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Research Paper

# Playful Environment: The Literature Review on Environmental Affordances to Motivate Kids to Play (EAMKP) †

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***Abstract***
*Several studies of developmental psychology have emphasized the importance of childhood as one of the most effective periods of life. Play as a tool of acquiring experiences has a wonderful effect on child development. Through playing, children can communicate with the world around them. Child psychologists and environmental psychologists, by focusing on the interaction of humans and the environment, believe that play provides the opportunity for experience and direct interaction with environmental factors for a child. In this review, by using descriptive and analytical methods, descriptions about the concepts and theories of play, motivation, and environmental affordances have been surveyed. The proposed approach was based on Gibson's Theory of Affordances (1979) describing an awareness of the environments and their functional significance or meaning. The main question was about the process of kids' interaction with the environment through the environmental affordances to motivate kids to play. Kids tend to the physical environment to satisfy the playing need as intrinsic motivation. By studying the child's interactions in the play environments, the ability of the environment which can be entitled the environmental affordances to motivate kids to play (EAMKP) was achieved. More precisely, the quality of the elements and physical components of the environment as extrinsic motivation factors encourages kids to play, so kids are encouraged to play. Individual features, physical and socio-cultural environments were considered as the effective factors on kids' motivation to play.*

***Keywords:*** *Play, Motivation, Environmental affordances, Motivation to play.*

## 1. INTRODUCTION

Playing is an independent physical or mental activity affecting the child's development in which he or she can express the feeling of exhilaration and happiness (Vygotsky, 1967). The theory of Lev Vygotsky (1978) has been a great effect in much of the recent studies on the fields of children's play and developmental psychology. He emphasized the mental representation of symbolic actions and objects as one of the main features of the play. He even claimed that "play is the leading activity of childhood, as it supports all aspects of a child's development" (Vygotsky, 1978).

Hassan Beiglou (2001) believes that childhood is the best time for gaining education, learning educational, social supervision, moral regulation, and social development (Hasan Beiglou, 2001). In addition, during these years, the child takes more effects from the environment (Shafaei, 2017). Environmental interaction in early childhood is necessary for the growth and development of physical and cognitive abilities. It has an important impact on the formation of the children's existent and their physical and mental development (Piaget, 1951). Especially, nature play impacts aspects of

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children's health and development, particularly physical activity and cognitive development (Dankiw et al., 2020). Today, for example, urban parks provide facilities and spaces for children's physical activity in low-income communities (Huang et al., 2020). More importantly, play streets can create safe places for children to actively play, with the assurance of increasing physical activity and strengthening the community (Umstattd Meyer et al., 2019).

Gibson's "The Ecological Approach to Visual Perception" (1979) allows reintroducing the environment into environment-behavior research. Based on his view, affordances are the functionally important properties of the environment perceived through the active detection of information by individuals. Affordances are always unique and different for each individual and a particular group of people. So, this concept is applicable for describing the psychological qualities of children's environment (KyttÄ, 2002). So far, some studies on the affordances of the environment for improving kids' motivation to play in natural and man-made spaces have been done based on Gibson's "Theory of Affordances" (1979). For example, comparative analyses in three different Finnish communities including urban, small town, and rural environments through studying outdoor activities and perceived affordances of children (8-9 years) have shown the effect of urbanization on children's outdoor activity and freedom to move around. The rural village seems to hold better possibilities for children's independent mobility compared both to the small town and the city. The most interesting gender differences were reflected in this study. The average number of daily journeys with friends was surprisingly enough higher for girls than for boys. Boys on the contrary made more journeys alone than girls and they had more freedom to move around (Kyttä, 1997). Another related study was conducted involving children in the age group of 8-9 years living in Finland and Belarus. The settings included rural, small towns, suburban and urban environments in both countries as well as a radioactively polluted area in Belarus. Significant differences were found in the availability of affordance, level of affordances (perceived, used, and shaped), as well as distribution of affordances within the categories of the taxonomy. Also, the location of the affordances (at home, in the yard, in immediate surroundings or somewhere further) varied significantly in different communities ( Kyttä, 2002).

A variety of environmental resources and access to exploration and play are considered as the two main criteria for a child-friendly environment (Moore, 1986). In 2004, Kyttä offered a hypothetical model for four different types of environments by using the number of actualized, positive affordances, and the degree of children's independent mobility in Belarus and Finland. Using individual interviews and questionnaires on 8–9-year-old children, the results show that the co-variation of the degree of independent mobility and the actualized affordances can be considered as a significant indicator in the assessment of child-friendly environments (Kyttä, 2004).

In Norway, an experimental study was carried out with kindergarten children (5 to 7 years). By focusing on the landscape affordances for versatile play (functional, construction, and symbolic play), the aim of this study was to explore how children's playing in the natural environment might stimulate their motor fitness. Results indicated the relation between versatile play in the natural environment and the impact on motor fitness in children. Different landscape elements made more diverse and specific possibilities for playing. There was a positive relationship between playing activities and the diversity in vegetation physiognomic type (growth forms: tree, shrub, etc.) types. The topographic diversity such as slope and roughness also provided more different play activities. Steep slopes linked to sliding, steep, m and rough cliffs were challenging for climbing. More even landscape structures were stimulating for running activities, role-play, and games. This survey was conducted by Gibson's "Theory of Affordances" (1979), which described the environments of the environment "as functions for use". Children interpreted these environmental affordances and adapted them into functions of play (Fjørtoft & Sageie, 2000; Fjørtoft, 2001).

Azlina and Zulkiflee (2012) claimed that diverse landscape elements have the qualities to meet the children's needs for stimulating them to play in the environment. This study describes the relationship between the structures and functions of a natural landscape element, its affordances to play, and the impact on physical activities among kindergarten children (4 to 6 years) in Kuala Lumpur. In this survey, the children's motor skills were observed and measured through their play activities based on Gibson's "Theory of Affordances" (1979). According to Gibson's view, affordances imply the functionally significant properties of the environment provided a psychologically-relevant concept for the analysis of the evolving child-environment relationship. When children perceive the landscape functions and use it for play, the landscape might have a functional influence on children's behavior and play. Therefore, a natural environment is a valuable place for children's diverse playing and learning opportunities.

Another investigation proposed behavioral responses of middle childhood children experiencing two cul-de-sacs in two different residential neighborhoods. This investigation showed that children viewed cul-de-sac not just by viewing the properties that stimulate them to play but more by the affordances that afforded them to socialize with peers. The activities that the children engaged in were more talking and watching peers play, take turns, make friends, and afforded to be curious. The results revealed that a cul-de-sac with a monotonous, flat landscape and some vegetation offered fewer affordances to the children than a cul-de-sac that has a slightly sloping landform with a variety of vegetation (Othman & Said, 2012).

Based on Gibson's "Theory of Affordances", Sandseter (2009) conducted a qualitative study on risky play affordances of two different types of Norwegian preschool playground. The findings showed natural playgrounds provide higher risky play opportunities than the traditional

settings (Sandseter, 2009). Cosco (2006) also compared three childcare centers with diverse outdoor play environments based on the physical activity affordances. The outcomes suggested natural elements and diverse play areas stimulate children's physical activity more (Cosco, 2006).

In the recent research on kids' motivation to play in a mid-rise residential complex, regarding environmental affordances, important factors affecting kids' motivation to play were extracted. These factors were: controllability, child-centered legibility, natural stimulant factors, social interactions (generational- intergenerational), the vitality of environment, and also sensory stimulation (Hosseini, 2021).

These studies reveal how the theory of affordances can be applied to recognize functional properties of the physical environment. Additionally, recent research has shown that neighborhood walkability for active commuting to school is necessary for rural and urban children (Molina-García et al., 2020). However, to date, no research has systematically recognized environmental affordances for kids' motivation to play. The purpose of this study is to investigate the environmental affordances to motive kids to play (EAMKP). To achieve this aim, the research is guided by the following questions:

- How is the process of kids' interaction with the environment through the environmental affordances to motivate kids to play (EAMKP)?
- Which factors affect environmental affordances to motive kids to play (EAMKP)?

It is worth noting that in addition to environmental affordances, several factors affect kids' motivation to play, which could not be addressed in this study, including culture (ethnic-racial), religion, society, economy (budget), politic (child protection laws), psychological conditions of parents (introversion, obsession, etc.), lifestyle, and parenting style (authoritative, permissive, etc.).

## 2. METHODOLOGY

This research is an interdisciplinary knowledge involving architecture, environmental psychology, and developmental psychology. Literature was chosen to illustrate the breadth of knowledge available about playing, motivation, and environmental affordances. A greater emphasis was placed on children's interaction with the environments and the impact of environmental affordances on children's motivation to play. The aspects taken into consideration in the review included environmental factors (physical and socio-cultural environments) that influenced the environmental affordances to motive kids to play (EAMKP).

In this literature review, both descriptive and analytical methods have been used. The descriptive method has been used in the section of theoretical perspectives and literature review. The analytical method has been used to achieve the formation process of environmental affordances to encourage playing and how it increases the kids' motivation to play.

## 3. THEORETICAL FOUNDATIONS

In order to accurate analysis of research, the concepts and theories of play, motivation, and environmental affordances have been surveyed.

### *3.1. Kids' Play*

Play as a tool for acquiring experience has a wonderful effect on child development. Researchers in various fields of science have given many playing definitions due to the variety of playing dimensions and aspects. In a general summary, "play is any targeting physical or mental activity at leisure or work hours for the purpose of obtaining pleasure, rebellion, soothing the body or mind, satisfying the immediate or long-term needs of the individual or group, whether done alone or in a group (Mahjoor, 2013). In other words, play is a free physical or mental activity that affects the overall development of a child. They can express their feeling of vitality and cheerfulness (Hosseini, 2021).

The literature review has shown that individual features (age, gender, race, physical condition, intelligence, and creativity), social environment (parents, peers, and media), and physical environment (design, equipment, environmental quality, and diversity) are introduced as factors affecting kids play (Veitch et al., 2006; Aziz & Said, 2012; Kahyaoğlu, 2014).

### *3.2. Kids' Interaction with the Environments*

The spatial and properties of the environment directly influence children's physical movement, cognitive scanning, and social transaction in space. These interactions involve complex sensorial and motoric actions. Perceptual responses such as sight, audio, smell, taste, and tactile, as well as mobility in an environment, reveal a lot of significant information. In other words, perception is an active experience, in which a child finds the information through mobility (Kyttä, 2003). "We must perceive to be able to move around, and we must move around to be able to perceive" (Gibson, 1979). This is an ecological perceptual psychology framework recognized by some environmental psychologists like Gibson (1979), Heft (1999), Kyttä (2002, 2003), and (Hussein, 2012).

According to the theories of Ulric Neisser (1980) and Jean Piaget (1956), the independent mobility is essential for the development of cognitive representations of the environment. Neisser's perceptual cycle model complements the traditional information-processing framework by introducing mobility and action and as parts of the perceptual cycle (Heft, 1988). In Fig. 1 the basic ideas of the theories of Neisser, Piaget, and Gibson are combined into a tentative model for the development of the relationship between children and the environment (Kyttä, 1997).

*3.2.1. Children's experience of place and architecture*

Under investigation environment, as the "phenomenal landscape" (Hart, 1977), is the environment children use and experience. Moore and Young (1978) presented a highly simplified model of factors which showed that a child lives in three interdependent realms of experience. The interchange between these three realms controls uses and results in what has been variously termed "image"; "topophilia"; "cognitive map"; "mental map": "schema" (Moore & Young, 1978). These realms are shown Fig. 2:

a- Inner space (the physiological- psychological life of an individual): A built environment that affords children to cognitively be aware of the external stimuli through movement and social actions will encourage them to associate or create bonding with it.

b- Physiographic space (the landscape of objects, buildings, people, and natural elements): The architecture and its landscape prepare children to show their physical strength and skills to make both perceptual and physical contacts with the elements and climatic forces of the place, either routine or occasional.

c- Social space (human relationships and cultural values): The architecture and its landscape as a "social space" where children play with peers or adults can create friendship and acquaintanceship, as well as reduce social regressions and withdrawals. These are progressive social responses of children. This results in increasing children's place cognition by assimilating others' actions, especially their peers during social play. As Piaget quotes (1972) "assimilation is the cognitive process of fitting new information into existing cognitive schemas". In a timely manner, through repetitive encounters, children's actions of accommodation create a new schema, which is an expansion of the previous one. Therefore, interaction in a social space offers more stimulation and feedbacks to the children (Said, 2012).

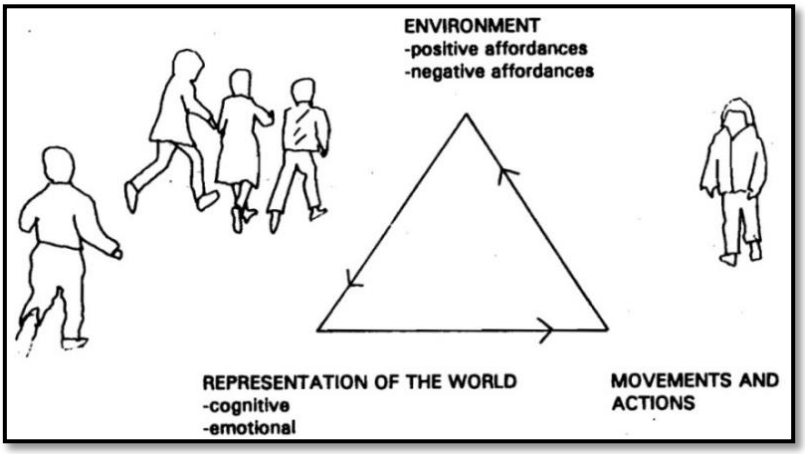


**Fig 1.** A Tentative Model for the Development of the Relationship between Children and the Environment (Kyttä, 1997)

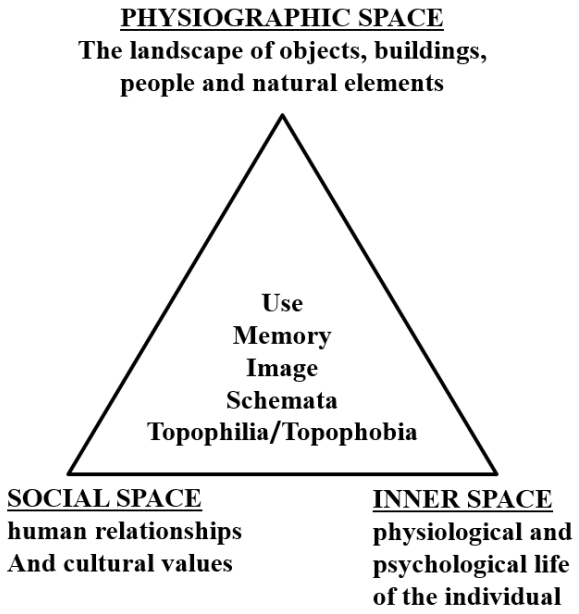


**Fig 2.** Realms of Environmental Experience (Said, 2012)

### *3.3. Environmental Affordances*

Living space does not have a dynamic structure itself, but motivational studies are needed to understand how this space is transformed. Consequently, the concept of Gibson's ecological theory of perception called affordances is presented (Gibson, 1979). Affordances of each object either material or immaterial are a part of the object's properties that can be used for a certain creature or member of species. Object properties considered by Gibson are the physical configuration properties of an object or a place that make a behavior usable for a specific activity (Lang, 1987).

Affordance is a central theory of ecological perceptual psychology. As stated above, affordances imply the functionally significant properties of the environment provide a psychologically relevant concept for the analysis of the evolving child-environment relationship (Gibson, 1979; Heft, 1988; KyttÄ, 2002; 2004).

Heft (1988) classified affordances of children's outdoor environments into ten functional categories by reviewing descriptive studies of children's outdoor play (Lang, 1987). For this purpose, he proposed a conceptual framework for the functional approach drawn on the work of Gibson's perceptual psychology (1979) and some ideas of Barker and Wright's behavioral ecology (1951). The resulting functional taxonomy offers a way of thinking about children's environments that may be more psychologically meaningful than the standard form-based classification of environmental features.

Greeno (1994) analyzed Gibson's theory of affordances. In his point of view, Gibson developed an interactional approach of perception and action focused on available information in the environment. He thereby rejected the still-prevalent framing assumption of factoring external-physical and internal-mental processes. In addition, in Gibson's opinion, abilities and affordances are inherently relational. More clearly, ability relates attributes of an agent to an interactive activity with something in the environment that has some affordances. Also, affordance relates attributes of something in the environment to an interactive activity by an agent who has some ability. It is viable to consider affordances being in different levels rather than phenomena (Greeno, 1994).

In Kyttä model (2003), affordances in an outdoor environment for children's experiences are divided into two levels: potential and actualized[1] (Fig. 3). The potential environmental affordances are considered to be known as the environmental perception of quality and quantity for an individual such as children's physical skills or proportions (Gibson, 1979). The actualized environmental affordances are viewed as what an individual perceives, utilizes, or shapes. About the children's physical activities, the actualized affordances are what they have experienced through movement and perception (Heft, 1988; Kyttä, 2002; Kyttä, 2003). Indeed, the utilized affordances offer an opportunity for performative and exploratory activities, as well as the shaped affordances offering productive activities (Othman & Said, 2012).

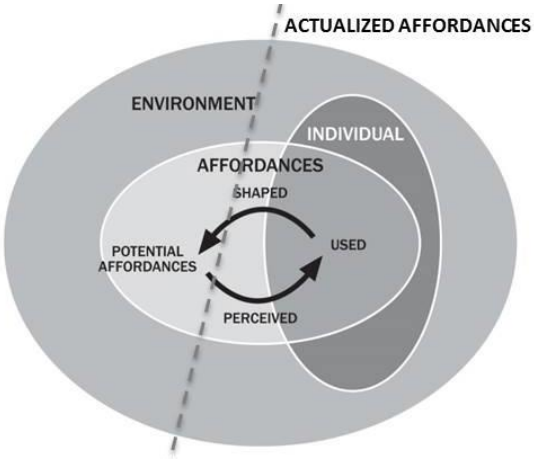


**Fig 3.** Affordances of Various Levels, based on the Person-environment Relationship (Kyttä, 2003)

In 2003, Kyttä stated that children perceive two types of affordances: positive and negative. The quality of the behavior settings perceiving through their senses determines these two types of affordances. Positive affordances correspond to the children's movements and their environmental perceptions, give them satisfaction, as well as finding the environment appealing and friendly. In return, negative affordances induce feelings of danger, avoidance, fear, and escape (Kyttä, 2003). Nevertheless, children might also be interested in engaging with unsafe behavior settings as they like to take risks when they are active in their surroundings. The environment has the potential to provide human experiences and behaviors. According to the fundamental processes of human behavior (Fig. 4) "information of environment is obtained through perceptual processes stimulated by schemata and guided by motivation and human needs" (Lang, 1987). Therefore, it can be concluded that environmental affordances play an essential role in a person's motivation. Considering that affordances include the characteristics of the environment and individual behavior, this theory is suitable for describing the important qualities in the environmental psychology of children.

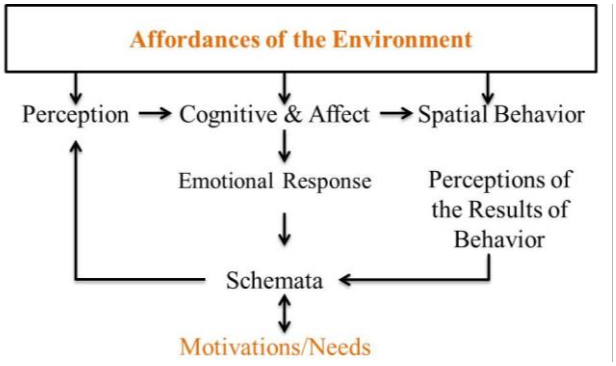


**Fig 4.** The Fundamental Processes of Human Behavior (Lang, 1987)

[1] Kyttä (2003) stated, 'Potential affordances become qualities of the environment and the actualized affordances become individual relationships with the environment

## 4. DISCUSSION

### *4.1. Environmental Affordances to Motivate Kids to Play*

In 1988, Heft stated that "the affordances of the natural environment for children's activities can be categorized into a taxonomy consisting of 10 categories of environmental quality: flat, relatively smooth surfaces, relatively rough slopes, greenery and wildlife, graspable /detached objects, attached objects, non-rigid attached objects, climbable features, aperture, microclimate, moldable material, and water" (Heft, 1988). This affordances taxonomy for sociality was inspired by van Andel's (1984, 1985) activity categories for children's outdoor play. In a recent survey on children's outdoor environments with varying degrees of urbanization, this taxonomy is enlarged by adding a category of affordance for sociality and play (Kyttä , 2002)

In 1993, Reed constructed a schema to give a social dimension to affordances. This schema made clear how some of the social and cultural factors influence the actualization of affordances. Many individual characteristics and social and cultural factors regulate which affordances can be perceived, utilized, or shaped (Reed, 1993). This diagram presents the ecological environment, the meaningful, perceivable environment consisting of the potential affordances. The potential affordances are divided into three subdivisions including the fields of free (FFA), promoted (FPA), and constrained action (FCA). These three fields of action reflect the rules that make the actualization of affordances possible (Fig. 5). There is a close relationship between the fields of free, promoted, and constrained action with the children's activities. At different stages of children's development, they variably remain outside, in between or inside of these fields. Children may also strive to expand the scope of the field of free action. Moreover, the degree of independent mobility of children is related to the extent of all three fields of action (Kyttä, 2004).

By examining the children's interactions in the playing environments, whether natural or built (the scale of city, neighborhood, and architecture), the environmental affordances achieved which can be called environmental affordances to motivate kids to play (EAMKP). To determine it as the potential affordances (Said, 2007), affordances of various levels (Fig. 3) and also the model of the environment as potential affordances (Fig. 5) are integrated. In Fig. 6, individual features factors (age, gender, physical condition, intelligence, and creativity, etc.), socio-cultural environment (parent, peers and media), and physical environment (design type, play equipment, environmental quality, environmental diversity, etc.) are also considered as the effective factors on kids' play.

It should be noted that age differences in assessment and use of places among children are important. To become aware of their spatial priority, a study was conducted on children aged 8 to 16 in a residential area. The results have shown that younger children choose places based on their affordances, while older children tend to choose places due to their cognitive characteristics or aesthetic qualities (Moore, 1986). For this reason, in accordance with the research age (children 3-6 years), it is necessary to improve kids' motivation to play as an environmental affordance.

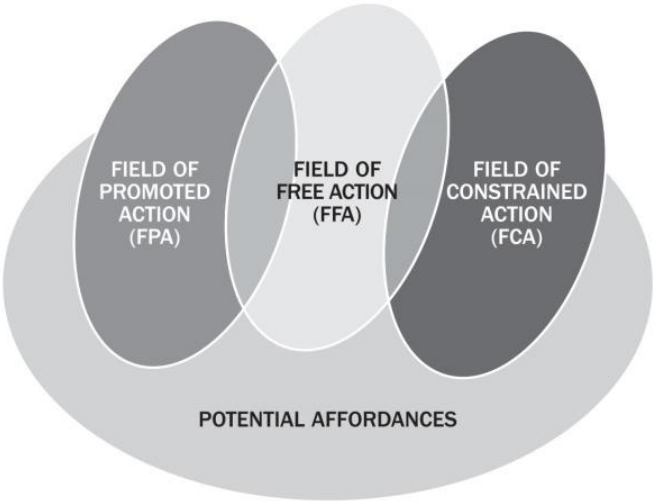


**Fig 5.** A Diagram of the Environment as the Potential Affordances, the Actualization of Which is Regulated by the Fields of Constrained, Free, and Promoted Action (Kyttä, 2003)

*4.2. Motivate Kids to Play*

The child generally defines his/her relation to the environment based on engagement with it through play. The result will be the quality in architectural space that can be called "play motivation". Spaces that motivate a child to play are formed based on the principle of his/her belonging to play culture. In such an environment, architecture provides a secure space in which the continuity of space guarantees the continuity of play. The diversity of the environment and its elements give a variety of playing tools and create a space that while having the ability to departmentalize in children age groups, accepting children's management on their play type (Mardomi & Ebrahimi, 2012).

Hartson (2003) proposed a quadratic division of affordances for designing and interacting with the environment. He divided the affordances of the environment into cognitive, physical, sensory, and functional affordances. These divisions are matched to their functions in the environment (Daneshgarmoghaddam & Eslampour, 2013).

Based on the literature review, it can be stated that children tend to the physical environment in order to satisfy the play need as a factor of intrinsic motivation. So, they gradually start to make changes to it. Furthermore, the physical environmental stimuli, as a factor of extrinsic motivation, play an important role in kids' motivation to free play. The result is creating environmental affordances which can be entitled environmental affordances to motivate kids to play (EAMKP), regarding the theory of affordances (Gibson, 1979). The purpose of environmental affordances to motivate kids to play (EAMKP) as the potential affordances or the functional affordances is to make the environment usable for children's play behavior (autotelic or free play), in a way they have the freedom to act in accordance with the goals and motivational resources as well as to interact with the environment. More precisely, the quality of the elements and physical components of the environment as the extrinsic motivation factor encourage kids to play. So, their motivation to free play will increase in the physical environment. The final result is the transformation of the physical environment into a playful environment for kids. In Fig. 7 summaries of the discussed issues is presented schematically:

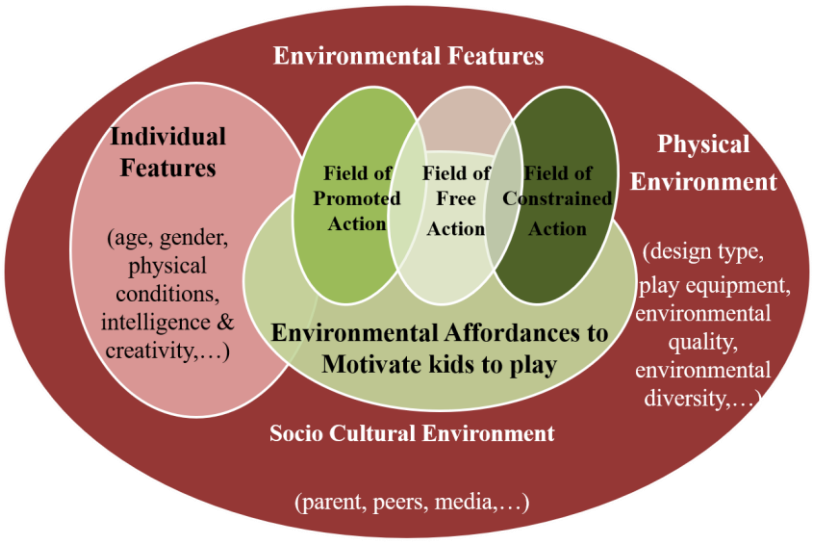


**Fig 6.** Environmental Affordance to Motivate Kids to Play (EAMKP) (Hosseini, 2021)

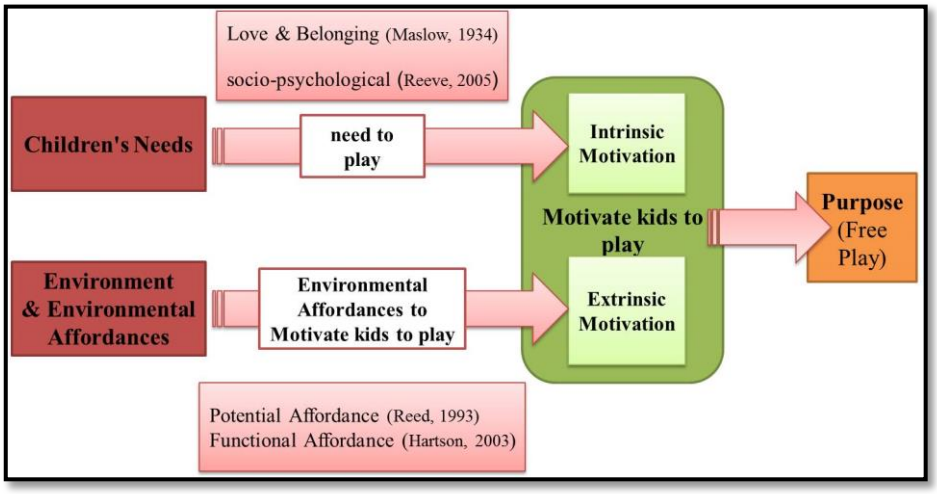


**Fig 7.** Kids' Motivation to Play in the Physical Environment (Hosseini, 2021)

In a test about the development of motivation to play, parsons (2016) have found that children who often play in nature have shown significant differences in balancing and harmonizing; because the development of motivation in outdoor natural play spaces is much more positive than traditional one [36]. Barrett and Barrett research, also distinguish between motor skills, motivation and social behaviors in different people. In general, studies have shown that children with a lower motivation level offer less social interaction [37].

According to William Brown and colleagues, the spontaneity of children in strengthening their social ties is very important. Children play symbolic games in which they play… have a stronger incentive than other children who are less interested in social interactions. Because their social activities are at a higher level Such a function is to some extent dependent on the characteristics of the game space in which the children are active and also dependent on the individual motive motor [38].

## 5. CONCLUSION

All psychologists of child development believe that the main core of developmental theories is the interaction of an individual with the environment. Based on the empirical studies of children's outdoor activities, the environment affects the child's behavior; so that by changing the environment, the child's behavior will change. Therefore, enriching and improving the quality of the environment can affect the child's individual and social development.

To answer the research questions about the kids' interaction with the environment through the environmental affordances and the factors affecting environmental affordances to motive kids to play (EAMKP), the research results showed that children tend to the physical environment in order to satisfy the play need as a factor of intrinsic motivation. On the other hand, the physical environmental stimuli, as a factor of extrinsic motivation, have an important role in kids' motivation to free play. Regarding the theory of affordances (1979), the final result is creating environmental affordances called environmental affordances to motivate kids to play (EAMKP). To be more accurate, the quality of the elements and physical components of the environments as a factor of extrinsic motivation will encourage kids to play and as a result, will create or increase their motivation to play in the environment. The final result will transform the environment into a playful environment for kids. Individual features, physical, and socio-cultural environments are also considered as effective factors in kids' play.

In order to enhance the research findings, it is suggested that the effective architectural and psychological indicators in creating various environmental affordances be examined so that an important step can be taken to improve the quality of the environment in order to create and increase the kids' motivation to play.

## REFRENCES


Aziz, N. F., & Said, I. (2012). The Trends and Influential Factors of Children's Use of Outdoor Environments: A Review. *Procedia - Social and Behavioral Sciences*, *38*, 204-212. https://doi.org/https://doi.org/10.1016/j.sbspro.2012.03.341

Azlina, W., & S, Z. A. (2012). A Pilot Study: The Impact of Outdoor Play Spaces on Kindergarten Children. *Procedia - Social and Behavioral Sciences*, *38*, 275-283. https://doi.org/https://doi.org/10.1016/j.sbspro.2012.03.349

Bar-Haim, Y., & Bart, O. (2006). Motor Function and Social Participation in Kindergarten Children. *Social Development*, *15*, 296-310. https://doi.org/10.1046/j.1467-9507.2006.00342.x

Brown, W., Pfeiffer, K., McIver, K., Dowda, M., Addy, C., & Pate, R. (2009). Social and Environmental Factors Associated With Preschoolers' Nonsedentary Physical Activity. *Child development*, *80*, 45-58. https://doi.org/10.1111/j.1467-8624.2008.01245.x

Cosco, N. (2006). Motivation to move : physical activity affordances in preschool play areas.

Daneshgarmoghaddam, G., & Eslampour, M. (2013). Study of the Affordance Theory Based on Gibson's Point of View and Its Effects on Studies of Human-Built Environment. *Armanshahr Architecture and Urban Design*, *5*(9), 14.

Dankiw, K. A., Tsiros, M., Baldock, K., & Kumar, S. (2020). The impacts of unstructured nature play on health in early childhood development: A systematic review. *PLoS ONE*, *15*.

Fjørtoft, I. (2001). The Natural Environment as a Playground for Children: The Impact of Outdoor Play Activities in Pre-Primary School Children. *Early Childhood Education Journal*, *29*(2), 111-117. https://doi.org/10.1023/A:1012576913074

Fjørtoft, I., & Sageie, J. (2000). The natural environment as a playground for children: Landscape description and analyses of a natural playscape. *Landscape and Urban Planning*, *48*(1), 83-97. https://doi.org/https://doi.org/10.1016/S0169-2046(00)00045-1

Gibson, J. J. (1979). *The Ecological Approach to Visual Perception: Classic Edition*. Houghton Mifflin.

Greeno, J. (1994). Gibson's affordances. *Psychological review*, *101 2*, 336-342.

Hasan Beiglou, B. (2001). *Growth Psychology*. Saramad Kavosh.

Heft, H. (1988). Affordances of children's environments: A functional approach to environmental description. *Children's Environments Quarterly*, *5*, 29-37.

Hosseini, A. (2021). *Design Principles of the Middle Area for Kids' Motivation to Play in Mid-rise Residential Complex of Isfahan (Case study: Medium Scale & Gated Residential Complexes)* Art University of Isfahan]. Isfahan, Iran.

Huang, J.-H., Hipp, J. A., Marquet, O., Alberico, C., Fry, D., Mazak, E., Lovasi, G. S., Robinson, W. R., & Floyd, M. F. (2020). Neighborhood characteristics

associated with park use and park-based physical activity among children in low-income diverse neighborhoods in New York City. *Preventive Medicine*, *131*, 105948. https://doi.org/https://doi.org/10.1016/j.ypmed.2019.105948

Hussein, H. (2012). The Influence of Sensory Gardens on the Behaviour of Children with Special Educational Needs. *Procedia - Social and Behavioral Sciences*, *38*, 343-354. https://doi.org/https://doi.org/10.1016/j.sbspro.2012.03.356

Kahyaoğlu, H. A. (2014). Play as Seen by Children and Pre-school Teachers in Turkey. *Procedia - Social and Behavioral Sciences*, *152*, 149-153. https://doi.org/https://doi.org/10.1016/j.sbspro.2014.09.172

Kyttä, M. (1997). Children's independent mobility in urban, small town, and rural environments. *Growing Up in a Changing Urban Landscape*, 41-52.

KyttÄ, M. (2002). AFFORDANCES OF CHILDREN'S ENVIRONMENTS IN THE CONTEXT OF CITIES, SMALL TOWNS, SUBURBS AND RURAL VILLAGES IN FINLAND AND BELARUS. *Journal of Environmental Psychology*, *22*(1), 109-123. https://doi.org/https://doi.org/10.1006/jevp.2001.0249

Kyttä, M. (2003). Children in Outdoor Contexts. Affordances and Independent Mobility in the Assessment of Environmental Child Friendliness. *951-22-6858-2*.

Kyttä, M. (2004). The extent of children's independent mobility and the number of actualized affordances as criteria for child-friendly environments. *Journal of Environmental Psychology*, *24*(2), 179-198. https://doi.org/https://doi.org/10.1016/S0272-4944(03)00073-2

Lang, J. T. (1987). *Creating architectural theory: the role of the behavioral sciences in environmental design*. Van Nostrand Reinhold Co.

Mahjoor, S. (2013). *Psychology of Play*. Virayesh.

Mardomi, k., & Ebrahimi, S. (2012). Play Motivation: strategy of designing Learning environment. *Iranian Scientific Association of Architecture and Urbanism*, *5*, 12.

Molina-García, J., Campos, S., García-Massó, X., Herrador-Colmenero, M., Gálvez-Fernández, P., Molina-Soberanes, D., Queralt, A., & Chillón, P. (2020). Different neighborhood walkability indexes for active commuting to school are necessary for urban and rural children and adolescents. *International Journal of Behavioral Nutrition and Physical Activity*, *17*(1), 124. https://doi.org/10.1186/s12966-020-01028-0

Moore, R., & Young, D. (1978). Childhood Outdoors: Toward a Social Ecology of the Landscape. In I. Altman & J. F. Wohlwill (Eds.), *Children and the Environment* (pp. 83-130). Springer US. https://doi.org/10.1007/978-1-4684-3405-7_4

Moore, R. C. (1986). *Childhood's domain : play and place in child development / Robin C. Moore*. Croom Helm.

Othman, S., & Said, I. (2012). Affordances of Cul-de-sac in Urban Neighborhoods as Play Spaces for Middle Childhood Children. *Procedia - Social and Behavioral Sciences*, *38*, 184-194. https://doi.org/https://doi.org/10.1016/j.sbspro.2012.03.339

Parsons, A. (2011). Young Children and Nature: Outdoor Play and Development, Experiences Fostering Environmental Consciousness, And the Implications on Playground Design.

Piaget, J. (1951). *Play, Dreams and Imitation in Childhood*. Routledge and Kegan Paul.

Reed, E. S. (1993). The intention to use a specific affordance: a conceptual framework for psychology. In R. H. Wozniak & K. W. Fischer (Eds.), *Development in Context. Acting and Thinking in Specific Environments*. NJ: Lawrence Erlbaum Associates.

Said, I. (2007). Architecture for children: Understanding children perception towards built environment.

Said, I. (2012). Affordances of Nearby Forest and Orchard on Children's Performances. *Procedia - Social and Behavioral Sciences*, *38*, 195-203. https://doi.org/https://doi.org/10.1016/j.sbspro.2012.03.340

Sandseter, E. B. H. (2009). Affordances for Risky Play in Preschool: The Importance of Features in the Play Environment. *Early Childhood Education Journal*, *36*, 439-446.

Shafaei, M. (2017). Design patterns of kids' spaces Focusing on enhancing their creativity [Research Paper]. *International Journal of Architectural Engineering & Urban Planning*, *27*(1), 19-27. https://doi.org/10.22068/ijaup.27.1.19

Umstattd Meyer, M. R., Bridges, C. N., Schmid, T. L., Hecht, A. A., & Pollack Porter, K. M. (2019). Systematic review of how Play Streets impact opportunities for active play, physical activity, neighborhoods, and communities. *BMC Public Health*, *19*(1), 335. https://doi.org/10.1186/s12889-019-6609-4

Veitch, J., Bagley, S., Ball, K., & Salmon, J. (2006). Where do children usually play? A qualitative study of parents' perceptions of influences on children's active free-play. *Health Place*, *12*(4), 383-393. https://doi.org/10.1016/j.healthplace.2005.02.009

Vygotsky, L. S. (1967). Play and its role in the mental development of the child. *Soviet Psychology*, *12*, 16.

Vygotsky, L. S. (1978). *The Role of Play in Development. In: Mind in Society*. MA: Harvard University Press. Cambridge.

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