be a key function in the development, and the alterations in play activity in autism can lead to disorders in adaptive capacity. This adaptability is also required in cognitive and social skills.

It can be clearly seen that play is related to many divergences in functioning encountered in autism. Probably we can understand something new about autism, if we try to examine play, which can be considered the context in which social and cognitive skills develop. This can help us answer an important question, which came first, the cognitive problems or the divergent play activities, and by further research in this area we can learn more about the relation of play, cognition, and culture.

#### CONCLUSION

We tried to summarize the main theories of play. Previously there were many authors who dealt with play from a

theoretical viewpoint. Now there are also a lot of researchers who investigate playing skills, but these are rather empirical than theoretical approaches. These new studies apply the previous theories, especially Piaget's view, to find the differences between developmental age groups, and compare play activity in specific disorders (e.g., in autism) to typical play development. Although these empirical tests contribute to the field, it would profit from a theoretical refinement of different concepts. If we talk about play, the context is defined by what we mean by *play*. Seemingly different definitions exist, but we think that there can be a global one, which is meaningful in a cultural, cognitive approach as well as in an evolutionary, neurological one. Therefore in this paper we tried to find some common points in the various play theories, which can be a starting point to a more global approach. We name these characteristics *the essence of play*.

Although only Winnicott emphasized that he was talking about playing, and not play, most of the theories include the activity aspect of play. Repetition also appears in some theories, although theorists differ in the meaning of it, for example, repetition of phylogenesis as compared to repetition of a new, unknown behavior. The aimless nature is also a common aspect mentioned in play theories, despite the fact the early authors tried to define the aim of play (e.g., Groos, 1898, as cited in Elkonyin, 1983). Later the theorists agreed that this aimless aspect of play is one feature which can help in differentiating playing from casual activity. We think play is not aimless, rather as Grastyán (1985) said, play is an *autothelic* phenomenon: its aim is itself. These three aspects were already mentioned in the introduction, where Gadamer (2003) concluded, after the examination of linguistic metaphors, that every kind of play is a "to and fro" motion which doesn't have an aim.

The play definition of Grastyán (1985) contain all these three criterions: play is a function (i.e., *behavior, activity*) in which the organism sets its own barriers before reaching a desired natural or created target (*it is autothelic*), and thereby creates a reproducible condition (*repetition*) of the induction of intense pleasure. We recommended the use of Grastyán play definition in research. It is interpretable in psychological, neurological, cultural, and evolutionary approaches.

Regarding autism, it is not clear what kind of alterations exist in play activity. But the autothelic repetitive actions are one of the main symptoms in autism. However, earlier researchers did not interpret this as function play. So it is an interesting research question how development and play are related in autism, and also how does play skill influence the adulthood abilities to adapt to new environments.

The interrelation of play and development is also an element which appears in all of the theories. However, it remains unclear whether play is only related to childhood development, or whether it is a broader relation. We think that it is worth considering interpreting play similarly in

adulthood and in childhood. The sociality is also an important aspect of play theories. Probably it is not true that every play is social, but the connection between social skills and play is undeniable.

Perhaps the phrase which we used throughout the paper is the most informative one: play is a context. We can imagine play as a sandbox. There we can find the first friend, the first love, and we can do the first art creation. But if we do not have a sandbox, we will experience all these pleasures, only in another place and perhaps in another way. Thus we can experience and learn a lot during playing, and we develop in this context, but the aim of play is not this development. The aim of play is only playing.

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