

Emotional Attachments in Children's Toy Design Dimensions and Strategies: A Grounded Theory Approach

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Abstract

Children's emotional attachments to toys foster trust and stability, impacting psychological growth. This study evaluates the concept of emotional attachments in children's toy designs. Employing a grounded theory methodology, it seeks to establish a conceptual framework for understanding the elements and principles of emotional attachments in toys. By shedding light on the factors that develop children's emotional attachments with their toys, this research aims to inform the design and development processes of toys that promote healthy emotional development. The findings suggest that integrating a conceptual model of emotional attachments into the design processes can lead to the creation of toys that facilitate children's holistic growth and offer them positive experiences of emotional connection. Furthermore, the study proposes a conceptual framework for integrating emotional attachment into children's toy design and development processes. This has profound implications for toy designers, teachers, manufacturers, and education researchers aiming to enhance children's emotional well-being through play.

Keywords: Child development psychology, Emotional attachments, Children's toy design, Grounded theory, Conceptual Framework.

1. Introduction

The concept of children's toys represents essential tools for developing children's development, including their cognitive, physical, social, and emotional well-being. Toys contribute to the development of cognitive, motor, socio psychological, emotional, and language skills. Healey and Mendelsohn (2018) emphasized the crucial role of toys in children's mental health. Especially interactive toys, and cultivating emotional growth (Hall et al., 2022).

Gjersoe, Hall, and Hood (2015) argued that children readily imbue their toys with their own mental states, developing significant emotional connections and engaging in anthropomorphic behaviors. This positive emotional attachments to toys are vital for children's mental health and development.

However, despite its importance, the element of emotional attachments remains largely overlooked in the designs of most toys.

Hassinger-Das et al. (2021) pointed out that contemporary children's toys often do not suffice in supporting children's psychological and physical development, with the crucial role of emotional attachments being largely unconsidered. This highlights a critical gap in the current designs process, necessitating an in-depth attention of children's emotional needs and the intentional integration of elements that develop emotional attachments. This perspective emphasizes the urgent need to prioritize emotional attachments in the designs of children's toys, ensuring they effectively cater to the full spectrum of children's developmental requirements.

This study explores the relationship between emotional attachment and toys. By establishing a conceptual framework, it provides valuable insights for incorporating emotional attachment into children's toys. The research integrates definitions and classifications of emotional attachment in toys, analyzes trends and challenges in the field of children's toys, and aims to foster innovation and create impactful toy products. Combining theory and practice, this study offers a new perspective on understanding and applying the concept of emotional attachment in children's toys. It not only expands the knowledge base of educational and developmental psychology but also provides practical guidance for designers and educators.

This study offers several significant contributions to both theory and practice as follows: 1) it breaks new ground by employing grounded theory to develop a conceptual model of children's emotional attachments to toys, along with strategies for developing such attachments. This model, which includes a detailed analysis of the various dimensions of children's emotional attachments to their toys, offers valuable insights for future research and practical applications. 2) The study advances theoretical understanding by filling a critical gap in the existing literature. While research on children's emotional attachments to toys is scarce, this study is the first to synthesize and analyze current practices to create a conceptual model of this phenomenon. This model offers a much-needed theoretical framework for further exploration and analysis in this area of study.

2. LITERATURE REVIEW

With the development of society, parenting practices increasingly focus on children's mental health and development. The role of modern toys is becoming more prominent, being seen as important tools for cultivating children's creativity, cognitive abilities, problem-solving skills, and emotional expression. The emotional attachments children form with their toys can help establish a sense of security and trust. Therefore, studying the factors influencing children's toy preferences and the nature of their emotional attachments to these objects provides valuable insights and paves the way for further research in this field.

2.1. Factors Influencing Children's Toys

Parents undergo a complex decision-making process when selecting toys for their children. Boe and Woods (2017) suggested that parental toy choices change in accordance with their children's growth and development. Additionally, research by Richards, Putnick, and Bornstein (2020) involving mothers of children aged 0-12 in the United States reveals a strong preference for

educational toys. Safety and price are also key considerations for parents during toy purchases (Kurdi, 2017). Educational toys, designed with specific learning objectives, aim to instruct, explore, and develop various skills in children.

Children engage in various activities with different toys, each facilitating diverse types of developmental needs. Parents are increasingly aware of the potential benefits toys offer, seeking those that benefit psychological, physiological, and cognitive growth (Liu et al., 2020). Toy preferences often exhibit gender-based characteristics. However, research by Alexander, Wilcox, and Woods (2009) suggested that certain characters transcend gender boundaries and appeal to both boys and girls. Generally, boys gravitate towards objects such as vehicles, tools, and construction materials, while girls often favor items associated with domesticity.

2.2. Emotional Attachments to Children's Toys

Beyond entertainment, toys play a crucial role in fostering emotional development by enabling children to explore and express emotions, thereby enhancing their understanding of emotional experiences (Alexander, Wilcox & Woods, 2009). Technological advancements have further amplified the emotional impact of toys, incorporating sophisticated features like interactivity that captivate children's attention (Valente & Cardenas, 2017). Research has focused on the evolution of toys with the rise of artificial intelligence and robotics, integrating these technologies into children's toys for personalized and engaging play experiences. Smart toys, which support children's emotional regulation, are expected to grow significantly in the coming years (Theofanopoulou et al., 2019).

Laurie, Manches, and Fletcher-Watson (2022) highlighted the crucial role of emotional attachments between children and their toys, providing insights for future intervention designs. Similarly, Hall et al. (2022) emphasized the positive impact of technical toys on children's emotional development, fostering creativity, empathy, and emotional expression. These findings underscore the importance of considering children's emotional needs in toy design.

Although emotional attachment between children and toys is significant for development, existing research rarely focuses on the relationship between toy design and emotional attachment, nor directly studies the conceptual dimensions of emotional attachment in toy design. Investigating these dimensions helps understand children's psychological development, covering cognitive, emotional, and social aspects, reflecting their sense of security, trust, and innate curiosity. Applying grounded theory to explore the emotional attachment concept in toy design can help parents and caregivers choose toys that promote healthy emotional development and provide valuable insights for toy designers and other professionals.

3. METHOD

This study used grounded theory to investigate children's emotional attachment to toys. It included a literature review, semi-structured interviews with parents, and observations of children's interactions with toys. Data analysis applied grounded theory principles and Zagen's framework to identify key dimensions of children's emotional connections with toys. Grounded theory is known for its rigorous inductive approach, ideal for exploring social phenomena and

developing theoretical frameworks. This approach is well-suited for studying children's emotional attachment to toys due to its ability to uncover the complexity of this phenomenon. Figure 1 illustrates the study's analytical framework, detailing a three-step text analysis process: open coding, axial coding, and selective coding, culminating in a theoretical model.

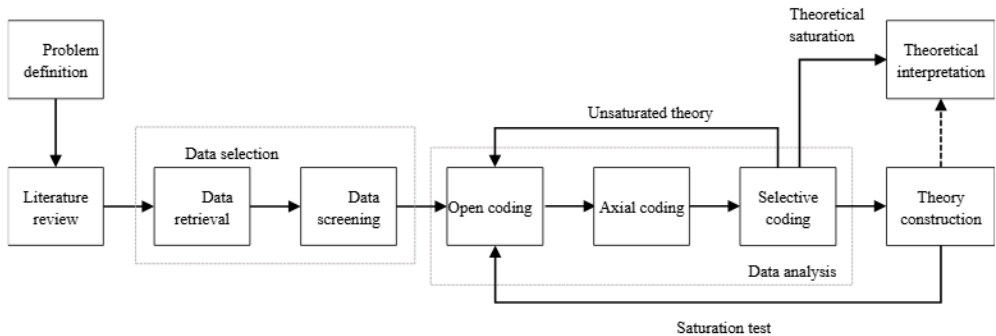


Figure 1. Flow chart of study (Source by Author)

This study assesses the multifaceted relationship between children and their toys, specifically focusing on the emotional attachments and structural dimensions at play. To establish a foundational understanding, a literature review was conducted utilizing "emotional attachments" as the primary keyword. This involved a screening process, including titles, abstracts, and full texts, to identify works directly relevant to the emotional significance of toys in children's lives. Recognizing the relative nascency of this research area and the consequent scarcity of dedicated literature, a total of 33 relevant studies were curated to form the core material for open coding. These sources consist of research exploring both the factors influencing children's toys preferences and the emotional aspects associated with these cherished objects. Following this rigorous selection process, the chosen literature, specifically focused on the emotional attachments children form with their toys, was further classified and coded based on in-depth reading.

Table 1. Data sources (Source by Author)

Data Source	Access Address	Data Number
Scientific direct database	https://www.sciencedirect.com	12
Elsevier- Scopus database	https://www.elsevier.com/solutions/scopus	3
The Springer Nature Book	https://link.springer.com	2
Google academic database	https://scholar.google.com	5
The Wiley Online Library	https://onlinelibrary.wiley.com	2
Sage journal online	https://journals.sagepub.com	3
CNKI	https://www.cnki.net/index	6

During the interviews, participants were prompted to engage in introspection and elaborate on their perspectives, thereby facilitating a purposeful theoretical sampling approach. Researchers invited interviewees to evaluate their personal experiences and discuss their emotional attachments to children's toys. Six parents of children between the ages of one and three were

selected as representative participants, and their responses were analyzed utilizing behavior-oriented methods to identify underlying needs of children. The interviews primarily explored the interaction between children and toys, including topics such as preferred toys categories, Colours, tactile experiences, the emotional influence of toys on infants and toddlers, and parental insights into children's toys preferences.

The interviews proved instrumental in exploring the conceptual dimensions of children's emotional attachments to toys. First, they offered rich insights into the interactions and emotional experiences children have with their toys, deepening researchers' understanding of the phenomenon. Second, the interviewees' narratives, grounded in their lived experiences, offered valuable theoretical sampling guidance, enabling researchers to optimize the focus of following studies. Finally, through content analysis, researchers were able to identify implicit, behaviorally-driven needs expressed by children, leading to more relevant recommendations for both children's toys designs and parental toys selection.

Data collection involved semi-structured interviews and recording sessions, each lasting approximately 40-60 minutes. To ensure accuracy, recordings were transcribed verbatim and thereafter reviewed by participants for feedback and revisions. Following data organization, a rigorous process of thematic analysis was undertaken. This involved iterative cycles of coding and inductive reasoning, guided by the principle of theoretical saturation, while saturation was considered to have been achieved when no new themes or concepts from the data.

4. RESULTS AND DISCUSSION

4.1. Open Encoding

Open coding involves systematically analyzing textual data to identify and develop initial concepts and categories. This process begins by importing data into software like NVivo 12 for detailed examination. Sentences and examples are coded to extract key statements related to the research topic, such as children's toys. The software helps annotate emergent concepts, allowing researchers to refine these for further analysis.

The next step involves comparing similar cases to develop conceptual codes. By analyzing initial coding nodes, researchers derive preliminary concepts. This iterative process helps in deconstructing textual information, laying the groundwork for deeper exploration and interpretation. Due to the abundant volume of original statements and limitations of space, this text presents only a representative sample of 32 concept coding, such as "Safe materials," which is derived from the statement: "Touching sharp surfaces on toys can produce anxiety and negative emotions in children." The third step consists of optimizing categories. This is achieved by grouping multiple concepts that share a common thematic direction. For instance, "the behavior of holding toys," "your games," and "the behavior of touching toys" are all synthesized under the broader category of "Interaction Processes." Finally, 16 initial categories are established (Table 2).

Table 2. Open encoding and category optimization (Source by Author)

The Original Statement	Conceptualization	Categorization	
Changes the Colour of the interface, thereby alleviating the impact of emotional changes.	Colour can relieve the mood	F1	Suitable Colours
Toys with more inspiring Colours reflect the visual impact of toys.	Colour vision affects mood		
Choose a smooth, simple, and generous shape, so as not to impact or change children's mood.	Effect of toys shapes on mood	F2	Rich shapes
Try to make the toys look comfortable as far as possible, soft, simple, and generous shapes can also bring them a happy mood and good mood.	The right shape can lead to good mood		
Touching sharp surfaces on toys can produce anxiety and negative emotions in children.	The toys materials are safe	F3	Safe materials
Wood material with warm features, can let a person feel the natural atmosphere; glass material with clear, transparent features.	Different materials produce different emotional effects.		
Studies have demonstrated that toys over 70 decibels can damage the auditory system.	Noise can cause damage to the auditory system in children	F4	Gentle sounds
Loud sound produced by toys may make young children irritable, affecting their emotional experience with the toys.	Noise affects the personality of children		
Babies like to hold their toys.	The act of holding a toy	F5	Interaction processes
We often observe that the back-and-forth interaction of seesaw games is beloved by children.	The way you interact with each other is to be liked		
Crying is a common way for children to express emotions, and toys can effectively soothe them.	Toys can be used to soothe children's mood	F6	Emotional transfers
The appearance of toys can quickly shift their emotions, and attention is completely attracted to toys.	Toys can quickly divert their bad emotions		
Families support babies to interact with toys.	Effect of the family environments on the emotional attachments	F7	Surrounding Environments
Kindergartens encourage babies to interact with toys.	Effect of the kindergarten environments on emotional attachments		
When children want to play with their friends, they should ask their friends kindly.	When playing with toys, make friendly requests to your partner	F8	Peer relationships
Children exchanging toys and other simple acts, to a large extent, reflect the children's ability to communicate and friendly peer relations.	The exchanges of toys reflect the friendly partnerships.		
Young children unfamiliar to each other by using toys to play games together, thus promoting emotional and language communication.	Promote language communications	F9	Language communications
A parent's word of praise or affirmation is directly determining the children's attitude toward the toys.	Effects of parental language on emotional attachments		
Girls' toys in the form can be more curved or have curved surfaces, with some lovely designs on the surfaces.	Girls like cute toys	F10	Gender differences
For boys, toys in the form of tough but not sharp, such as planes and ships.	Boys like planes and ships		
When children are depressed, they play with doll toys to show different movements and become happy.	Figure out with doll toys to show different movements to be happy	F11	Diverse gameplays
Transform a single toy through effort into a great shape, so that children get the joy of success.	Multiple shapes of a single toy make children happy		
Choosing plants and animals is to cultivate children's compassion	Cultivate children's care and concern for them	F12	emotional resonances

The choice of characters is to understand the feelings and emotions of others.	Understand the feelings and emotions of others	
According to statistics, children spend nearly half of their time with toys.	Children play with toys for a long time	F13 Accompanying growth
It can be said that toys accompany children as they grow up.	Toys accompany children as they grow up	
Adjusting the presentation of toys can create more appropriate conditions for improving children's social behaviour.	How toys are presented can improve the children's social behaviour	F14 Presentation methods
In the prompt presentation, most babies seem to be eager to play with toys, and they grab them simultaneously.	Prompt presentations increase babies' interests in toys	
Plush toys, with plant designs elements, can teach children the love of nature.	Toys can educate children, develop compassion and love	F15 Educational effects
Toys can cultivate children's ability to resist setbacks, with the completion of the task bringing the joy of success.	Toys develop the ability to resist setbacks, bring joy	
Through interaction with toys, they can forget loneliness, grow up happily in their own fairy tale world.	Toys can make children send lonely and lonely	F16 Emotional balances
Playing with toys, children can freely express their own thoughts, playing to their own abilities.	You can vent your emotions	

4.2. Axial Encoding Establishes the Main Category

Following the identification of 16 categories through open coding, axial coding was employed to explore their properties and dimensions, discovering potential logical relationships. This process facilitated the development of overarching categories and their corresponding subcategories. This study evaluates the conceptual dimensions and strategies for enhancing children's emotional attachments to toys. By analyzing the internal logical connections between categories at the conceptual level, four primary categories were established (Table 3).

Table 3. Main category formed by axial encoding (Source by Author)

Fundamental Category	Category	Connotation Interpretation
Z 1 Toys Features	F1 Suitable Colours	Colour selection should consider factors such as age, gender, and cultural background.
	F2 Rich shapes	The richness and variety of shapes can stimulate children's curiosity and creativity.
	F3 Safe materials	The material should meet safety standards and not contain toxic substances.
	F4 Gentle sound	Mild sounds should not be too high in decibels and should be in line with the child's age to protect the child's hearing.
Z 2 Interaction with Environments	F7 Surrounding Environments	The right environments can improve children's interest and learning effects.
	F 8 Peer relationships	Peer interactions can affect the child's social ability and emotional intelligence.
	F 9 Language communication	Toys should be designed to match the child's language ability.
Z 3 Personality and Diversity	F5 Interaction process	During the interaction processes, the children can acquire more knowledge and skills.
	F10 Gender differences	Toys should be designed to consider the needs and preferences of children of different genders.

Z 4 Educational and Emotional Regulations	F11	Diverse gameplay	Different gameplay can meet the diverse needs and interests of children.
	F14	Presentation methods	Different presentation methods can meet children's various learning and exploration needs.
	F12	Emotional resonances	Toys should be able to arouse emotional resonances in children.
	F13	Accompanying growth	Good toys are an integral part of children's growth process.
	F15	Educational effect	The designs of toys should pay attention to the educational aspect and promote the development of children's moral character, intelligence, and EQ.
	F6	Emotional transfers	Toys can help children calm their emotions and reduce loneliness and separation anxiety.
	F16	Balancing emotion	Toys should be designed with a focus on emotional balances, which can help children regulate their emotions and emotional expression.

4.3. Selective Coding of Core Categories Definition

Selective coding is a critical step in qualitative data analysis, focusing on refining insights into core categories. This involves analysing how these core categories relate to other identified aspects and constructing a coherent storyline that contextualizes phenomena, summarizing research findings, and promoting theoretical saturation and conceptual model development. In this study, the core category is children's emotional attachments to toys. The constructed storyline includes Toys Features, Interaction with Environments, Personality and Diversity, and Educational and Emotional Regulation. Together, these categories contribute to the development of emotional attachments to toys in children. Ideally, toys should possess qualities that attract children, promote active engagement, reflect personalization and diversity, and offer educational and emotional regulation benefits. Such toys can foster positive emotional attachments throughout children's development, supporting holistic growth. Based on this storyline, the study presents and elaborates on a conceptual dimensional model of children's emotional attachments to toys (Figure 2).

The theoretical saturation of the conceptual model on emotional attachments to children's toys was tested to ensure research integrity and accuracy. Following Glaser's (2002) approach, the relationships between identified concepts and categories were mapped and compared with existing literature, which revealed no new concepts or relationships. Furthermore, open coding was applied to a subset of data, confirming consistent findings and the absence of new major categories. Expert review further validated the model's completeness, demonstrating the theoretical saturation of the preliminary coding model (Figure 2).

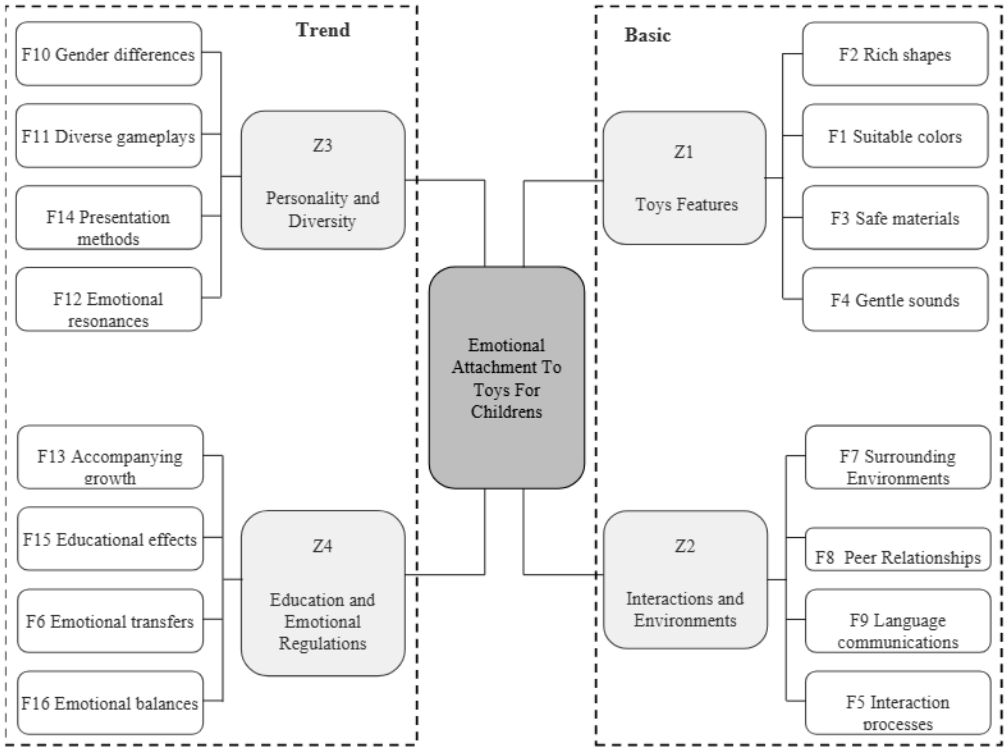


Figure 2: The concept of emotional attachment in children’s toys (Source by Author)

4.4. The Conceptual Dimension Model of Emotional Attachments

Through encoding textual materials related to children's toy designs, a comprehensive "storyline" has been constructed to illuminate the concept of emotional attachments to toys. This analysis resulted in the development of a conceptual model (Table 4) explaining the various dimensions of this attachment. The model encompasses key dimensions such as Toys Features (including rich shapes, suitable Colours, safe materials, and gentle sounds), Interaction and Environments (encompassing surrounding environments, peer interactions, language communications, and interaction processes), Personality and Diversity (involving gender differences, diverse gameplays, presentation methods, and emotional resonances), and Education and Emotional Regulation (covering accompanying growth, educational effects, emotional expressions, and balances). These dimensions collectively represent the conceptual framework for understanding children's emotional attachments to toys, highlighting the interrelation and significance of Toys Features, Interaction with Environments, Personality and Diversity, and Educational and Emotional Regulations in shaping emotional engagement and supporting children's holistic development.

Table 4. Concept Dimension of Emotional attachments (Source by Author)

Fundamental Category	Concept Dimension	Description
Toys Features	Rich Shapes	Varied shapes nurture emotional bonds by sparking curiosity and expanding cognitive horizons (Satlow & Newcombe, 1998; Resnick et al., 2016).
	Suitable Colours	Colours play a significant role in visual development and evoke emotional responses. Bright Colours stimulate curiosity, while softer tones provide stability (Kuo, Chang & Lai, 2022; Peck & Childers, 2015).
	Safe Materials	Non-toxic, sustainable, and durable materials ensure children's health and safety, promoting positive emotional attachments (Babich, Hatlelid & Wanna-Nakamura, 2014).
	Gentle Sounds	Proper sound levels enhance auditory development and emotional regulation, preventing potential hearing damage and fostering engagement (Mahboubi et al., 2013; Niskar et al., 2001).
Interaction with Environments	Surrounding Environments	Physical and social contexts, such as playgrounds and family settings, significantly impact children's play and emotional attachments (Torpegaard et al., 2022).
	Peer Relationships	Play with peers fosters social skills, empathy, and conflict resolution, positively influencing emotional development.
	Language Communication	Interactions through language help children express thoughts, understand emotions, and build relationships, enhancing emotional connections (Hashmi et al., 2022; Sabatin, 2015).
Personality and Diversity	Interaction Processes	Engaging with toys through observation, imitation, and practice develops cognitive skills, creativity, and social abilities (Hall et al., 2022).
	Gender Differences	Deconstructing gender stereotypes in toy design promotes holistic development by encouraging diverse play experiences (Jones, Greenberg & Crowley, 2015).
	Diversified Gameplay	Diverse play experiences stimulate imagination, provide emotional fulfillment, and contribute to skill development (Miller et al., 2017).
	Presentation Methods	Visually appealing aesthetics and dynamic effects capture children's attention, fostering exploration and holistic development (Eisenberg, 2003).
Educational and Emotional Regulations	Emotional Resonances	Toys that evoke inner responses foster empathy, moral development, and social skills, enhancing emotional experiences.
	Accompanying Growth	Toys serve as essential companions in children's growth, fostering independence, confidence, and adaptability.
	Educational Effect	Toys promote cognitive, linguistic, social, and motor skills, contributing to overall development and emotional attachments (Lin et al., 2020).
	Emotional Transfers	Toys help calm distress and provide comfort, developing a sense of security and emotional support (Karaca & Güner, 2022).
	Emotional Balances	Play interactions help children recognize, express, and manage emotions, promoting emotional balance and reducing loneliness.

5. CONCLUSION

This study employed grounded theory methodology to systematically analyse textual data concerning children's emotional attachments to children's toys designs. Through a rigorous coding process, the data was categorized according to research type, yielding the following key findings: 1) A conceptual model of emotional attachment in children's toy design was derived from grounded theory analysis. This model proposes that Toys Features, Interaction with Environments serve as the foundation and inducement for emotional attachments. In addition, Personality and Diversity, Educational and Emotional Regulations are identified as factors that realize emotional attachments in children. 2) The crucial role of toys in children development is emphasized by this study. The proposed conceptual model of children's toys designs, grounded

in the understanding of emotional attachments, offers valuable guidance for designers. By prioritizing the emotional attachments between children and their toys, designers can create toys that resonate with children's intrinsic needs, developing positive emotions and nurturing their psychological growth.

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