Design of Family Rooms for Environment-Friendly Hotels Based on Parent-Child Interaction

Liu Wei*, Liu Qiuye1, Liu Yingzhi1, Liu Xinghui1 and Du Huajun1

1Shenyang Aerospace University School of Design and Art, Shenyang, Liaoning, China

*Corresponding author’s e-mail: 1424817759@qq.com

Abstract. There has been a growing demand for family rooms of a hotel based on parent-child interactions as a result of the development of tourism. Unlike conventional designs of hotel rooms, the family room of hotels features a higher level of parent-child interactions. This paper investigated and studied literatures on the mentality and behaviors of children, and analyzed the mental needs of parents, aiming to boost parent-child interactions in an environment-friendly way. The paper proposed a design incorporating graffiti, window opening and holes in walls. By encouraging graffiti and design by parents and children, the room allows children to make a full use of imagination, practice manual skills and cultivate the awareness of environmental protection. The design fits the behavioral pattern of children and incorporate the elements of games, meeting the needs of both parents and children and enhancing the parent-child interactions of hotel family rooms.

1. Introduction
To meet the needs of the growing tourism, the hospitality industry has been working on the parent-child room services, with entertainment facilities and activities based on the theme. In 2012, the Lin'an Landscape Family Hotel, the first parent-child themed hotel in China, was formally established. At present, the parent-child hotels are mainly scattered near playgrounds and resorts. Meanwhile, there is not much variety in the design of the parent-child hotel rooms, which are mostly children themed rooms. There is no clear-cut definition of parent-child hotels in domestic and foreign literatures, especially for parent-child rooms. There are only a limited number of studies on parent-child hotels and related theories. With increases in the number of family tours in recent years, young people have formed major consumers, whose children are gradually eligible for school. There have been several factors complicating communication between young parents and their children. First, parents have to handle tremendous pressure from their work while dealing with housework. Meanwhile, children are flooded by homework. Second, children tend to spend most of their spare time on electronic devices, like playing online games and chatting. The design of hotel family rooms incorporating graffiti and holes in walls can boost parent-child interactions and meet the needs of consumers. The hotel family rooms have several functions: 1. Improving parent-child relationship. Parent-child interaction plays an important role in bringing parents and children closer to each other, and it is also one of the ways for children to learn things and make progress. In the interaction, parents can encourage and guide their children to constantly explore the unknown world. Meanwhile, we can learn more about the mentality of children, enabling parents to discover potential problems and find out a solution. This kind of activities can help improve the relationship between parents and children. 2. Promoting physical and mental health of children. Play is an important part of childhood. Activities like running, climbing and
doing manual work can effectively stimulate the physical development of children. Designers need to offer challenging activities that fit the mentality of children based on the needs of children and parents.

3. Enabling parents to maintain an innocent heart. It’s easy for children to get happiness from activities because they are seldom affected by the outside world. However, parents are usually pressured by family, social and job responsibilities. Having fun activities together with their children could arouse childhood memories of parents, who are more like friends with their children instead of mere custodians. According to statistics from China Network of Industrial Information (CNII) in the following figure, parent-child tourism is a major trend in the future, which is a great business opportunity and also a severe test for the hospitality industry. Through these data, we know that parents have come to realize the importance of communication and interaction with their children, which is a great opportunity for the development of hotel family rooms. Therefore, there is an urgent need for the transformation of room design.

![Figure 1.2019 Chinese family parent-child relationship performance status](source: www.chyxx.com)

![Figure 2. Parents gradually realize the importance of companionship as children grow up](source: www.chyxx.com)
Figure 3. Parents spend significantly more time with their children during holidays
Source: www.chyxx.com

Figure 4. The number of days for parent-child travel accounted for 3-5 days
Source: www.chyxx.com

2. Physical and Mental Features of Children

2.1 Mental features of children and Clues for Room Design
1. Sensitive sensory system. Children are highly sensitive to sensory stimulation from the external environment. To stimulate the development of children's sensory system, it is necessary to attract their attention by sight, touch and hearing. That is, we need to incorporate elements like colors, texture of materials and sound into the design. In the design of family rooms, the combination of colors is particularly important, which is decided by the functional attributes of each space in the room. There are smooth and rough textures, which can be properly used based on the space. Meanwhile, both
sounds and a quiet atmosphere need to be utilized to provide a rest space in the guest room and an open space for smooth parent-child interactions.

2. Lively and active. It is the nature of children to be active and lively, who are curious to explore the outside world. Therefore, the design should encourage children to explore the environment and meet their curiosity by activities like putting together and taking apart toys. Being active also means great potential of getting hurt. Therefore, safety is another consideration for designers of hotel family rooms. For example, edges and corners of furniture should be avoided for this purpose.

3. Rapid physical development. As the bones of children are developing rapidly, the sizes of bed and other facilities need to fit children of older ages, which not only meet the needs of older children, but also provide a larger space for younger children to play.

2.2 Mental characteristics of children and clues for design

| Table 1. Four stages of Piaget's cognitive development |
| Stage | Age | Characteristics |
|-------|-----|------------------|
| Sensorimotor Stage | 0-2 years old | Children of this stage could only coordinate activities at the sensor-motor level, with basic behavior for interactions with the outside world. |
| Preoperational Stage | 2-7 years old | In this stage, external and internal perception and motions are playing an important role in the mentality of children, who start to use words for communication. Children can use the language of representation as an intermediary to describe the external world. Children at this stage are usually self-centered, without the ability to analyze a problem from various perspectives. For example, they can tell left and right of themselves without the ability to distinguish left and right of the person facing him or her. |
| Concrete Operational Stage | 7-12 years old | Children at this stage have developed logical thinking with the help of specific objects and images. |
| Formal Operational Stage | 12-15 years old | Children at this stage are developing abilities of logical reasoning at a level similar to adults. |

Sources: drawn by authors

1. A strong desire to know the outside world. As the perception of children is much below the level of adults, they would ask parents questions beyond their cognition. The family room could boost parent-child interactions in the form of drawings and graffiti.

2. Emotion and personality. Studies have shown that interactions and touch are conducive to the mental and physical health of children, which have a direct impact on the personalities of children. Therefore, the emotional factors should be incorporated into the design.

3. Characteristics of children’s play and their needs for interactions

3.1 Characteristics of children’s playing behavior

Based on observations of games of children on a daily basis, we concluded:

1. Children prefer to play on the ground instead of sitting still, no matter when they are accompanied by their peers or parents. Therefore, we need to save a large space of interactions and play for children in the family room.

2. Children need to have their own space as they like hiding themselves. Activities like drilling and tent building are allowed by holes in walls to meet their needs.

3. Younger children tend to have difficulties in concentrating. Psychological studies showed that children aging between 5 and 6 years old could only concentrate for up to 6 minutes. However, the
duration extends with their growing process, which lasts for almost 30 minutes when they are 11 or 12 years old. Graffiti and other parent-child activities could be incorporated into the design of family room for concentration training of children. It boosts parent-child interactions while ensuring the healthy development of children.

4. Children like role-playing, which allows them to use their imagination based on characters and events of movies and games, and develop their unique understanding of the real world. The design of family rooms could utilize the feature and give a full play to the imagination of children.

5. Children are rich in imagination, and games like building blocks and graffiti have a positive role in developing their imagination. Parents can engage in such activities and develop intimacy with children.

3.2 The needs of children for interaction
The parent-child interactions are more than just having conversations or touching, which also include communication, entertainment, display and exploration.

Parents and children need to be equal in the interactions, with sufficient respect shown to the children. Children would turn to parents whenever they have troubles, and the active participation of parents would help build a sense of intimacy and send a caring signal to the children. Children are eager for the support and recognition of parents when playing games. Therefore, parents should help children to achieve something, and give them plenty of space to show their talents. Hotel family rooms need to satisfy the above features, namely fulfilling their sense of accomplishment and need of entertainment.

4. Mental Characteristics of Parents
Parents play a vital role as decision-makers of the purchasing behavior. Most customers of hotel family rooms are young parents in the urban areas. They receive good education, know how to educate children, and are willing to embrace new things. They understand new technologies and care about children's physical and mental health. On the other hand, the fast pace of life, and pressures from work and family have left them with almost no time to communicate with their children. When there is only limited time to spend with their children, parents tend to dote on their children and do their best to meet their requirements. Therefore, parents are quite generous in buying products that are beneficial to their physical and intellectual development.

5. Design of Hotel Family Room Featuring Parent-Child Interactions

5.1 Taking parent-child interactions in the family room with graffiti as an example
The elements of design mostly come from events or characters of games and movies. However, there might be problems if the elements are utilized in hotel family rooms, as it is impossible to cover the need of every child. If the elements fail to attract children, it could have negative effects on the mentality of children.

In the design of family rooms, canvas for graffiti was applied as the visual center of the space, allowing children to express their favorite design elements that combine with the whole space. In addition, parents can work together with their children, thus stimulating interactions and narrowing the distance between them. When designing the visual center, the author finished only part of the design, with the rest to be accomplished by parents and children in the form of graffiti. The use of graffiti in the design of family rooms can reduce the cost of decorative materials in indoor space, which is economical and environment friendly.

In addition, when parents and children check out, they can take the graffiti away as souvenirs, which not only encourage children to develop practical abilities, but also improve their awareness of environmental protection. Meanwhile, it also creates conditions for the later maintenance of the hotel.
5.2 Characteristics of Graffiti Art in Hotel Family Room
As a new form of art, graffiti has a unique role in people's life, that is, the creator can freely express its inner emotions and interact with people. Graffiti provides people with mental pleasure, which, in essence, has the same purpose as interior design. It's characterized by the following three features:

1. Diversity
Graffiti features diversity in its origination as it was created by immigrants bearing their own national characteristics. They might have expressed their own culture unconsciously. In addition, the creation of graffiti is characterized by flexibility, without fixed standards and models, allowing artists to freely use imagination. In the design of hotel family rooms, the graffiti by parents and children could have different effects as they are born in different times and environments. Parents and children can learn from each other in the process, thus stimulating interactions.

2. Individualized forms
Changes in the aesthetic perception of people have lead to variations in the representation and style of graffiti, which is mainly characterized by novelty and departure from traditional patterns. The color and lines of graffiti are drastically different from traditional paintings, a rupture of conventional approaches and perceptions, thus creating unexpected visual effects. Therefore, it has threatened traditional design to some extent. The design of hotel family rooms is not restricted by traditional painting approaches, which are highly accessible to parents and children who haven’t received formal art education. They are encouraged to make a full use of imagination and express their perception of beauty while developing greater intimacy.

3. Variety in materials
Unlike restrictions on conventional painting, graffiti feature a great variety in the selection of materials. Graffiti artists have a long tradition of using handy materials to express their ideas. At present, there are various novel materials of graffiti being applied in the design. These materials could be utilized in the hotel family room for both aesthetic and innovative purposes.

5.3 Values of graffiti art in hotel family rooms

5.3.1 Enlarged space and layers
There are greater demands for the design of space, which is no longer a mere partition and lifeless composition. Graffiti of the family room integrate the creativity of parents and children with lifeless objects, endowing the space with vitality and energy. The art is a breakthrough of traditional decorations by paint and wallpaper. The graffiti make the room three-dimensional, or even lengthen the objects in the room, creating striking visual effects.

5.3.2 Easing pressure and encouraging relaxation
In the family room, the wall behind the TV and sofa could be decorated by graffiti. By decorating the walls with funny patterns, parents and children could let off steam while integrating interests with the room decoration, add vitality to the room. People could fall in love with room because of the graffiti, thus developing loyalty to the hotel. Therefore, the visual effects of graffiti could bring commercial value.

5.3.3 Highlight personal feelings
People would be tired of hotel rooms with more or less the same decorations. However, graffiti could change the situation by incorporating individualized elements into life and highlighting characters and emotions. For parents and children checking in the hotel, graffiti are not only a form of art, but a representation of personal values and inspirations, allowing people to express their ideas in the form of graffiti. Besides, parents and children need to match the graffiti with the color of furniture, gaining a sense of comfort and satisfaction in an environment of color consistency. Thus, they will relax and find inner peace.
5.4 Application of emotional maintenance in hotel family room
The principle of emotional maintenance refers to the separation and interdependency of parents and children’s rooms in the family suite. The design facilitates the observation, interaction and communication of children. Such examples include holes in the walls and windows. The holes in the walls are based on the playing behavior of children and their preferences in seek-and-hide. The design offers an independent space for children to play, and assists parents to take care of and communicate with their children. The holes in windows allow fun interactions between children and the outside world while ensuring privacy of parents. Made of half-transparent glass materials, holes in windows would obscure characters in the interactions, and encourage fun interactions by transforming people in interaction into various visual forms.

5.5 Application of natural materials in hotel family rooms
Natural materials are not only conducive to the health of children, but also environment friendly. The short molecule chain of natural materials allows recycle and reuse of the materials. For example, wood, bamboo and vine could provide nutrients to the soil when they rot under the ground. The natural materials could be used to create rooms of different styles, encouraging parent-child interactions.

5.6 Application of lights in hotel family room
The lighting system of hotel family room consists of downlight and spotlight instead of main light, allowing variation of lighting based on the needs of guests. Studies found that children liked to play in rooms with natural light. However, in limited space, the natural light can only light up some areas rather than the entire room. Therefore, the transition of lighting effects needs to be taken into account when designing family rooms. The lighting effect should deliver fun to children. For example, the integration of shadow, light spots and the space supports interactions with children and features environmental protection. There are two approaches for this purpose. First, the luminating design based on natural light, which creates fun projections as a result of the forms of windows and hiding of light. The second approach is based on artificial light, which creates light spot and projections by adjusting the lighting system, thus bringing fun to children.

6. Conclusion
This paper proposed a design of hotel family rooms based on parent-child interactions, which breaks from the traditional design of hotel rooms and integrates parent-child graffiti interactions and holes in walls and windows into space design. Parent-child graffiti, accompanied by entertainment, effectively boosts interactions between parents and children, which combines physical exercises and spiritual entertainment, bringing pleasure to both children and parents. The family room design in this paper can not only arouse children's environmental awareness, but also stimulate their hands-on ability and imagination in graffiti painting. Also, it narrows the distance between parents and children through communication, which can maximize the value of family rooms, improve their market competitiveness, and ensure the sustainable development of the hospitality industry.

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