

PLAY, THEORIES OF PLAY, AND SELF-DETERMINATION: AN INTEGRATED PERSPECTIVE ON PLAYGROUNDS

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ABSTRACT

Play is crucial for child development and enhances emotional, cognitive, social, creative, and physical growth. Playgrounds represent one of the most vital environments for facilitating these developmental processes. Recent design developments have started incorporating psychological theories to meet children's needs. Playgrounds represent one of the most fundamental environmental settings facilitating such developmental processes. Recent advancements in playground design have rarely incorporated psychological theories to cater to the needs of children. This paper examines the potential for applying self-determination theory to the design of playgrounds. Also, this paper considers how the principles of play, as outlined by Huizinga, Sutton-Smith, Caillois, and Bateson, can be applied to create an enriching and supportive environment. The paper points out what is unique about the characteristics and functions of play and further indicates a requirement for various play experiences. The paper also examines the explicit application of self-determination theory (SDT) in playground design, emphasizing how its features can foster autonomous decision-making and skill development. The paper concludes by outlining the potential advantages of SDT-based playground designs. Further research will be required to find an optimal design that promotes all aspects of play. By understanding and considering the various aspects of play, it is possible to design playgrounds that encourage children's growth and well-being, as these provide the foundation for healthy and happy childhoods.

Keywords: Play, Play Theories, Child development, Playgrounds, Self-Determination Theory (SDT).

Type: Research paper

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OYUN, OYUN KURAMLARI VE ÖZ BELİRLEME: OYUN ALANLARINA BÜTÜNCÜL BİR BAKIŞ

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ÖZET

Oyun, çocuk gelişimi için son derece önemlidir ve duygusal, bilişsel, sosyal, yaratıcı ve fiziksel büyümeyi geliştirir. Oyun alanları, bu gelişimsel süreçleri kolaylaştırmak için en gerekli çevrelerden birini temsil eder. Son yıllardaki tasarım gelişmeleri, çocukların ihtiyaçlarını karşılamak için psikolojik teorileri birleştirmeye başlamıştır. Oyun alanları, bu tür gelişimsel süreçleri kolaylaştıran en temel çevresel ortamlardan birini temsil eder. Oyun alanı tasarımındaki son gelişmeler, çocukların ihtiyaçlarını karşılamak için nadiren psikolojik teorileri de içermektedir. Bu makale, kendi kaderini tayin teorisinin oyun alanlarının tasarımına uygulanma potansiyelini incelemektedir. Ayrıca, Huizinga, Sutton-Smith, Caillois ve Bateson tarafından özetlenen oyun ilkelerinin zenginleştirici ve destekleyici bir ortam yaratmak için nasıl uygulanabileceği de ele alınmaktadır. Makale, oyunun özellikleri ve işlevleri hakkında benzersiz olan şeylere işaret etmekte ve ayrıca çeşitli oyun deneyimlerinin gerekliliğine işaret etmektedir. Makale ayrıca, öz-belirleme teorisinin (SDT) oyun alanı tasarımında açık bir şekilde uygulanmasını incelemekte ve özelliklerinin özerk karar verme ve beceri gelişimini nasıl teşvik edebileceğini vurgulamaktadır. Makale, SDT temelli oyun alanı tasarımlarının potansiyel avantajlarını özetleyerek sona ermektedir. Oyunun tüm yönlerini destekleyen en uygun tasarımı bulmak için daha fazla araştırma yapılması gerekecektir. Oyunun çeşitli yönlerini anlayarak ve dikkate alarak, çocukların büyümesini ve refahını teşvik eden oyun alanları tasarlamak mümkündür, çünkü bunlar sağlıklı ve mutlu çocuklukların temelini oluşturur.

Anahtar Kelimeler: Oyun, Oyun Kuramları, Çocuk Gelişimi, Oyun Parkları, Öz Belirleme Kuramı (SDT).

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1. INTRODUCTION

Participation in play is vital for children to improve their emotional, physical, social, creative, and cognitive development. It is necessary to have playgrounds that provide children with specific areas to encourage and stimulate their development. Several studies highlight play's crucial significance in children's learning and development. Piaget (1962) stated that play is essential for cognitive development, while Vygotsky (1978) argues that social games develop language, self-regulation, and problem-solving skills. Parten (1932) argues that different types of play (solitary, parallel, cooperative, etc.) contribute to social development. Smilansky (1968) shows that sociodramatic play provides cognitive and social benefits. Brown (2009) emphasizes that play is vital for brain development and creativity, while Gray (2011) associates a lack of free play with increased anxiety in children. Whitebread et al. (2012) also highlight the critical role of play in developing social skills and self-regulation. Playgrounds are crucial in promoting comprehensive development as they develop children's critical thinking ability, social skills, and physical development.

Current developments in playground design are increasingly influenced by various psychological theories that address children's developmental needs in more advanced and effective ways. One of the essential concepts in this field is self-determination theory (SDT), which highlights the importance of three basic psychological needs (autonomy, competence, and relatedness) in promoting intrinsic motivation, commitment, and well-being.

Recent improvements in the design of playgrounds include principles from various psychological theories to make them more responsive to the developmental needs of children. The self-determination theory highlights the significance of autonomy, relatedness, and competence in encouraging intrinsic motivation and overall well-being.

SDT-based elements in playground design could be a promising way to ensure the establishment of inviting and inclusive areas that support children's intrinsic need for play. This article explores how three elements of autonomy theory - autonomy, competence, and relatedness - can contribute to playground design and enhance children's play experiences.

2. THEORETICAL FOUNDATIONS OF PLAY

Several researchers, such as John Huizinga, Brian Sutton-Smith, Gregory Bateson, and many more, have studied the nature and definition of play over time.

Huizinga (1955) defines play in his book *Home Ludens* as:

"Summing up the formal characteristics of play, we might call it a free activity standing quite consciously outside "ordinary" life as being "not serious," but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained. It proceeds within its proper boundaries of time and space according to fixed rules and in an orderly manner. It promotes

the formation of social groupings which tend to surround themselves with secrecy and to stress their difference from the everyday world by disguise or other means." (Huizinga, 1955, p.13).

Johan Huizinga argues that play is a fundamental form of cultural expression essential for the development of civilization (Huizinga, 1955). He states that play is crucial in cultural development as a purposeful and intrinsically motivated activity. His work emphasizes the social and cultural dimensions of play, claiming that it serves as a foundation for human society.

Huizinga (1955) outlines several basic characteristics of play that provide insights into basic human behavior. First, he emphasizes the non-serious nature of play, claiming that it exists outside the realm of seriousness. This separation from the obligations of daily life allows individuals to escape the demands of work and duty.

Huizinga also points out the importance of freedom in play. He argues that an activity can only be considered play if it is performed voluntarily. As soon as an activity is imposed or forced, it is no longer playful. The voluntary nature of play is thus essential to the experience, as it allows the individual to engage freely and willingly.

Finally, Huizinga emphasises the role of 'fun' as a core element of play. He argues that pleasure and enjoyment are integral to the concept of play. According to Huizinga, fun is not a mere by-product but the defining characteristic of play itself.

According to Huizinga, the most critical characteristic of play is its non-serious and free character, accompanied by a pleasure factor. Based on these concepts of non-seriousness, freedom, and pleasure, Huizinga examines the concept of play and tries to understand in more depth the individual perceptions and inner impulses that make play such an important and enjoyable part of human existence.

Brian Sutton-Smith's work on play has significantly shaped our understanding of the role and importance of play in human and animal behavior. Early in his career, around 1972, Sutton-Smith initially viewed play as a freeing experience in which players temporarily become someone else (Sutton-Smith, 1972). This perspective emphasized the transformative and liberating nature of play, allowing individuals to explore different aspects of their identity and behavior.

In his 1986 book "Toys as Culture", Sutton-Smith put forward five basic ideas to define play. First, he argues that play is a primitive form of communication, with animals and humans using play signals such as funny noises, tail wagging, and laughter to interact. Secondly, he argued that play is a primitive way of expressing oneself, which has developed unique styles and ways of communicating. Thirdly, he described play as a paradoxical form of communication and expression in which individuals convey what they typically cannot express in everyday life. Fourth, he argued that creating schematic rules in play involves both the creation and the invasion of everyday rules, creating a dynamic state of imbalance and equilibrium. Finally, he suggested that play serves as a primitive form of symbolization, representing underlying motivations and serving as a vehicle for expressing deeper needs and desires (Sutton-Smith, 1986).

Later in his career, particularly in 1999, Sutton-Smith tried to define play more extensively. In the context of the play, people create a mental environment defined by a sense of balance and normality, known as "imaginary equilibrium". Within this artificially created world, individuals can interact with situations that evoke a sense of imbalance or difficulty, referred to as "states of disequilibrium". Thus, play functions as a means by which individuals can safely explore different scenarios and emotions, enhancing the ability to acquire coping strategies for real-world difficulties. This process leads to pleasurable effects such as excitement and optimism. Many forms of play, including fantasy, skill, imitation, humor, risk, competition, and celebration, have been articulated by Sutton-Smith (1999). These forms of play are all intentional simulations of paradoxical diversity. The author also emphasized the binary relations present in play, including the dichotomy between safety and risk, as well as the distinction between voluntary and involuntary actions.

According to Sutton-Smith, play is characterized by its complex nature, its ability to communicate and express itself, and its role in imitating and addressing the contradictory aspects of life. His work emphasizes the importance of play as a fundamental element of human and animal behavior, vital for communication, expression, and adaptation.

Caillois (1961) identifies four main categories of play: agon, alea, mimicry, andilinx. Agon, or competitive play, involves activities in which participants compete to outperform each other, such as sports or academic competitions. These experiences help develop skills such as strategy and endurance, foster a sense of achievement, and prepare individuals for real-life challenges. Alea, or gambling, emphasizes the role of unpredictability and luck, as seen in lotteries and dice games. This form of play teaches participants to accept uncertainty and manage risk effectively. Mimicry involves role-playing and imitation, encouraging creativity and empathy through activities such as acting or pretend play. It enhances social skills and emotional intelligence by allowing individuals to explore different identities and perspectives. Finally,ilinx refers to activities that create sensory experiences, such as spinning or bungee jumping, which provide physical excitement and allow participants to push their sensory limits while enjoying physical sensations (Caillois, 1961). Each category provides unique developmental benefits that contribute to the comprehensive development of individuals in various areas of life.

Gregory Bateson presents play as a metacommunicative process that facilitates children's understanding of social interactions and communication through playful activities (Bateson, 1972). This concept emphasizes the importance of play in enabling children to conduct social experiments and gain a deeper understanding of the limits and expectations of their behavior.

All these theories (Table 1) emphasize the diverse aspects of play, revealing its essential role in personal development and the social environment. Play is crucial for children, as it is the primary way of exploring the world, developing cognitive and social abilities, and building emotional resilience. Through play, children gain the ability to engage in social interactions, participate in problem-solving activities, and express their creativity. A comprehensive understanding of play underscores its importance as a fundamental component in the fabric of human civilization, nurturing creativity, social harmony, and individual development from an early age.

Table 1. Key concepts of play theories

| Huizinga | Caillois | Garvey | Vygotsky | Sutton-Smith |
|-----------------------|-------------------|---------------------|---------------------|--------------------|
| 1955 | 1961 | 1977 | 1978 | 1972 and 1999 |
| Free | Freedom | Free | Freedom | Freedom |
| Non-Serious | Voluntary | Spontaneity | Symbolic Play | Ambiguity |
| Absorbing | Pleasure | Creativity | Role-taking | Variety |
| No Material Interest | Imitation | Exploration | Social Interaction | Playfulness |
| Boundaries | Role-playing | Social Interaction | Imagination | Freedom |
| Fixed Rules | Governed by rules | Role-playing | Developmental Stage | Competence |
| Social Groupings | Freedom | Flexibility | Self-Regulation | Social Interaction |
| Pleasure | Separation | Pleasure | Constructivism | Expression |
| Voluntary | Uncertainty | Learning | Purposeful Activity | Cultural Context |
| Outside ordinary life | Unproductive | Imitation | no-Boundaries | Pleasure |
| Pretend | | Boundaries | | Transformation |
| | | no superficial goal | | |

3. CHARACTERISTICS OF PLAY

Play has distinct characteristics that set it apart from other activities and make it a crucial and unique element of human development, especially for children. These characteristics include voluntary participation and intrinsic motivation, stimulation of imagination and creativity, adaptability and initiative, and active engagement. These characteristics of play are:

Voluntary and Intrinsically Motivated

Play is typically a voluntary and intrinsically motivated activity. According to Sutton-Smith (2009), people engage in play because they find it intrinsically enjoyable and satisfying rather than because of extrinsic motivation or obligation. Intrinsic motivation is important because it promotes a sense of independence and personal fulfillment, which are essential for healthy psychological development. Research also shows that intrinsically motivated activities such as play are associated with high levels of creativity, persistence, and general well-being (Deci & Ryan, 2000).

Imaginative and Creative

Play often requires the use of imagination and creativity. Children can explore new concepts and potentials by creating fictional realms, characters, and situations in play (Bodrova & Leong, 2005). The creative element of play serves both as a source of pleasure and an important factor in developing cognitive and social abilities. It enhances children's ability to think abstractly, tackle challenges, and develop creativity. According to Vygotsky (1978), play offers a different environment for children to develop advanced cognitive abilities such as critical thinking, logical reasoning, and empathizing with others' perspectives.

Flexible and Spontaneous

Play is defined by its ability to adapt and occur without prior planning. The activity is characterized by the absence of rigid rules or boundaries, allowing participants to freely adjust and change according to their preferences (Huizinga, 1955). This flexibility allows children to engage in many roles and arrangements, developing their capacity to adapt to unfamiliar circumstances and to think creatively. The natural spontaneity of play allows it to take place at any time and place, making it easily accessible for both learning and enjoyment. The natural adaptability of play develops flexibility and problem-solving abilities as children direct and modify their play to encounter new challenges or ideas (Bateson & Martin, 2013).

Active Participation

Play is a dynamic process that requires full engagement of the body, mind, and emotions. It requires active rather than passive participation and contact with the environment or friends (Pellegrini & Smith, 1998). Active involvement in play improves children's physical coordination, cognitive abilities, and emotional management. Furthermore, playing with others encourages social contact and cooperation, further developing social and communication skills. Research shows that play is essential for improving executive processes, including working memory, inhibitory control, and cognitive flexibility (Diamond, 2013).

Social Interaction and Communication

Play involves social interaction and provides a context for children to develop and improve their communication skills. Children learn to share, negotiate, take turns, and solve problems through cooperative play. These interactions are vital in developing social skills and emotional intelligence (Göncü & Gaskins, 2007). Role-playing and pretend play enables children to explore different social roles and viewpoints, fostering empathy and understanding of others.

Exploration and Risk-taking

Engaging in play encourages exploration and risk-taking in a safe environment. In the play, children often push the limits of their physical abilities, try unfamiliar activities, and explore new environments. According to Sandseter (2009), developing confidence and power over their bodies and environment is crucial. Play that involves risk-taking enables young people to gain insight into their abilities, assess potential dangers, and develop effective methods to cope with challenges.

Emotional Expression and Regulation

Engaging in play provides children with an innate means of regulating their emotions and fostering the ability to regulate and control them. In a safe and stimulating environment, children can use play to express emotions such as joy, excitement, fear, and frustration. Russ's 2004 study supports the understanding that play in children is greatly influenced by the development of emotions and the ability to communicate, understand, and control their emotions.

Cognitive Development and Learning

Play is an effective tool to enhance cognitive development and learning. It enables children to explore topics, conduct cause-and-effect experiments, and develop problem-solving skills. Engaging in fun learning activities provides a deeper understanding of ideas and stimulates the innate drive to acquire

knowledge (Hirsh-Pasek et al., 2009). Play enhances many aspects of cognitive development, including verbal proficiency, numerical cognition, and logical inference.

4. FUNCTIONS OF PLAY

Play serves critical roles that contribute to children's cognitive, physical, social, and emotional development. Cognitively, play supports problem-solving, creativity, and abstract thinking. Vygotsky (1978) stated that play develops high-level cognitive abilities such as critical thinking, while Piaget (1962) emphasized the role of play in environmental exploration. Physically, active play supports motor skills and general health (Pellegrini & Smith, 1998). Socially, play helps children develop communication, cooperation, and conflict-resolution skills (Parten, 1932). Emotionally, play builds endurance and emotional intelligence by providing an outlet for expression and emotional regulation (Brown, 2009; Hughes, 2010). Therefore, play is crucial for the general well-being of children.

Cognitive Development

Play develops cognitive functions such as problem-solving, critical thinking, and imagination. Play enables children to explore new concepts, test various approaches, and develop their understanding of the world. Sutton-Smith (2009) argues that play activities facilitate children's engagement in abstract thinking and support the development of critical cognitive abilities that underpin academic learning. Engaging in activities such as building with blocks, solving complex puzzles, and participating in role-play scenarios stimulates children's cognitive abilities and develops their creativity and ingenuity.

Social Development

Play increases the child's chances of social contact, cooperation, and communication. Play teaches individuals about negotiation skills, the act of sharing, and the practice of collaboration, which supports the development of social skills and interpersonal connections. Corsaro (2015) emphasizes that play is an essential tool for children to learn the rules and values of the society in which they live, to develop empathy, and to grasp social tasks. Participating in group games and cooperative play activities, such as team sports and cooperative board games, develops children's skills in cooperation, conflict resolution, and friendship building.

Emotional Development

Play provides a safe and stimulating environment for children to express and manage their emotions. Play promotes emotional resilience and well-being by teaching children coping mechanisms for dealing with stress, anxiety, and other challenging emotions. Erikson (1963) emphasizes the importance of play for children to effectively regulate their emotions and gain a sense of autonomy over their environment, which is essential for emotional development. Role-play allows children to process events, express their feelings, and explore various emotional responses.

Physical Development

Participating in physical activities helps develop gross and fine motor skills, coordination, and overall physical health. It also promotes healthy growth and supports the development of spatial awareness. Gabbard (2015) states that engaging in physical activities through play facilitates the development of

strength, endurance, and flexibility, which are crucial for maintaining optimal physical well-being. Activities such as running, climbing, and playing sports develop physical abilities and support the growth of spatial and bodily awareness.

5. TYPES OF PLAY IN PLAYGROUNDS

Environmental and social factors determine children's opportunities for play. According to Moore (1986) and Kytta (2003), social, cultural, and physical factors significantly influence children's experiences and development. However, living in urban areas often has negative consequences for children. Chudakoff (2007) noted that unstructured play spaces for children are diminishing, which is one of the many problems in urban areas.

Children face significant barriers to outdoor play opportunities due to traffic congestion, motorized vehicles, and densely populated urban areas. Research shows that there has been a significant increase in screen time and participation in computer games among children and adolescents in recent years. For example, Twenge and Campbell (2018) reported that screen time, including video games, has increased significantly, especially with the spread of smartphones and tablets. Similarly, a report by Rideout (2015) found that children aged 8-18 spend more time on entertainment media, including computer games, than any other activity except sleep. This trend has raised concerns about the impact of excessive screen time on children's physical and mental well-being. Playgrounds are the only designated space for outdoor play activities.

Whitebread et al. (2012) classified play as physical, social, symbolic, fantasy, and rule-based, which supports children's development. Physical play includes activities such as climbing, jumping, and rolling. Playing with objects involves exploring and building. Symbolic play involves the use of visual media and language. Pretense/socio-dramatic play consists of role-playing and imaginary scenarios. Rule-based play involves sharing, taking turns, and teaching cooperation.

Playground design plays an important role as it provides a variety of play styles, such as physical, social, constructive, creative, and organized play. A well-designed playground not only provides a variety of opportunities for play but also significantly influences children's development in multiple domains. Playgrounds that thoughtfully incorporate these different classifications of play can promote physical health through active movement, develop social skills through cooperative interactions, encourage imagination and creativity, and promote cognitive growth through problem-solving and understanding rules. Understanding these classifications and their impact on children's development is critical when designing appropriate playgrounds, as it ensures that the environment supports general growth and meets the developmental needs of all children.

Physical play is an activity that helps to develop motor skills and improves physical well-being. These activities include running, climbing, swinging, and jumping. (Figure 1) Playgrounds designed to encourage physical exercise often include slides, climbing walls, monkey bars, and large areas that allow unrestricted movement. Participating in physical activities improves children's physical strength, coordination, and

endurance development. Research shows that maintaining a regular physical exercise routine is essential to promote healthy growth and reduce the risk of childhood obesity (Ginsburg, 2007).



Figure 1. ICON, 2011 Australian International Design Awards. (<https://www.fitness-gaming.com/news/schools/icon-electronic-playgrounds-combine-active-outdoor-play-with-interactive-gaming.html>)

Social play involves interaction and participation between children and their peers. During play, children acquire basic cooperation, communication, and conflict-resolution skills. Playgrounds can promote social interaction by incorporating elements encouraging group participation, such as multi-user swings, group seesaws, and cooperative games. (Figure 2) Social play is crucial for developing children's social skills and emotional intelligence. It enables them to understand and navigate social hierarchies and build relationships with others (Gray, 2013).



Figure 2. PlayForm7, Singapore. 2018 International Design Awards (IDA) Silver Winner. (<https://www.facebook.com/photo/?fbid=5863425027041976&set=a.122929964424873>)

Constructive play creates or builds something that helps children develop problem-solving skills and spatial awareness. Playgrounds often include sandboxes, building blocks, and water play areas to encourage constructive play. (Figure 3) Engaging in such play enhances the development of creativity and logical thinking as children investigate different materials and structures (Hirsh-Pasek & Golinkoff, 2003).

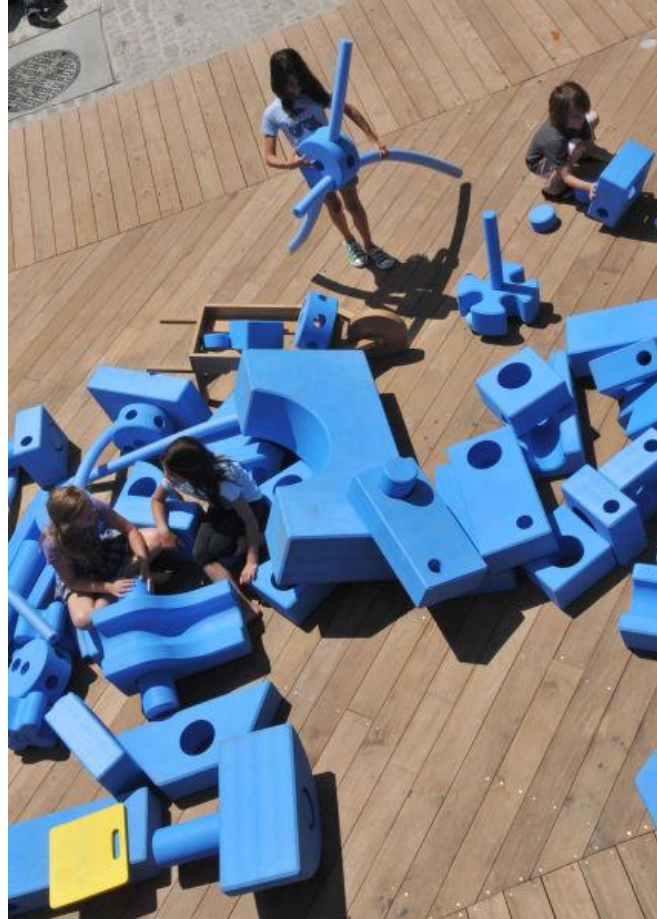


Figure 3. Children's Museum and Library Imagination Playground.
(<https://www.nycgovparks.org/parks/imagination-playground>)

Imaginative play, sometimes called pretend play, supports cognitive and language development by allowing children to participate in many roles and situations. Playgrounds can foster imaginative play by including themed areas, play structures, and artifacts that stimulate imagination. Such play supports children to express themselves, understand different perspectives, and develop storytelling skills (Berk, 2006).

Games with rules, such as sports or board games, teach children about organization, strategy, and fair play. Playground facilities that support this type of play include sports fields and particular play areas. Participating in games with specific rules allows children to develop the capacity to follow instructions,

develop strategic thinking skills, and gain direct exposure to the dynamics of competition and cooperation (Piaget, 1962).

Understanding the different types of play and their benefits is crucial to designing playgrounds that effectively support children's development (Table 2). Playgrounds are more than just recreational spaces; they provide essential environments for children to engage in activities that promote physical, cognitive, emotional, and social growth. The classifications of play explored earlier serve as the foundation for applying relevant theories in playground design.

Table 2. Types of play

| Mildred B. Parten 1932 | Sara Smilansky 1968 | Bob Hughes 1996 | Whitebread 2012 |
|------------------------------|-------------------------------|-----------------------|------------------------------|
| Unoccupied play (0-3 months) | Functional Play | Communication Play | Physical Play |
| Solitary play (0-2,5 years) | Symbolic Play / Dramatic Play | Creative Play | Play with objects |
| Onlooker play (2,5-3 years) | Constructive Play | Deep Play | Symbolic Play |
| Parallel play (2,5-4 years) | Games with Rules | Dramatic Play | Pretense/Socio-dramatic Play |
| Associative play (3-4 years) | | Exploratory Play | Games with rules |
| Social play (4-6+ years) | | Imaginative Play | |
| | | Locomotor Play | |
| | | Mastery Play | |
| | | Object Play | |
| | | Recapitulative Play | |
| | | Rough and Tumble Play | |
| | | Social Play | |
| | | Socio-dramatic Play | |
| | | Symbolic Play | |

The next part will explore how these concepts translate into practical design strategies that create enriching play environments. Through play, children develop social skills, problem-solving abilities, and creativity, reinforcing its importance as a vital component of human development from an early age. Thoughtfully designed playgrounds can nurture creativity, foster social harmony, and support individual growth.

6. APPLICATION OF PLAY THEORIES IN PLAYGROUND DESIGN

The application of game theories to playground design involves translating abstract concepts into tangible elements that support the overall development of children. The cultural significance of play is emphasized as expressed by Johan Huizinga in his book *Homo Ludens*. Huizinga suggests that playgrounds should be designed to encourage creative and symbolic play and integrate cultural narratives. Storytelling and role-playing can be encouraged in themed playgrounds, which can promote children's understanding of different cultures and foster creativity (Huizinga, 1955).

Brian Sutton-Smith's analysis of the ambiguity of play emphasizes the need for adaptable playground equipment that accommodates different play styles. Playgrounds should include many components that

encourage physical, social, productive, and creative play. For example, providing a variety of climbing structures, sandboxes, and pretend play areas can cater to many forms of play, allowing children to explore their interests and developmental needs (Sutton-Smith, 1997).

Roger Caillois' classification of play, which includes agon (competitive play), alea (chance-based play), mimicry (role-play) and ilinx (sensory play), can enhance playground design by including elements that support each type of play. For example, sports fields and climbing walls cater to competitive play known as agon, while spinning tops and seesaws provide sensory experiences known as ilinx. Playhouses and costume areas can facilitate the act of assuming different roles, while game boards and puzzles can incorporate unpredictability (alea) (Caillois, 1961).

By designing interactive features that encourage cooperative play and facilitate social learning, we can bring Gregory Bateson's concept of play as a meta-communicative process to life. Play structures that require collective engagement, such as large building blocks or cooperative activities, develop children's communication, negotiation, and collaboration skills. These interactive components facilitate the development of social skills and increase the overall enjoyment of play (Bateson, 1972).

7. APPLICATION OF SDT TO PLAYGROUND DESIGN

Self-Determination Theory (SDT) is a psychological framework developed by Edward L. Deci and Richard M. Ryan and first introduced in the mid-1980s. Their major theoretical work came with the publication of *Intrinsic Motivation and Self-Determination in Human Behaviour* in 1985. The aim of SDT is to understand human motivation and behavior by examining the intrinsic tendencies for personal development and the basic psychological needs that support self-motivation and personality development (Deci & Ryan, 1985; Deci & Ryan, 2000). Individuals have three basic psychological needs: autonomy, competence, and relatedness, according to the core principles of SDT.

Designing for Autonomy

Autonomy refers to the desire to have responsibility for one's activities and freedom of choice. It reflects the understanding that one's actions are justified and aligned with personal interests and beliefs. In the context of child development, promoting autonomy is very important because it helps children develop a sense of self-direction and independence. Playgrounds that support autonomy provide opportunities for children to choose how to participate in play, which encourages their natural motivation and creativity (Vansteenkiste et al., 2020).

Loose parts, defined as moving objects that can be combined in different ways, play a crucial role in encouraging creativity and autonomy (Nicholson, 1971). Whether natural elements such as branches and stones or man-made objects such as tires and ropes, these materials offer children endless opportunities to build, disassemble, and reimagine their play environments. Open-ended play materials and modular equipment enable children to create play scenarios, fostering creativity and decision-making skills (Nicholson, 1971). Additionally, providing various play options allows children to choose freely based on their interests, personalizing their play experiences (Smith & Pellegrini, 2008). This variety enriches the play experience by encouraging exploration, creativity, and independent decision-making (Gray, 2013).

Adventure playgrounds incorporating natural elements such as sand, water, and logs provide unique opportunities for children to manipulate their environment and engage in independent play (Frost, 2010). (Figure 4) By providing a variety of elements for children to explore and adapt, these playgrounds support open-ended play and give children the freedom to determine the direction and nature of their activities.



Figure 4. The Playground at Heiwa no Mori Koen Park (Shiraoi, Japan). ([Mori_Park-Ota_Tokyo_Tokyo_Prefecture_Kanto.html](#))

Playgrounds that promote autonomy allow children to make independent decisions and freely interact with their environment, thus supporting their motivation and development. In this context, key elements in playground design emphasize giving children the opportunity to make choices.

In conclusion, autonomy-supportive playgrounds offer flexible and creative environments where children can act independently. These areas are suitable environments for meeting the developmental needs of children.

Designing for Competence

Competence is the need to believe that one is competent to overcome challenges and complete tasks. People work hard to acquire new skills, become skilled at something, and feel a sense of accomplishment.

To promote competence, playgrounds should include features that encourage and challenge children's physical and cognitive abilities (Fjørtoft, 2004). A variety of equipment, such as climbing structures, balance beams, and interactive panels, facilitates the development of new skills and increases children's self-confidence. Providing progressively complex tasks adapted to various age groups and proficiency levels is essential to ensure that each child feels a sense of achievement and progress (Herrington & Brussoni, 2015).

Playgrounds created with competence in mind should include activities that encourage skill development and problem-solving. For example, obstacle courses with different difficulty levels allow children to assess their physical limits and improve their motor skills (Pellegrini, 2009). Similarly, interactive components such as puzzles or educational panels have the potential to engage children's cognitive capacities and encourage them to think critically and problem-solve while participating.

Furthermore, creating opportunities to engage in risk-taking activities in a safe environment is crucial for developing a sense of competence. By allowing young people to take controlled risks, such as climbing a slightly higher structure or maintaining their balance on a thin beam, they develop the ability to assess their physical skills, which improves not only their physical skills but also their self-confidence and ability to recover from challenges (Bundy et al., 2009).

Playgrounds should support the development of skills and provide challenges appropriate to a diverse range of ages and ability levels. Playgrounds with different levels of difficulty can develop a sense of competence by creating chances for mastery and gradual skill development. For example, creating settings that allow children to progress from easier to more difficult tasks helps to increase their self-confidence and skill levels.

Designing for Relatedness

Relatedness is the need to be connected to others, to feel belonging, and to engage in meaningful relationships. It means experiencing social conditions where one feels supported, understood, and cared for.

Playgrounds that promote connectedness improve social interaction and communication between children (Chawla, 2015). Play structures are designed to be inclusive, and shared play areas and activities that require teamwork contribute to the development of a strong sense of community and belonging. Playgrounds can increase children's social skills and help their emotional health by creating environments that encourage group play and social interactions (Bundy et al., 2009).

Design elements that encourage social interaction include group swings, multi-person seesaws, and large, open spaces where children can play cooperatively (Frost, 2010). Playgrounds can be intentionally planned to include spaces that facilitate active and passive forms of social interaction. Shaded seating areas and picnic tables can provide children and their caregivers with places to rest and interact with each other, fostering a sense of community among playground users.

Inclusive play equipment is vital to encourage a sense of connection. Playgrounds that enable children of all physical abilities to participate in play, including wheelchair-accessible swings, sensory play panels, and ground-level play features, promote inclusivity and encourage empathy and understanding between children (Herrington & Brussoni, 2015).

Table 3. Play Types and Their Alignment with SDT Principles

| Key Words for Play | Types of Play | Autonomy | Competence | Relatedness |
|--------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Free Activity | Ritual Play Social Play Competitive Play | High: Choice and freedom in play activities. | Medium: Varies by the structure and rules. | High: Encourages social interaction and group dynamics. |
| Non-Serious | Role Play Imaginative Play Creative Play | High: Allows for spontaneous and self-directed activities. | Medium: Competence depends on individual creativity and role execution. | Medium: Often involves collaboration and role-taking. |
| Absorbing | Pretend Play Socio-Dramatic Play Exploratory Play | High: Engages children deeply in their chosen activities. | High: Provides opportunities to master new skills and roles. | Medium: Social interaction is often a key part. |
| No Material Interest | Symbolic Play Dramatic Play Fantasy Play | High: Focus on imagination and internal goals rather than external rewards. | Medium: Competence through skill-building in imaginative scenarios. | Medium: Can involve collaborative storytelling or role-play. |
| Boundaries, Fixed Rules | Games with Rules Rule-Based Play Constructive Play | Medium: Boundaries and rules provide structure, but choices within them support autonomy. | High: Rules and boundaries help develop and measure competence. | Medium: Rules can facilitate or limit social interaction depending on context. |
| Voluntary | Self-Directed Play Unoccupied Play Solitary Play | High: Engages freely chosen activities. | Medium: Competence develops based on personal interest and self-directed goals. | Low: Limited social interaction in solitary play. |
| Pleasure | Functional Play Sensory Play Exploratory Play | High: Activities are inherently enjoyable and chosen freely. | Medium: Pleasurable experiences contribute to skill acquisition. | Medium: Enjoyable activities can include social interactions. |
| Creativity | Construction Play Fantasy Play Imaginative Play | High: Encourages self-expression and imaginative exploration. | High: Mastery of new techniques and creative problem-solving. | Medium: Often involves collaboration and shared imaginative scenarios. |
| Social Interaction | Cooperative Play Associative Play Onlooker Play | Medium: Social play often involves some level of choice and collaboration. | Medium: Opportunities for social skills development and collaborative competence. | High: Directly involves interactions with others and building relationships. |
| Role-taking | Dramatic Play Socio-Dramatic Play Fantasy Play | High: Role play allows children to explore and choose different roles. | Medium: Competence through execution of roles and scenarios. | High: Encourages interaction and collaboration with peers. |

8. CONCLUSION AND FURTHER STUDIES

Playgrounds are necessary for children's overall development as they include areas that encourage their physical, cognitive, social, and emotional growth. The integration of self-determination theory (SDT) with current theories of play has allowed the development of settings that encourage an increase in intrinsic motivation in children, greatly enhancing their abilities and general well-being.

Johan Huizinga's cultural lens emphasizes play as a fundamental aspect of human expression, while Brian Sutton-Smith acknowledges the complexity of play and its variability across contexts. Roger Caillois categorizes play into different genres, and Gregory Bateson's idea of play as meta-communication underlines the multifaceted nature of play and its profound importance in child development. These theoretical insights, when aligned with SDT's emphasis on autonomy, competence, and relatedness, provide a comprehensive framework for playground design. This approach ensures that children are provided with stimulating and nurturing spaces that encourage personal development, creativity, and emotional resilience.

Incorporating Self-Determination Theory into playground design creates a holistic strategy to enhance children's play experiences. When environments are intentionally structured to promote autonomy, competence, and relatedness, they foster deeper engagement, intrinsic motivation, and overall well-being (Ryan & Deci, 2017). These design principles not only support children's developmental needs but also have lasting effects on their self-confidence, curiosity, and ability to navigate social interactions. The theoretical foundation set by SDT underscores the need for continuous research and practical application (Niemi & Ryan, 2009), as the evolving understanding of the role of play in child development requires innovative approaches to designing play spaces (Deci & Ryan, 2000).

By applying these principles, we can create play environments that are not just for fun but become dynamic arenas for learning, creativity, and personal development. These play spaces can significantly enhance children's development as well-rounded, competent individuals ready to thrive in different social, cognitive, and emotional environments.

Further studies could examine the long-term impact of playgrounds designed according to the principles of Self-Determination Theory (SDT) on children's development in areas such as self-regulation, problem-solving, social competence, and emotional well-being.

Such research could provide insight into whether SDT-based playgrounds play a significant role in children's development in these key areas. A crucial element of future research could be measuring and analyzing the extent to which children require SDT principles in their play environments.

This study proposes to use both quantitative and qualitative methods to assess children's needs for autonomy, competence, and relatedness in their daily interactions, particularly in the playground. Given the influence of cultural contexts on play and motivation, comparative research could explore how different cultural values shape the integration of SDT into playground design. The cultural significance of

play, as proposed by Huizinga and Sutton-Smith, indicates that the expression of autonomy, competence, and relatedness may vary across cultural contexts.

Such research would enhance our understanding of the universality and adaptability of SDT principles in playground design across cultures. By examining in detail how these psychological needs affect motivation, engagement, and well-being, this study could provide valuable empirical evidence supporting the importance of SDT in playground design. Furthermore, it would offer insights into how developmental stages and individual differences shape these needs, contributing significantly to educational psychology and the design of optimal play environments.

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