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**EMOTIONAL DESIGN
AND PERCEIVED
VISUAL QUALITY
IN THE AFFECTIVE
ASSESSMENT OF
TOYS INTENDED
FOR 9-MONTH-OLD
CHILDREN**

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Abstract: This article aims to investigate the perceived visual quality of toys intended for 9-month-old children. Therefore, an exploratory research was carried out with 20 mothers using 9 photographs of toys developed by the fisher-price company for this age group. These toys were organized using the multiple classification system according to the interrelationship of different levels of contrast and complexity. Despite the small number of subjects analyzed, the results obtained outline important characteristics in relation to the confirmation to a certain extent of what the theory about affective evaluation defends, providing potentially interesting evidence for the study of the theory and its contribution to product design. In addition to offering theoretical discussions about the relationship between studies on emotional design and theories addressed by the field of perceived visual quality.

Keywords: Children's toys, emotional design, perceived quality, multiple rating system.

INTRODUCTION

Studies on the emotional connection between users and the products they consume have been gaining ground in the design process as a strategy for product differentiation, which are increasingly equated in terms of aesthetics and the technology used. Mont'Alvão & Damázio (2008) state that the user establishes an affective relationship with the product he consumes, with the current designer, as his main function, triggering feelings in the consumer that provide a healthy and safe relationship with the product. In order to measure the emotional characteristics that can enhance the user's relationship with the product, studies related to psychological assessment of environmental landscapes have been highlighted, used in this work from the point of view of products.

Kaplan (1988) proposes that the perceptual process is intrinsically linked to the human being, providing important information about human standards linked to aesthetics and the underlying meanings of this in the individual's understanding scheme. From this point of view, the theory presents a concept that is very close to what emotional design research observes: The term "affordance" is the observation of an object from the point of view of the perceiver, offering important information about it. of the individual who perceives it, in addition to understanding the influence that this object or environment could have on the individual.

Thus, this article intends to investigate the affective quality related to the stretching of a toy for 9-month-old children, through 9 photographs of Fisher Price toys selected and organized using the multiple classification system (ranging from low to high complexity and low to high contrast). Using as a theoretical basis for such investigation the foundations of emotional design and perceived visual quality.

EMOTIONAL DESIGN ACCORDING TO NORMAN

Norman (2008) argues that we are the result of three different levels of brain structure: the visceral level - automatic and pre-programmed responsible for quick judgments; the behavioral level - which refers to the brain processes that control most of our actions and the reflective level - which is the contemplative part of the brain, linked to interpretation, understanding and reasoning.

Visceral design comes from the basic stimuli that, despite our natural evolution, we can still capture in a given environment or product. According to Norman (2008), the love that we humans have for sweet flavors and smells, light and highly saturated colors come exactly from this co-evolution, from the connection between people and the basic

characteristics of nature, awakened for the perpetuation of the species. Everything that we are biologically predisposed to consider aesthetically pleasing comes from this characteristic of the evolution of species, with the culture in which the human being is inserted, the greatest guide when it comes to considering which of these elements can be rationally decisive for their choice.

The behavioral design is fully reflected in the use of the product, the effectiveness and efficiency of its usability is the basis for approval at this level, extremely emphasized by Norman in his book *The design of everyday things*. In this book the author states that from a behavioral point of view, four components are crucial to good design: function, understandability, usability and physical feel. Thus, this level is basically linked to the satisfaction of the users' physical needs, either by improving an existing product that does not efficiently meet the function for which it was designed or by creating it, seeking to understand the consumer's needs and their perception of them. to the artifact.

The reflective level is the most rational of the three characterized by Norman (2008), in which everything has to do with culture, with the understanding that the user has of himself and the society in which he lives. According to Norman (2008), this view addresses the memories and meanings of objects for each person, as well as being related to self-image and the meaning that an object can have in society. "Whether we want to admit it or not, we all care about the image we present to others" (NORMAN, 2008, p. 107). Reflective value may even overcome some behavioral difficulties.

These three levels always operate together in our relationship with the objects present in our surroundings, the visceral level being responsible for the first impact with the

product, the behavioral level related to the functional aspects of the artifact and the reflective level linked to more subjective and personal interpretations. with respect to the product.

THE AFFECTIVE ASSESSMENT OF AN ENVIRONMENT ACCORDING TO RUSSEL

According to Nassar (2000), affective evaluation refers to an attribution of the built environment, providing information about the judgment of individuals in relation to a particular place or group of people. Although perceived visual quality depends, in part, on perceptual/cognitive factors, it is, by definition, an emotional judgment that involves evaluation and feelings (NASAR, 1988).

Russell (1988) states that to understand affective evaluations it is necessary to know at least three interrelated areas: The nature of affective evaluations, including here the means to describe and measure them; The relationship of assessments to the physical or objective properties of environments and, finally, the relationship of assessments to other psychological processes, including behavior, emotion, and cognition. It is this third relationship that is emphasized in the text, since, according to the author, in the rush to obtain the first two relationships, this one is usually neglected.

To understand the process, it is first necessary to understand what an affective evaluation is. Russell (1988) states that an affective evaluation happens when a person attributes qualities to something (eg, pleasant, sympathetic, etc.), thus resembling both emotion and cognition. In emotion, affective feelings are observed, while cognition aspects are observed as someone interprets something. Bringing this concept to the evaluation of environments, we can say that

the subject attributes affective qualities to the places that, in turn, produces a certain mood, which can be evaluated through physical and psychological reactions characteristic of the emotion felt.

Figure 2 consists of a bipolar dimension: The first represents the horizontal axis, ranging from extreme unpleasantness, through a neutral point, to the extreme of pleasantness. The second dimension, which is independent of the first and is represented by the vertical axis, concerns the arousal quality of the place, ranging from sleepy to extremely exciting. The graph is therefore divided into 8 characteristics that can be grouped into 4 main quadrants. Remembering that these 8 characteristics are not the only possible ones.

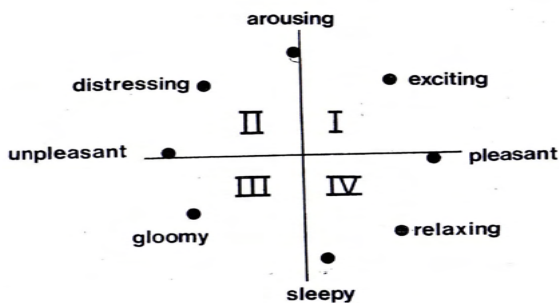


Figure 2: Spatial representation of the affective quality descriptors of environments.

Source: Russel (1988).

Russell (1988) states, based on the graph presented, that an affective evaluation involves a process that can be divided into two main stages: an environment is initially perceived in terms of pleasantness and arousal; phenomenologically, these dimensions combine into a single perception. Then, to articulate the affective qualities of the environment, one must think of place and category in the same space, each place will adjust to many affective categories, to a certain extent.

METHODOLOGY

Nine photographs of toys for 9-month-old children from Fisher-Price were presented. These photos were presented to 20 mothers, who were asked to organize the images in order of pleasantness, that is, the toys that most aesthetically pleased them and, consequently, that they would most easily buy for their children. As an instrument for carrying out the experiment and collecting data, the multiple classification system was used.

Regarding the subjects used in the experiment, we have as direct subjects of the research the 20 mothers who listed the photos according to the criteria of pleasantness and as indirect subjects, their children, children between 9 and 11 months of age. As for the selection of toys, the phase from 0 to 1 year of age was chosen, where these artifacts generally do not have colors related to the child's gender and commonly perform the same activities. As for the manufacturer of these toys, Fisher-Price was chosen in order to create an aesthetic standard and ensure that all safety procedures were carried out rigorously in the toys presented.

The 9 toys that integrated the experiment were selected taking into account white background photographs, without children or any other element that could influence the choice. These were arranged in order of contrast and complexity, ranging from low, medium, and high, as shown below.

For the application of the research and tabulation of the results, the multiple classification system was used and for the construction of the question that guides the research, a basic element of the theory of facets was used. For this study, two facets were considered: CONTRAST and COMPLEXITY, both having low, medium and high levels as internal elements, as can be seen in Table 1.



Figure 3: Toys 1, 2 and 3.

Source: www.fisherprice.com.br.



Figure 4: Toys 4, 5 and 6.

Source: www.fisherprice.com.br.



Figure 5: Toys 7, 8 and 9.

Source: www.fisherprice.com.br.

To what extent does person X rate the pleasantness of toys intended for 9-month-olds according to the criteria of:

(facet 1)
CONTRAST (C)

(facet 2) COMPLEXITY(V)

- (C1) low contrast
- (C2) médium contrast
- (C3) high contrast

E

- (V1) low complexity
- (V2) médium complexity
- (V3) high complexity

facilitate →

COMMON RATIONAL

- 1) Nothing
- 2) A little
- 3) More or less
- 4) Much
- 5) Very much

Is your intention to buy these products?

Table 1: Structuring sentence for the evaluation of pleasantness of toys intended for 9-month-old children.

Source: Built by the authors.

The combination of the internal elements of the two facets of content presented (3C X 3V) resulted in nine possibilities of combination of the elements that were tested during the research. In addition to the combinations found, the possibility of responses from the analyzed individuals was also considered: This rationale is common to both facets and also the question formulated by the sentence. Thus, a scale of five options was considered: 1 - nothing; 2 - little; 3 - more or less; 4 - a lot; 5 - very much. Figure 6 shows the organization of the images of the toys chosen according to the criteria developed through the structuring sentence.

The experiment was carried out in person on April 6th and 7th, 2017 with 20 mothers of children aged between 09 and 11 months, teachers from municipal schools in the city of Arcoverde - PE. Initially, a brief presentation of the study and its objectives was carried out and, later, procedures for carrying out the experiment were explained: 1. Fill in the information contained in the data collection form (Name, sex, age and education); 2. Evaluate the 9 photos of toys presented in the form according to the pleasantness criterion, that is, how much that toy pleased them or could please their children; 3. Arrange the photos according to the same criteria as before, ordering them from the most pleasing to the least pleasing.

Pleasantness levels were organized on the form using a five-point Linkert scale: 1 - nothing; 2 - little; 3 - more or less; 4 - a lot; 5 - very much. Another question often used during the experiment was also how much would you like to buy these toys?

RESULTS

At the end of the experiment, it was possible to perform the data tabulation from the sum of the positive choices related to the toys presented. Thus, for the frequency

of choice, the answers related to the options “very” and “very much” were observed as positive, implying that the more pleasant these toys are for mothers, the easier they will buy for their children. The options “nothing” and “little” were taken here as options that do not enhance pleasantness so much and, consequently, do not encourage the purchase of these toys. The option “more or less” was considered neutral. Below is the presentation of the frequency of choice of subjects in relation to positive responses (selection of the options “very” and “very much”):

According to figures 7 and 8, we can see that the toys most strongly chosen as pleasant were 5 and 6, which are classified respectively: medium complexity and medium contrast and medium complexity and high contrast. These answers offer a certain degree of approximation with the theory regarding complexity, since according to Nassar (1997, apud CASTILLO, OLIVEIRA, 2016), the environments preferred by individuals are those with low contrast and medium to high complexity. It is important to emphasize that complexity, according to Nassar (1997, apud CASTILLO, OLIVEIRA, 2016), can be characterized by the number of elements present in the scene.

Taking this characteristic for the analyzed products, we can observe from this aspect the number of parts that make up the toy and the number of details that make up these parts (eyes, mouths, little arms, little ears, etc.). Thus, as can be seen in figure 8, the two best-voted toys were previously classified as having medium complexity, which approximates the results obtained from the theory built on the basis of perceived visual quality.

Regarding contrast, still according to Nassar (1997, apud CASTILLO, OLIVEIRA, 2016), we can take into account criteria related to color, shapes and textures. In this experiment, we only considered color and

	Low contrast (BCA)	Medium contrast (MCA)	High contrast (ACA)
Low complexity (BCO)	1 	2 	3 
Medium complexity (MCO)	4 	5 	6 
High complexity (ACO)	7 	8 	9 

Figure 6: Organization of images according to Contrast and Complexity levels.

Source: Built by the authors.

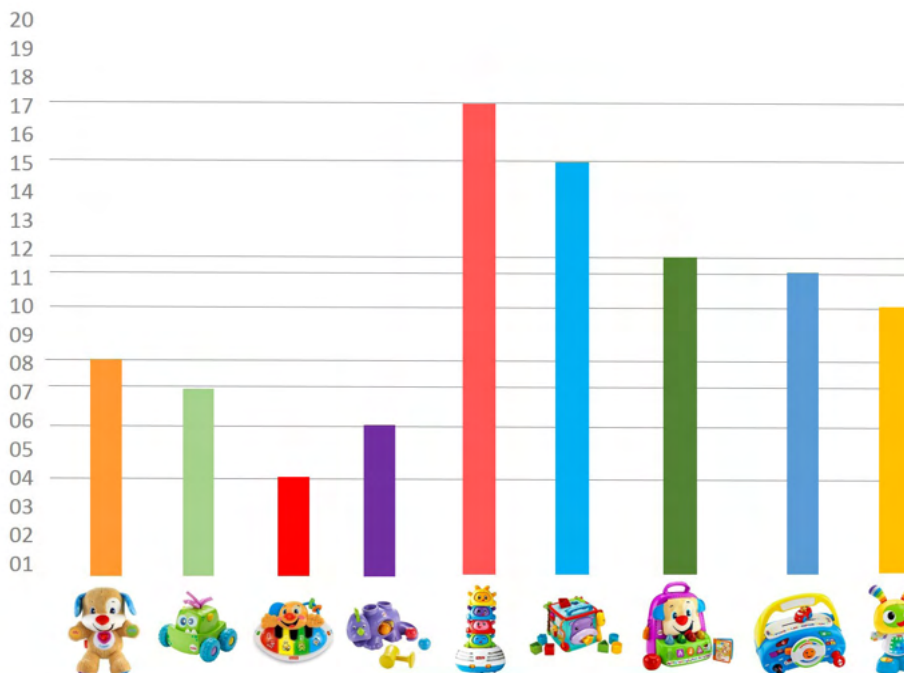


Figure 7: Result of the evaluations carried out by the research subjects according to the order of presentation of the toys.

Source: Built by the authors.

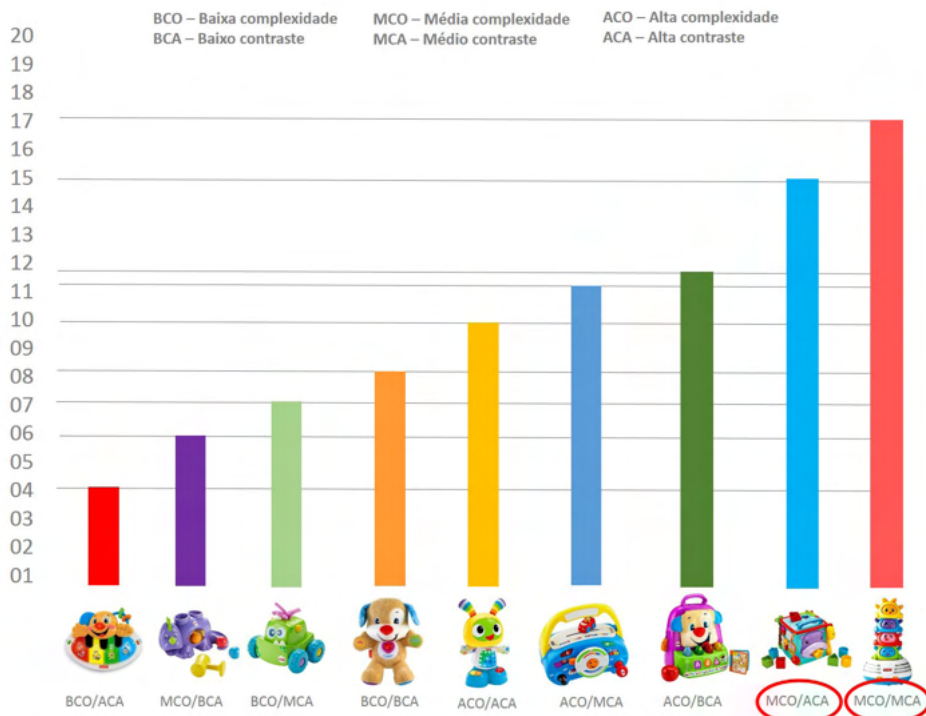


Figure 8: Result of the evaluations carried out by the research subjects according to the number of choices made by the subjects.

Source: Built by the authors.

shape, since texture cannot be evaluated effectively through photographs. In the contrast criterion, the most strongly chosen options were previously classified as medium and high contrast (toys 5 and 6 respectively), this result deviates a little from what the theory defends as common responses in relation to affective evaluation, however, it approaches in measure of the common characteristics of the target audience for which the product is intended.

That is, despite the theory defending that low contrast would be the best choice in relation to the affective assessment of the environment, we can associate the answers found here with the need for more playful characteristics for products aimed at children, thus, the use of saturated colors, geometric shapes and different aesthetic elements is more easily related to the characteristics present in

toys, as well as other products intended for children, which could justify the answers obtained in the experiment.

FINAL CONSIDERATIONS

Taking into account the research hypothesis built for this work, we can see that potentially significant approaches in the study of the relationship between children and toys suggest an important tool for analyzing the sociocultural context of the users to whom the products are intended, as well as their capabilities and limitations, enabling the development of products that contribute to the knowledge construction process, making them increasingly closer to children. The fundamentals of perceived visual quality, taken in this study as a theoretical basis and analysis tool, allow verifying each visual/aesthetic element that composes the artifact,

observing the participation and contribution of each of them to the potentiation of the affective relationship established between user-product.

In addition, the theory of facets, used here to construct the structuring sentence that guided the experiment, offers observation and analysis structures that allow us to understand the mediating role of artifacts in human life, making, to a certain extent, research and analysis more objective. For the design issues inherent to the artifact, since it makes it possible to perceive in a more clarified way the potential points or the existing noises in the development of the activity, locating them and facilitating, through more in-depth research, the insertion of the appropriate solutions.

Thus, from the analysis of the environment in which the child is inserted and its relationship with the artifact, it

becomes easier to define the characteristics that can enhance positive affect through the levels of Emotional Design. Therefore, we can say that the foundations of perceived visual quality, developed in this work through the experiment carried out with mothers, can offer the methodological structure necessary for the insertion and observation of positive characteristics that can enhance positive affect through studies of emotional design. from Norman.

At the end of the work, some relevant limitations were noted in the elaboration of the final results of the research: the time for its execution became very short, due to the complexity and extension of the topics worked that, necessarily, need a more detailed study. However, this same complexity and extension can point to important paths to be followed for the expansion of the work, demonstrating that these studies do not end here.

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