

THE DIMENSIONS OF USERS' FUN EXPERIENCES  
WITH CONSUMER PRODUCTS

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## **ABSTRACT**

### **THE DIMENSIONS OF USERS' FUN EXPERIENCES WITH CONSUMER PRODUCTS**

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User experience (UX) is a multi-dimensional user-product interaction involving positive and emotional usage. Fun experience is a component of UX which maintains distinctive dimensions. In this study these dimensions of the fun concept, namely the nature of the experience, the qualities of products that take place in the experience, and the emotional content of the fun experiences are investigated. The thesis is supported by arguments collected from the literature and the data from two empirical studies.

Keywords: fun, fun-related products, user experience, emotional design

## ÖZ

### KULLANICILARIN ÜRÜNLERDE DENEYİMLEDİKLERİ EĞLENCENİN BOYUTLARI

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Kullanıcı deneyimi, olumlu ve duygusal ürün-kullanıcı etkileşimini içeren çok boyutlu bir kavramdır. Eğlence de kullanıcı deneyimlerinin bir bileşeni olup, kendine özgü özellikler taşımaktadır. Bu çalışmada eğlenceli kullanıcı deneyimlerinin boyutları, diğer bir deyişle bu tarz deneyimlerin doğası, bu deneyimlerde rol alan ürünlerin özellikleri ve de bu deneyimlerin duygusal içeriği araştırılmıştır. Tez, literatürden derlenen görüşler ve iki adet deneysel çalışma ile desteklenmiştir.

Anahtar Kelimeler: eğlence, eğlence ilişkili ürün, kullanıcı deneyimi, duygusal tasarım

*There are three things which are real: God, human folly and laughter.  
The first two are beyond our comprehension, so we must do  
what we can with the third.*

*John F. Kennedy*

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Problem Definition

*We realize that many people will read this article as a sort of joke. To this extent, we are the victims of our own analysis: there are risks in being serious about fun. Still though we continue to see, without humor, the prospect of a decade of research analysis possibly failing to provide the leverage it could on designing systems people will really want to use by ignoring what could be a very potent determinant of subjective judgments of usability – fun. (Carroll & Thomas, 1988, p.23)*

Almost 20 years ago, Carroll and Thomas concluded their article on 'fun' with some reservations about the acceptance of the subject within the usability literature. Even so they underline the significance of fun; they thought that their attempts to bring up such a non-instrumental concept were early for the goal-directed usability.

As a matter of fact, it took some years to absorb these ideas within the field. But today, it is convenient to state that the picture has changed. Recognizing the importance of the users' hedonic needs necessitated incorporating those into the effectiveness and efficiency-focused usability. Therefore, a more comprehensive understanding of usability has been constituted. Its scope has been widened owing to the users' pursuit of emotional benefits besides functional ones; the users who consider the usage process as an experience and value the quality of this experience. This new usability brings in the concept of user experience (UX) which is associated with positive, experiential and emotional usage, rather than just preventing problems (Hassenzahl & Tractinsky, 2006).

The increased prominence of UX is apparent when we take a glance at the number of related research conferences in the areas of pleasure and fun, the research journals publishing special issues about the subject, and the emerging interest in

companies and universities. UX comprises many different dimensions in itself, and 'fun' is one of them. Fun is related to playfulness; it is a kind of experience that distracts the person from himself/herself. It is different than other hedonic experiences as it is associated with humor and amusement, and possesses certain qualities as triviality and non-seriousness, repetition, or transgression (Blythe & Hassenzahl, 2003). Despite the research efforts, still there is not any comprehensively constituted framework for explaining what fun actually is. The literature survey reveals that fun is studied mostly in relation to computer applications, whilst its inclusion as a research subject in product design is limited. The dimensions of fun, namely the nature of the experience, the qualities of products that take place in the experience, the interplay of fun with the instrumental needs of the users and its relation to other non-instrumental qualities remain unclear. The literature lacks a coherent understanding and a theoretical base of fun for products in physical domain; therefore, it is necessary to take the analysis of fun seriously to reveal its dimensions which contribute to rich and engaging user experiences.

## **1.2 Scope of the Study**

This study presents an insight on 'fun' with regard to product design by analyzing users' understanding of fun, together with studying the emotional content of fun experiences to determine their dimensions. In the following chapters, the product qualities that can be entitled as fun features will be identified and the emotions they evoke (and their appraisal patterns) will be discussed with supporting arguments collected from the related literature and the data from two case studies.

The main research question of the thesis is:

- What are the dimensions of fun in relation to products in physical domain?

During the study, the issue will be explored through the sub-questions listed below:

- In which terms is the fun concept different (or similar) from other hedonic concepts such as enjoyment or pleasure?

- Which qualities of the products contribute to the fun experiences?

- Which emotions are elicited during fun experiences with products?

- What are the appraisal structures behind the elicitation of these particular emotions and how this knowledge is integrated into product design?

### 1.3 Structure of the Thesis

General structure of the study consists of five chapters referring to the four sub-questions mentioned in the previous section (see Figure 1.1).

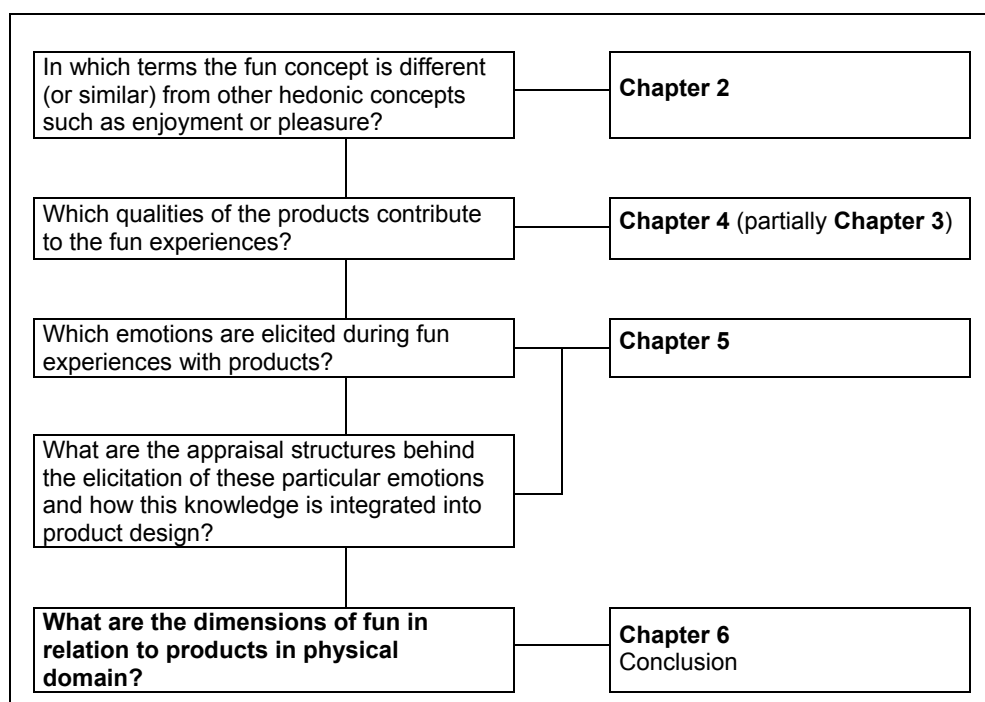


Figure 1.1 Diagram illustrating the structure of the study

The thesis starts with a chapter providing a brief overview on pleasure in which a history on its integration to the Human-Computer Interaction (HCI) literature and its contribution to the emergence of the UX concept are given. The experiential and connotative differences between the hedonic concepts, and the definition of fun and fun-related products are also given within this chapter.

As fun is a kind of user experience, the next chapter elaborates on this literature in order to understand its basics. In this chapter, the different models on experience are categorized and the key elements of experience are addressed through these models. Then, a framework on user experience comprising these key elements is presented at the end of this chapter.

Chapter 4 and Chapter 5 are based on this framework, wherein each chapter investigates its components in detail:

Chapter 4 deals with the tangible and intangible qualities of the products that take place in users' fun experiences. In this chapter, the relevant literature on product qualities is elaborated with an empirical study examining users' perception and understanding of fun. The results are evaluated in light of the findings of preceding literature research.

In Chapter 5, the emotional content of the users' fun experiences are explored. This chapter begins with a brief discussion on the terms of emotion and appraisal; then a corresponding empirical study concerning the emotions elicited by fun-related products is presented. The findings are supported by literature research focusing on the possible appraisal patterns behind these particular emotions.

The thesis concludes with a final chapter summarizing and evaluating the findings of the preceding chapters. Suggestions for further research are conveyed in the closing sections of the chapter.

## CHAPTER 2

### HEDONIC PHENOMENA

This chapter begins with a short overview on hedonic concepts studied by various disciplines, and proceeds with a section that explains the compulsory introduction of enjoyment to Human-Computer Interaction (HCI) literature, together with its contribution to the emergence of User Experience (UX) concept. In the second section of the chapter, pleasure-related hedonic concepts are presented and their differentiating dimensions are highlighted. The chapter ends with a brief section on designing fun-related products, comprising their qualities and the kind of experience they provide.

#### 2.1 The Studies on Hedonic Phenomena

Studies on pleasure and enjoyment have their roots in social sciences such as philosophy, psychology and sociology. Lately, marketing and consumer behavior disciplines have also made attempts at defining what pleasure is since its significance in the market success has been understood (Richins, 1997). This section begins with a brief history on pleasure studies, and continues with its introduction to the HCI literature and its current situation.

##### 2.1.1 Hedonic Concepts in Different Disciplines

The earliest studies on pleasure come from philosophy literature. In his compilation book of philosophical concepts, Honderich (1995) gives a short history of pleasure from ancient Greece to modern ages about why and how we enjoy. He asserts that the early view was to consider pleasure as a 'replenishment of a natural lack' (p.688). This viewpoint mostly referred to the satisfaction of the biological needs such as quenching thirst or appeasing hunger. Later, it was realized that some pleasures involved no replenishment; Aristotle for example, asserted that pleasure

was produced by the stimulation of the senses (2002, in Blythe & Wright, 2003). Besides the satisfaction of bodily needs, he considered the incitement of the mind and the senses also as pleasurable. This is the main idea behind the hedonism as well. Hedonism is the doctrine that claims 'pleasure is the good', and it argues that all the pursuit in life aimed at yielding pleasure (Honderich, 1995). In this era, pleasure was given an extreme importance since the philosophers committed to the investigations of the reasons of getting pleasure and the methods of measuring it. Afterwards, interest has been shifted from hedonism to philosophy of mind, in which pleasure was considered as one of the inner givens of the mind. For instance, Freud (1925, in Stephenson, 1967) puts forward a pleasure-pain principle in which pleasure is a "waking tendency to shut out painful experiences" (p. 52). He claims that it is the motivating force for all human actions, during the experience of which the person is not necessarily conscious.

Meanwhile in the twentieth century, studies to explain the nature of emotions and their role in experience have gained significance in the psychology literature. Early research in this domain paid attention on negative emotions. This was because negative emotions were considered to be more worthy than positive ones as they help to cope with the potential harm (Ellsworth & Smith, 1988). However, coping with the danger is not the only purpose of a person in his/her life. Laughing, loving a person, playing, being proud of the success, relaxing after a stressful event are also important for the well-being. Therefore, studies on pleasure and other positive states have come into question in the psychology literature with the realization of their functions (Lazarus, Kanner & Folkman, 1980; Ellsworth & Smith, 1988; Roseman, 2001; Scherer, 2001). In these studies, the mental processes involving pleasurable experiences and the reasons behind the elicitation of pleasure were investigated.

There is also a large body of literature relevant to the study of pleasure to be found in sociology and anthropology. In these studies, the play concept has been associated with pleasure and fun, and it has been considered to be one of the most noteworthy and fundamental human activities. The best known study on the subject of play is 'Homo Ludens' (Man the Player) by Huizinga (1949). In his book, Huizinga claims that play is found present in every action that is different from ordinary life, it is extremely active behind all cultural processes and it forms the fundamentals of social life. The forces of civilized life have their origins in play: myth and rituals, law,



commerce, crafts and art, poetry, wisdom and science. Furthermore, there are some other sociological studies focusing on the functions of play. For example, Goffman (1961) examines human interactions over playing games, and Stephenson (1967) analyzes the play dimension of mass communication which helps the masses to gain standards and provide them leisure. Hence, play is indeed a significant contributor of today's culture, and serves for developing new values and goals, learning new things, and achieving new understandings, which are strongly associated with the pleasure concept (Gaver *et al.*, 2004).

Besides social sciences, lately consumer studies and marketing departments have turned their attention to studying pleasure as well. Marketing researchers have shown interest in pleasure to influence consumer behavior in purchase decisions (Creusen & Schoormans, 2005), to create desirable consumer experiences (Schmitt, 1999, in Demir, Desmet & Hekkert, 2006), and to illustrate the relationship between consumption emotions and satisfaction (Mano & Oliver, 1993, in Richins, 1997). These studies revealed that affective product design contributes to the commercial success of the product and reinforces competitiveness in the market (Oh & Kong, 2003, in Spillers, 2005).

### **2.1.2 From Usability to User Experience**

As there are vast varieties of study in social sciences concerning pleasure, usability can be considered as a late-comer to the field. During the 1970s, it was realized that the physical, sensorial and perceptive approach of ergonomics was insufficient to overcome problems of interaction with computers (Adler & Winogard, 1992, in Berkman, 2005). These interaction problems necessitated involving cognitive insight to explain human behavior and mental processes. This is how the usability concept was born; and Human-Computer Interaction (HCI) emerged as a discipline within this field, bringing cognitive psychology into practice (Carroll, 2003). In the HCI literature, usability is associated with five attributes: learnability, efficiency, memorability, error and satisfaction (Dormann, 2003); and it is defined as "the effectiveness, efficiency and satisfaction with which a product is used." (ISO 9241-11). These are reasonably instrumental perspectives as they involve solely functional qualities of products. Even satisfaction, supposed by this definition, refers to the satisfaction of the user with regard to the effectiveness and efficiency of the

product. In other words, if a product meets those two qualities, it should guarantee satisfaction (Hassenzahl, 2001). However, this view seems to comprise a very limited fragment of the users' needs and expectations. It is assumed that the users evaluate the products at the cognitive level (e.g. performance, usefulness, capacity) and experience satisfaction at the affective level based on cognitive evaluation (Dormann, 2003). However, humans are affective beings; in addition to cognition, they have emotions, goals, motives, and drives. All of their evaluations are not necessarily based on usefulness or performance. Nonetheless, until recently, the only attempt to connect affect and usability concerned negative emotions where it focused on preventing frustration, rather than promoting enjoyable interactions (Johnson & Wiles, 2003).

Meanwhile, with continuing advances in computing technology, computers found their way into consumer products bringing designers face-to-face with interaction design challenges (Djajadiningrat, Wensveen, Frens & Overbeeke, 2004). These new technologies have pertained to work and work systems in the first place, then they went through rapid expansion; they diffused in our homes, leisure activities, and social environments. However, the motivations behind using technology differ between home and office. Monk (2002) asserts that we are paid to interact with computers and computer-integrated systems at work, therefore, we would put up with the tedious problems they may cause. On the other hand, our attitudes to technology that we buy for ourselves are different. We expect them to be reliable, attractive and enjoyable to use. Correspondingly, Dormann (2003) points out the functions of home applications dedicated to leisure activities, which are: augmenting play, enhancing social interaction and making domestic life more pleasurable, and she further argues that:

A large part of home applications are thus dedicated to leisure activities and playful consumptions, producing experiences enjoyed for their own sake for sensory pleasure, stimulation or emotional playoffs. (p.1)

Yet, traditional usability approach is limited in covering these new advances in interaction design. Many interactive products have entered our everyday lives, high technology allows more than pure functionality, and most importantly the aforementioned affective characters of the users have been recognized. These

factors brought a new understanding of usability that shifts our focus from task-oriented, easy to use activities to the 'joy of use'. Glass (1997, in Hassenzahl, Burmester & Beu, 2001) asserts that: "If you're still talking about ease of use then you're behind. It is all about the joy of use. Ease of use has become a given – it's assumed that your product will work" (p.70). Therefore, joy of use arises as a complementary element to functionality and usability. This more holistic approach extends the limits of the traditional usability and brings in the notion of 'user experience' (UX). Currently, the integration of the UX as a part of usability is widely accepted; it has even lead to the creation of new roles in design teams, such as User Experience Designer, User Experience Researcher, or Experience Modeler (Forlizzi & Battarbee, 2004).

The next chapter is dedicated to user experience where it will be studied in detail; however giving a brief definition would be beneficial to determine fun's position within this domain. Engage glossary (2005) defines experience as:

The sensation of interaction with a product, service or event through all of our senses, over time, and on both physical and cognitive levels. The boundaries of an experience can be expansive and include the sensorial, the symbolic, the temporal and the meaningful. (p.4)

As implied by this definition, user-product interaction may not be necessarily instrumental (e.g. using), it also refers to non-instrumental (e.g. playing) and non-physical interaction (e.g. remembering, desiring) (Demir, Desmet & Hekkert, 2006). It is shaped by the characteristics of the user and features of the product, and the usage context. Enjoyment and fun can be considered as the sorts of the user experience and they determine the quality of interaction.

## **2.2 Differentiating Enjoyable Experiences**

The user experience literature comprises a wide variety of contributions from various researchers, who are studying the non-utilitarian attributes of the products. Although they are defining almost the same phenomenon, each one of them entitles it differently, such as hedonic value, fun, pleasure or joy (Hassenzahl, 2002; Monk &

Frohlich, 1999; Jordan, 2000; Glass, 1997, in Hassenzahl, 2003). The differences between these concepts, their meanings and the experiences they refer to are vaguely defined. For this reason, in the previous section, the terms of enjoyment, pleasure and fun have been used interchangeably. However, this section aims to provide a structure that facilitates comparisons between these different kinds of enjoyment by focusing on their experiential and semantic differences.

An early attempt to differentiate pleasure-related concepts was by Bentham (1789, in Honderich, 1995). He proposed a 'hedonic calculus' (or 'felicific calculus') that represents a scale of pleasures that are listed according to their intensity, duration and likelihood of the action leading to pleasure. However, this quantitative distinction was criticized by Mill (1979, in Solomon & Stone, 2002) who claims that pleasures are 'qualitatively' as well as quantitatively different. He gives the examples of doing philosophy and playing bowling; they are both pleasurable experiences but involve different types of pleasure; for that reason they cannot be qualitatively compared.

In order to avoid this kind of a single-dimensional description, the experiential meanings of the pleasures should be taken into consideration. For instance, Blythe and Hassenzahl (2003) consider fun and pleasure as distinct forms of enjoyment and present their connotative and cultural differences in their study. They assert that enjoyment comprises the experiences of fun and pleasure, and it is the superordinate category. Within this category, the difference between fun and pleasure comes from the 'distraction' and 'absorption' they offer. In fun experiences we are distracted from the self; our concerns, problems, motivations are not important at the moment. The popular culture's triviality, non-seriousness or absurdness, repetition and transgression of morals can be used for explaining what it meant by fun. On the contrary, pleasure is experienced when a person is looking at a masterpiece of high art, climbing a mountain or playing chess. It is a deeper kind of enjoyment that absorbs people in an activity or an object. In contrast to fun experiences, people make connections to themselves in pleasurable experiences, namely their concerns, motivations, goals become relevant. The activities that offer pleasure become a part of one's self-definition. This does not imply that fun is less 'favorable' than pleasure experiences. They are both equally important answers to different psychological needs; this is why most people choose to watch television in their leisure time, instead of reading a challenging book (Seligman &

Csikszentmihalyi, 2000, in Blythe & Hassenzahl, 2003). Most of the time, the superficial, short-termed pleasures are preferred rather than pleasures that require commitment, time and effort.

Commitment to an activity (or being totally absorbed in it) has been studied by Csikszentmihalyi and his colleagues. This state is entitled as 'flow' and it is a euphoric state of concentration and involvement, in which the person is happy, motivated and cognitively efficient (Csikszentmihalyi & LeFevre, 1989). An activity that produces flow is so satisfying that the person carries out the activity for its own sake – as experts who spent their time on the activities they prefer, such as musicians, athletes, surgeons, artists, etc. The characteristics of flow experience were stated to be the presence of a match between the person's skills and the challenges offered by the activity, sense of control on the actions, decreased concern for the self during the activity but a stronger sense of self after the completion, and an altered sense of time (Csikszentmihalyi, 1992, in Johnson & Wiles, 2003). These characteristics are echoed in the pleasure definition of Blythe and Hassenzahl (2003) where its focus is on activity and it involves a feeling of absorption. Flow can be considered as a state that accompanies pleasurable experiences, and consequently separates pleasure from fun in terms of its intensity and relation to action.

Furthermore, Blythe and Hassenzahl's (2003) distinction of pleasure and fun is also in parallel with Huizinga's (1949) classification of play and laughter respectively. Huizinga (1949) defines play as: "A free activity standing quite consciously outside "ordinary" life as being "not serious", but at the same time absorbing the player intensely and utterly." (p.13). He emphasizes the 'absorption' that playing conduces and also defines the seriousness dimension of playing. In his book, he asserts that many people consider play as direct opposite of seriousness, however it is better explained as non-seriousness. When playing, a person is aware that situation is not real and it is 'only for fun', however this does not stop the person to proceed with the greatest seriousness and be absorbed in it. Think of little girls playing with their dolls, a professional tennis player on a tournament or a man gambling around a roulette table; all of them attach a great importance to their play. Conversely, Huizinga proposes laughter as the opposite of seriousness. Laughter is associated with humor, and the two are the subsidiaries of fun. In humor, the total experience is non-serious, short-termed and concentrated on the object. In terms of seriousness

and the focus of the experience, Huizinga's division of play and laughter corresponds with the Blythe and Hassenzahl's (2003) differentiation of pleasure and fun. Table 2.1 points out the differences between play-pleasure and laughter-fun experiences.

In brief, pleasure and fun are diverse experiences with different characteristics. Pleasurable experiences take their sources from the qualities of the activity, which absorb the person and provide opportunity for personal growth. The person is involved in pleasurable experiences with seriousness, his/her concerns, motivations and goals become relevant. On the other hand, fun experiences distract the person from the self, at the moment he/she is focused on the object that is the source of the fun. Fun experiences involve the elements of triviality and absurdness. They are associated with humor and laughter; consequently, the person is aware of the non-seriousness of the event. Although these experiences are not necessarily personally meaningful or do not reveal the untouched parts of our personalities, they are acknowledged for their humorous or absurd content, and for the cleverness they involve.

Table 2.1 The attributes of laughter-fun and play-pleasure experiences.

	<b>Seriousness</b>	<b>Focus</b>	<b>Duration</b>	<b>Kind of Experience</b>
Laughter - Fun	-	Object/Event	Short	Distraction
Play - Pleasure	+	Activity	Long	Absorption

### **2.3 Designing for Fun**

When it comes to design, the differences between pleasure and fun experiences bring in the necessity of having different approaches. Blythe and Hassenzahl (2003) address the attitudes that should be taken into consideration when designing for pleasure and designing for fun by asserting that:

It is likely then that repetitive and routine work based tasks and technologies might be made fun through design but non-routine and creative work must absorb rather than distract if they are to be enjoyable. The infamous winking paperclip in word is clearly intended to be fun but most people find it annoying. It distracts rather than aiding concentration or absorption. A cute graphics approach may be appropriate to making repetitive or mundane tasks more enjoyable (...). But such an approach can be hazardous if the experience that is being designed for should be pleasurable rather than fun. (p.96)

Therefore, according to the context that the product is intended, different approaches on design should be followed. The absorption or distraction level needed in the activity should be examined, and then the product should be shaped accordingly. The reason for this is fun-related products are different than pleasurable products in terms of their attributes and kind of experience they provide. For instance, as mentioned in the previous section, fun is a relatively short-termed experience. It has some unique qualities as triviality, absurdness, and spectacle (Blythe & Hassenzahl, 2003); consequently, the products that are entitled as 'fun' correspond with these terms. They comprise humor and humanity, in that way they reach out to people and begin a dialogue (Demirbilek & Sener, 2003).

Furthermore, the fun-element in products offers playfulness to the users. In HCI literature, playfulness is defined as the user's tendency to interact with microcomputers spontaneously, inventively, and imaginatively (Noyes & Littledale, 2002, in Demir, Desmet & Hekkert, 2006). This definition is also acceptable for fun-related products as they allow creative use, and encourage the users to explore the product and communicate with it.

Certainly, these factors do not mean that fun-related products have to be cute and smiling. When addressing fun, instead of taking a Walt Disney approach on design, it should be done in a sophisticated way that goes beyond the superficial interpretations. In other words, fun should not be a 'glued on' quality, fun-related products should offer engagement and interaction in every level which involves users physically and emotionally, appreciating their sensory richness (Overbeeke, Djajadiningrat, Hummels, Wensveen & Frens, 2003). Some of these fun qualities of the products are summarized by Carroll (2004):

Things are fun when they attract, capture, and hold our attention by provoking new or unusual perceptions, arousing emotions in contexts that typically arouse none, or arousing emotions not typically aroused in a given context. Things are fun when they surprise us; when they don't feel like they look, when they don't sound like they feel. Things are fun when they present challenges or puzzles to us as we try to make sense and construct interpretations, when they transparently suggest what can be done, provide guidance in the doing, and then instantaneous and adequate feedback and task closure. (p.38)

Carroll mentions these factors in relation to computer applications; however these are the qualities that are also valid for the products in physical domain. Being novel, surprising, challenging and communicating effectively with the users are examples of the means to provide 'fun' in a sophisticated way. These qualities are, indeed, significant components of fun and they will be studied in detail in Chapter 4 with the data from a supporting empirical study on the qualities of fun-related products.

However, before proceeding with the product attributes, a chapter on user experience will be presented. As fun is a kind of user experience, investigating the nature of the experience and determining its components is necessary before discussing the dimensions of the fun experiences.



## CHAPTER 3

### USER EXPERIENCE

In the previous chapter, a brief history about the introduction of user experience (UX) to the usability domain has been discussed. This chapter elaborates on the UX literature with the intention of explaining its nature. It involves definition of the concept, its components, and the current UX models. A simple framework that comprises the key elements of the experience is constituted in the last section of the chapter to guide the subsequent empirical studies on the 'fun experience' which will be discussed in Chapter 4 and Chapter 5.

#### 3.1 User Experience

Design research is particularly interested in understanding the nature of user experience, since experience underlies the basis of all user-product interactions. The more the researchers have insight on the dimensions of it, the more the designers are capable of creating successful products that elicit rich interactions. Hence, the research society endeavors to develop the UX concept theoretically by building models. While doing so, most of them base their ideas on John Dewey's philosophy of experience (Forlizzi & Battarbee, 2004; Forlizzi, Mutlu & DiSalvo, 2004; McCarthy & Wright, 2003; Wright, McCarthy & Meekison, 2003). According to Dewey (1934, in Mutlu & Forlizzi, 2004), experience involves the relationship between the subject and object; in which both sides have an integrity that there is no division or hierarchy between them.

Adopting Dewey's arguments, Forlizzi, Mutlu and DiSalvo (2004) have created a framework attempting to explain the dimensions of any kind of experience, which certainly encompasses the concept of user experience. The framework considers the experiencer (subject) and the thing experienced (object) as the main parts of the experience that shape its quality.

The object contributes to the experience by its specific attributes that convey experience to a practical, emotional and intellectual form. In terms of design, these forms refer to the functional and usable attributes, aesthetic aspects, and lastly social and cultural meanings of the products, respectively. An experience incorporates these different types of factors and creates an overall experiential quality.

Besides the attributes of the object, the attributes of the subject are also significant in the experience. The subject attends to the situation with certain goals, and the quality of experience is constituted by the degree of correlation between the intended goals and realized experience. In constructing these goals, objects in the environment play an important role. Figure 3.1 illustrates the framework of Forlizzi, Mutlu and DiSalvo (2004) that present different dimensions of experience and also put forward the difference between the intended experience and actual experience.

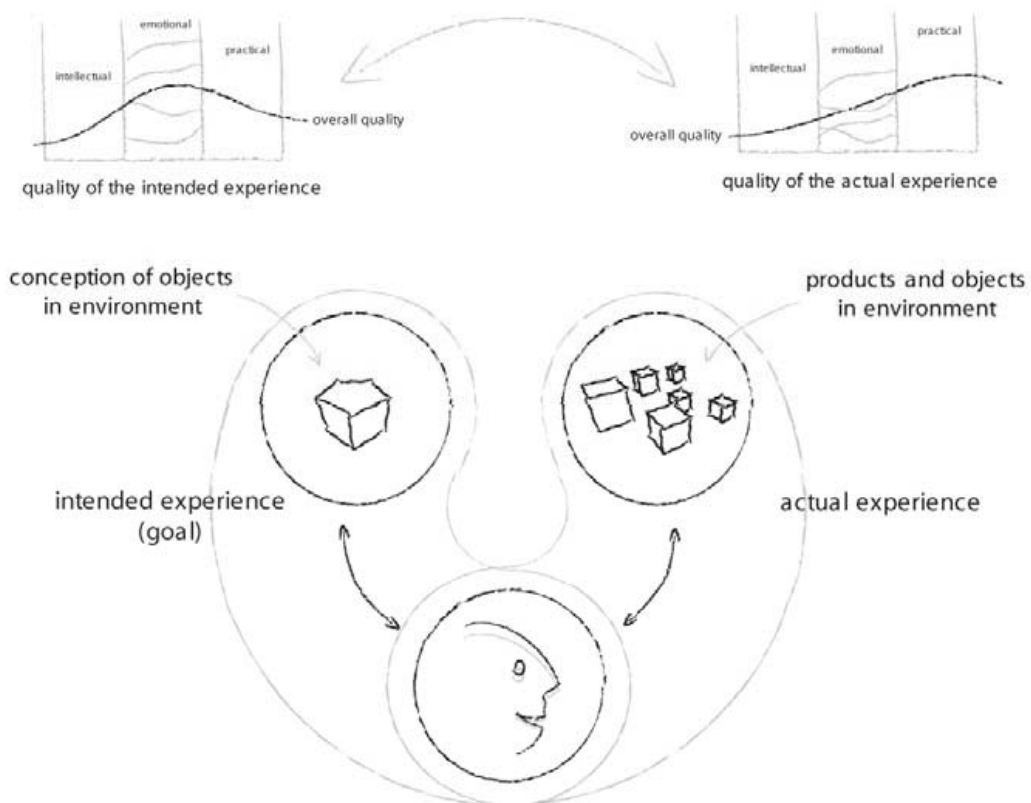


Figure 3.1 A framework of user experience (Forlizzi, Mutlu & DiSalvo, 2004)

In the basis of this model, it can be stated that the presence of a subject (with goals), an object (with different attributes) and an environment (takes part in constructing goals) is essential in the emergence of experiences. Unquestionably, these three elements are included in the user experience as well. User experience involves a 'user', a 'product' and a 'context' in which the interaction takes place. Correspondingly, Hassenzahl and Tractinsky (2006) define user experience as:

UX is a consequence of a user's internal state (predispositions, expectations, needs, motivation, etc.), the characteristics of the designed system (e.g. complexity, purpose, usability, functionality, etc.) and the context (or the environment) within which the interaction occurs (e.g. organizational/social setting, meaningfulness of the activity, voluntariness of use, etc.) (p.95).

Therefore, it can be stated that user experience has diverse dimensions; it is a holistic concept that avails more than fulfilling solely instrumental needs. This process refers to all the aspects of how people use a product; it encompasses physical, sensual, cognitive, emotional and aesthetic dimensions of usage (Forlizzi & Battarbee, 2004). In other words, how the product is handled, how it sounds, how pleasurable it is to look at, how well the user understands how to use it, and how he/she feels after the usage determine whether or not it is a rich and engaging experience. The answers to these kinds of questions shape the quality of experience.

So, what is the role of the designer in these processes? The complexity of the experience concept implies that designers cannot design 'an experience' since it involves not only physical product features, but also the user's internal states. This is an area that is beyond the control of a designer, he/she can only guess the perceptive and cognitive processes of the users. However, what designers can do is 'design for experience' (Wright, McCarthy & Meekison, 2003, p.52), that is to take experiential dimensions into consideration while designing, without guaranteeing a particular experience (Hassenzahl & Tractinsky, 2006). Designers can accomplish this task by treating the users holistically, which refers to anticipating and investigating the needs and expectations of the users, and fulfill these extensively with related product qualities. The adequate analysis of the individual users leads to

engaging products that enhance the usage process and create the intended user experiences.

## **3.2 User Experience Models**

A glance at the UX literature reveals a number of theories and models developed for understanding the dimensions of it. Although these models are diverse in their origin, they also have many common points. Essentially, they attempt to complement a functional perspective on user-product interaction by adding sensual, emotional, social and cultural enhancements (Blythe & Wright, 2006).

As mentioned in the previous section, user experience involves three components: 'user' is the experiencer, 'product' is the thing experienced, and 'context' influences the experience. Forlizzi and Battarbee (2004) categorize user experience into three models in correspondence with these components, wherein each model puts a different component into focus. Product-centered models attempt to reveal the qualities of products that elicit rich experiences; user-centered models aim to understand users; and interaction-centered models study the relationship between user and product while explaining the nature of experience.

### **3.2.1 Product-Centered Models**

Product-centered models are focused on the 'product' side of the user-product interaction, and aim to provide design guidelines for practice. In other words, "they describe the kinds of experiences and issues that must be considered in the design and evaluation of an artifact, service, environment, or system." (Forlizzi & Battarbee, 2004, p.262). Alben's (1996) set of criteria that intend to define successful interaction design is an example of these kinds of models. Alben assesses the quality of interaction by eight product attributes that fall into two categories: the attributes of products that make direct contribution to user experience, and the attributes of products that indirectly affect the user as they concern the development process.

According to the model, in order to create successful interactions, the product should be *needed* (i.e. satisfying a particular need; making a social, economic or environmental contribution), *learnable and usable* (i.e. communicating its purpose; being easy to learn; supporting different ways that people will approach and use), *appropriate* (i.e. solve the right problem at the right level), *aesthetic* (i.e. being aesthetically pleasing and sensually satisfying; having a spirit and style; accomplishing an integration of software and hardware; exhibiting continuity across graphic, interaction, information and industrial design), *mutable* (i.e. being adapted to suit particular needs and preferences; allowing change for new uses), and finally *manageable* (i.e. supporting the entire context of use by helping users to manage needs such as installation, training, maintenance, or supplies). These are the criteria that constitute the first category of the model which specifies the attributes of products contributing to user experience.

In the second category that concerns the product development process, the criteria of *understanding of users* (i.e. the design team understand the needs, tasks and environments of the people for whom the product is designed), and having an *effective design process* (i.e. the product being a result of a well-thought design process; employing methodologies such as user involvement, iterative design cycles and interdisciplinary collaboration) take place. Figure 3.2 presents these criteria for product design that is listed by Alben (1996). This model is a product-centered user experience model that comprises the requisite product qualities to create successful interactions with the users and contribute to the occurrence of rich experiences.

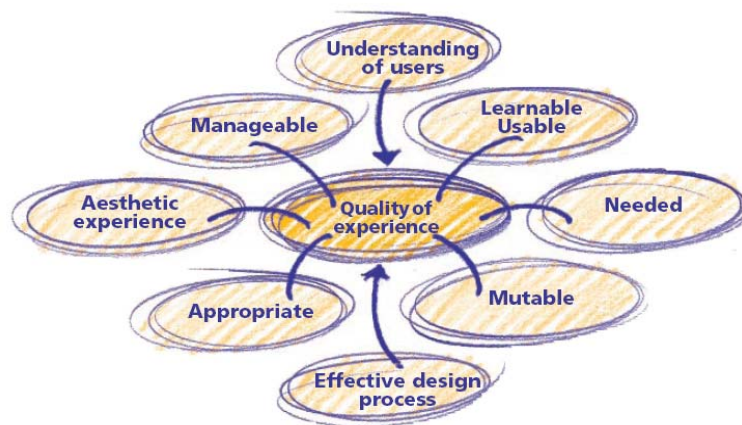


Figure 3.2 The criteria for products to evoke rich user experiences (Alben, 1996, p. 14)

### 3.2.2 User-Centered Models

User-centered models are concentrated on understanding the users of the products. In these models, personal needs, goals, expectations and actions of the users are studied in order to derive information about how they experience products.

Hassenzahl's (2003) model is an example of these kinds of models, in which he attempts to address the "subjective nature of experience" (p.31) by studying users' perception of the products, emotional responses and varying situations the experience takes place in. Figure 3.3 illustrates the key elements in the model.

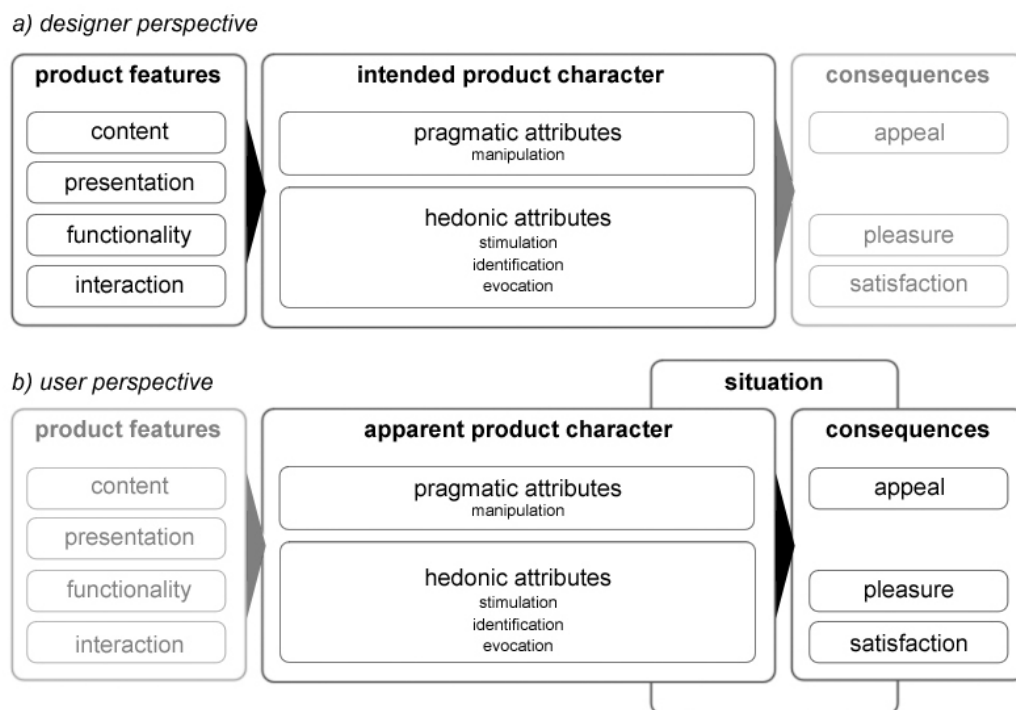


Figure 3.3 Key elements of the user experience model (Hassenzahl, 2003, p. 32)

In his model, Hassenzahl (2003) differentiates two perspectives on user experience. One is that of a designer, and the other is from the user. The whole process of interaction starts from the designer's perspective. The designer is the person who creates a product by choosing and combining certain *product features* (e.g. content, presentational style, functionality, interactional style) and conveys an *intended*

*product character*. The term 'intended' is emphasized here, because it is not for sure that the users will perceive the product the way the designer wants it to be perceived. Product character refers to the attributes of products and its function is "to reduce cognitive complexity and to trigger particular strategies for handling the product." (p.32).

When the users are confronted with the product, the other perspective -the user perspective- unfolds. The users perceive the product's features at the first place, and then they construct their own product character by combining product features with their personal standards and expectations. In the model, this is called *apparent product character*. Afterwards, evaluation of apparent product character leads to *consequences* such as judgment about appealingness of the product (e.g. attractive, good, pleasant, motivating, desirable), emotional consequences (e.g. pleasure, fun, frustration, surprise), or behavioral consequences (e.g. increased usage frequency, decreased learning time). Certainly, these consequences are embedded into a specific usage *situation*, therefore the characteristics of that situation moderate the consequences of experience.

The most significant contribution of Hassenzahl (2003) to the literature is that he connects product attributes with the needs and values of the users (Hassenzahl & Tractinsky, 2006). As aforementioned, transforming product features into apparent product character requires cognitive processes in which the users evaluate the situation according to their standards and goals. Therefore, he analyzes these evaluations and addresses two categories of needs which are expected to be fulfilled by certain product attributes. These attributes are pragmatic and hedonic. Pragmatic attributes of the products serve for fulfilling instrumental goals by *manipulation* of the environment. The qualities of being supporting, useful, or controllable are examples of pragmatic attributes. Besides fulfilling instrumental goals, Hassenzahl (2003) is also concerned with the attributes of the products that are related to an individual's psychological well-being. He entitles these attributes as hedonic attributes. He categorizes hedonic attributes as providing *stimulation*, *identification* and *evocation*. Stimulation refers to the user's personal growth by proliferation of knowledge and development of new skills. Novel, interesting and exciting products can be considered as stimulating since they help to fulfill these goals. Identification attribute of the products answers the need of expressing

identity, and being socially recognized. The products that present self to the others can be considered as communicating identity. And finally, evocation refers to the products that provoke memories by representing past events. In brief, Hassenzahl's (2003) user-centered experience model attempts to identify the components of experience and map the physical properties of the products onto their psychological effects (Wright, McCarthy & Meekison, 2003).

### 3.2.3 Interaction-Centered Models

Interaction-centered models study the role of the products as they contribute in bridging the gap between the designer and user. Models of this kind endeavor to provide knowledge about the ways users engage with products and the world. For instance, Wright, McCarthy and Meekison (2003) bring together the studies of philosophers such as Dewey (1934) and Bakhtin (1986) about the nature of experience, and create a model that identifies four threads of experience: compositional thread, sensual thread, emotional thread, and spatio-temporal thread. Different than former two models, they treat the subject with a holistic approach which emphasizes "experience cannot be reduced to fundamental elements but only exists as relations." (p.46). Therefore, their four threads of experience are not divisible components, but rather depend on each other. Figure 3.4 illustrates the four aspects of experience which are delineated as threads of a braid to underline the intertwinement of them.

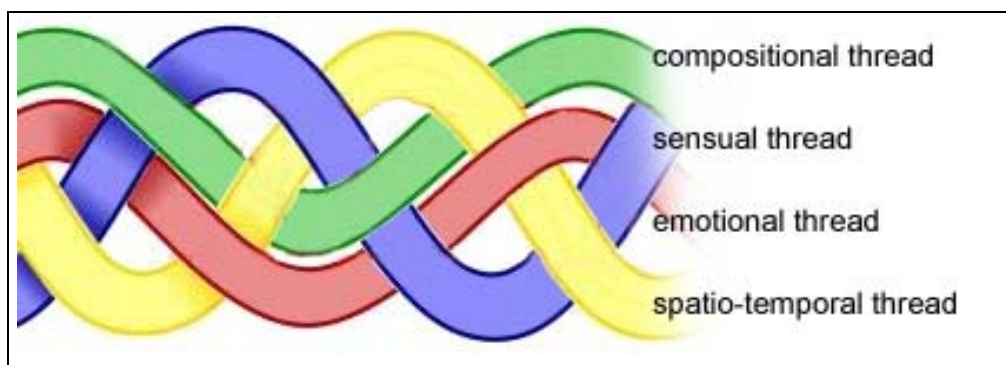


Figure 3.4 Wright, McCarthy and Meekison's model of human experience (2003)



In this model, the compositional thread refers to the part-whole structure of an experience. Wright, McCarthy and Meekison (2003) assert that the questions of “(...) “what is this about?”, “what has happened?”, “what will happen next?”, “does this make sense?”, “I wonder what would happen if?” (...)“ (p.47) involve the compositional thread of experience. This thread has a narrative structure that leads to inferences about usage in terms of possible consequences or plausibility. The sensual thread is concerned with the sensory engagement with a situation, such as look and feel of a product. The emotional thread refers to either emotional responses to a situation or motivations influencing our actions and understandings. Finally, the spatio-temporal thread signifies the particular time and place the experience unfolds. Consequently, this model emphasizes continuous engagement between the subject and object in a particular setting.

#### **3.2.4 Comparing User Experience Models**

These three prominent models of user experience focus on different aspects of user-product interaction, while sharing some common ideas with the others. The distinctions arise as each one proposes a different aim, defines the experience concept differently, and consequently puts emphasis on a different facet of interaction.

First of all, the aims of these models are different; Alben (1996) attempts to describe a set of criteria for evaluating products, Hassenzahl (2003) makes an effort to link user needs to product attributes, and Wright, McCarthy and Meekison (2003) aim to understand the nature of experience. As a result, their understanding of experience varies. Alben defines experience as all dimensions of using an interactive product, and therefore gives weight to understanding the product side of the interaction in her model. Hassenzahl defines experience as a ‘subjective’ situation, whose evaluation can vary between individuals because of their personal standards. Therefore, he studies the experience from the user perspective. And lastly, in contrast to Hassenzahl, Wright, McCarthy and Meekison claim that experience has an ‘objective’ nature that involves both the things the user brings to the situation and the artifacts that participate in the experience. So, they shape their model according to the aspects of engagement between user and product.

Furthermore, the models of Hassenzahl and Alben differ from Wright, McCarthy and Meekison's model in another sense as well. The former two researchers focus on specifically defining 'user experience'; however the latter intend to explain experience concept in general. For that reason, Wright, McCarthy and Meekison criticize Hassenzahl's model as he attempts to identify the components of experience in a traditional scientific sense. However, their view is that experience cannot be reduced to fundamental elements and they explore it with a holistic approach by trying to reveal the interaction of its components with each other.

Although there are differences in terms of aims and definitions; these models share some common ideas and arguments, which are illustrated in Figure 3.5. First of all, they all attempt to address human needs that are beyond instrumental. For example, Alben (1996) in her model identifies aesthetics as a contributing attribute to the quality of experience; Hassenzahl (2003) is concerned about hedonic attributes of the products, and Wright, McCarthy and Meekison (2003) mention sensual engagement and emotional interaction in rich experiences. All of these approaches have the common goal of enhancing current models of product quality with hedonic aspects of usage.

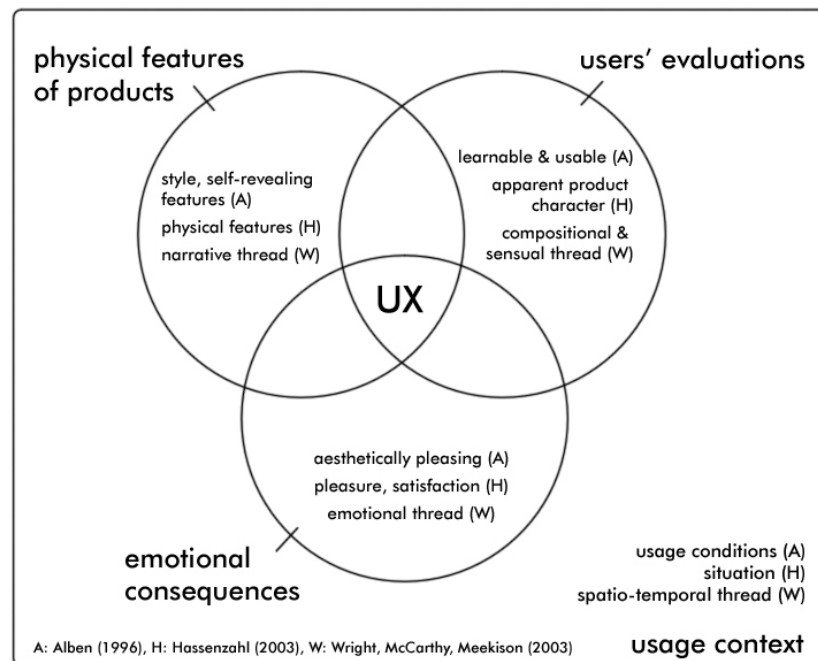


Figure 3.5 The common dimensions of the three models

Moreover, these models refer to some physical features of products that lead to rich user experiences. These features are the most detailed in Alben's model in which she defines criteria for product evaluation such as having a style, accomplishing software-hardware integration, making an environmental contribution, having self-revealing features or performing well. Similarly, Hassenzahl mentions about content, presentational style, functionality, and interactional style in his category of product features. And finally, Wright, McCarthy and Meekison mention about the narrative dimension of user experience which can be interpreted as the properties and the compositional elements that convey information about the usage, and also the product itself.

In addition to tangible properties of products, the cognition of the users to interpret these properties are mentioned in the models as well. Rather than directly adapting designers' intentions, the users go through some cognitive processes and construct their own images of products. For example, Alben (1996) mentions about the communication of a product with its user in terms of being learnable and usable or conveying its purpose. This dimension is explicitly reflected in Hassenzahl's (2003) model as he differentiates designer's intended product character from the user's apparent product character which results from evaluation according to goals and standards. Finally, the model of Wright, McCarthy and Meekison (2003) attaches importance to people's inferences from situations. Their compositional thread partly refers to this dimension as the user tries to make sense about the products' purpose, consequences, and action possibilities in this thread of experience. Moreover, the sensual thread in their model is also associated with this category, because it comprises the 'look and feel' of a product.

Another point is that all these models on user experience are concerned with the affective consequences of interaction and try to understand the role of affect as the antecedent, consequence or mediator of technology use (Hassenzahl & Tractinsky, 2006). The models study the consequences of interaction in terms of being aesthetically pleasing (Alben, 1996), resulting with pleasure, satisfaction, judgments about appeal (Hassenzahl, 2003), or including the category of emotional thread (Wright, McCarthy & Meekison, 2003).

Finally, the context of experience is also echoed in all three models. The influence of the environment that the experience takes place is attached a great importance. Alben (1996) discusses this dimension by emphasizing certain properties of products such as solving the right problem at the right time and being able to change and adapt themselves in new usage conditions. Hassenzahl's (2003) model comprises a situation component that moderates the consequences of experience, and finally Wright, McCarthy and Meekison (2003) add a spatio-temporal thread to their model to address the particular time and space the experience unfolds.

### 3.3 The Dimensions of User Experience

The dimensions of experience gathered from the three models constitute the basics of the user experience concept. It is shaped by the characteristics of the user (e.g. personality, background, goals, values, skills) and the product (e.g. shape, size, color, content, material), which is affected by the context. These dimensions are put into a diagram which is illustrated in Figure 3.6 consisting of the tangible features of products, users' subjective inferences about these features (intangible features of the products), the emotional content of the experience that result from inferences, and the context that this process takes place in.

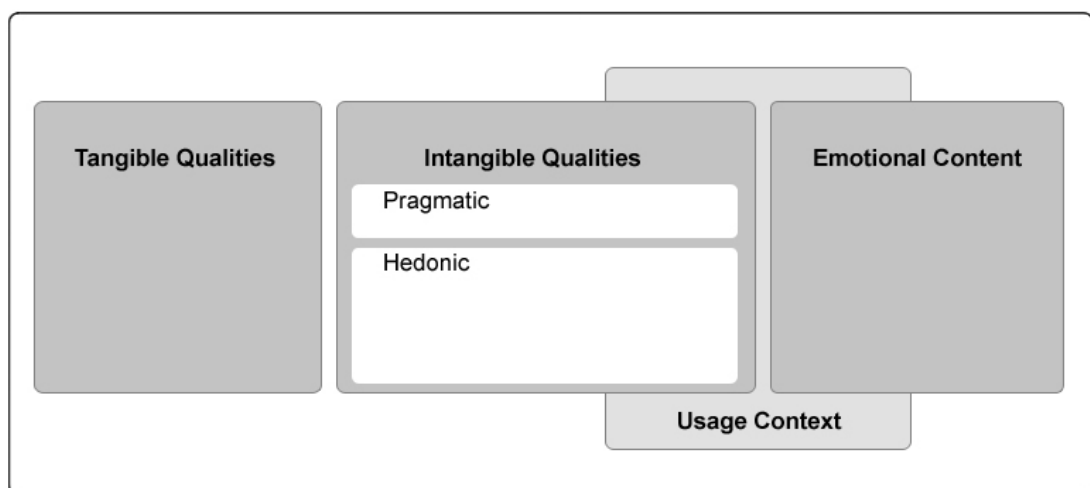


Figure 3.6 The key elements of user experience

In this framework, *tangible qualities of the products* refer to the physical elements of appearance that are combined by the designer. These elements may be geometry, dimensions, texture, material, color, graphics and detailing; and they are the 'objective' qualities of the design (Crilly, Moultrie & Clarkson, 2004). These qualities determine the first impression of the users, communicate values and lead to generating illations.

Based on a literature review, Creusen and Schoormans (2005) identify six different roles of product appearance. The appearance of the products communicates aesthetic and symbolic values, functional characteristics, ergonomic information, draws attention and influences the ease of categorization. These are the values that are inferred from the physical features of the products. Therefore, perception of the tangible qualities of the products leads to a cognitive response that involves the judgments of a user about the product. These are entitled as the *intangible qualities* within this framework. These qualities can be related to pragmatic and hedonic issues. Pragmatic inferences refer to what a product says about its function, usage mode and qualities. Hedonic inferences signify both aesthetic impression, and also the symbolic associations. Therefore, these elements are not objective qualities of the product; they are the cognitive responses to the product form. These are driven from both the perception of tangible stimuli and pre-existing knowledge (Crilly, Moultrie & Clarkson, 2004).

The evaluations about the products determine the *emotional content* of the experiences. The possible emotional responses to products are so wide that they may be pleasure, joy, amusement, anger, relaxation, surprise, interest, satisfaction, contempt, etc. These emotions provide behavioral reactions towards the products, such as approaching or avoiding.

Lastly, the *usage context* is a significant influence in this process. It shapes the experience as its results may change with the particular time and place it occurs. A product which is pleasurable may be considered as annoying under some usage conditions such as presence of other people or emergency. Therefore, the effect of usage context in determining the quality of experience cannot be underestimated.

In summary, user experience is a multi-faceted everyday encounter that is shaped by various factors. These factors are categorized under the previously mentioned dimensions of tangible and intangible qualities of the products, emotional content of the usage and the usage context. User experience involves any kind of emotional experience that is based on the user-product interactions (e.g. pleasurable user experiences, frustrating user experiences, satisfying user experiences, surprising user experiences). The content of their four dimensions distinguishes these user experiences from each other. For instance, the features of the products that take place in enjoyable experiences are different than those that play a role in aesthetically satisfying experiences; or the usage context may affect the experience being pleasurable or annoying.

Users' fun experience is one of these subsets of user experience; consequently, all of the dimensions of user experience are relevant for the fun experiences as well. However, fun experiences have their own specific product qualities and emotional content. Usage context also influences an experience to be considered as fun. Therefore, these dimensions should be studied for constituting an understanding on fun. Chapter 4 and 5 discuss these dimensions by building on Figure 3.6 while limiting the scope of this framework on users' fun experiences. The tangible and intangible qualities of the fun-related products; and emotional content of the fun experiences will be discussed in the following two chapters.

## CHAPTER 4

### THE FUN-RELATED QUALITIES OF PRODUCTS

The previous chapter presents a framework comprising the key elements of the user experience. While confining the extent of this framework on users' fun experiences, this chapter elaborates on tangible and intangible qualities of fun-related products (see Figure 4.1). The first section of the chapter deliberates on these two qualities in detail; the chapter proceeds with the presentation of a corresponding empirical study investigating the qualities of fun-related products.

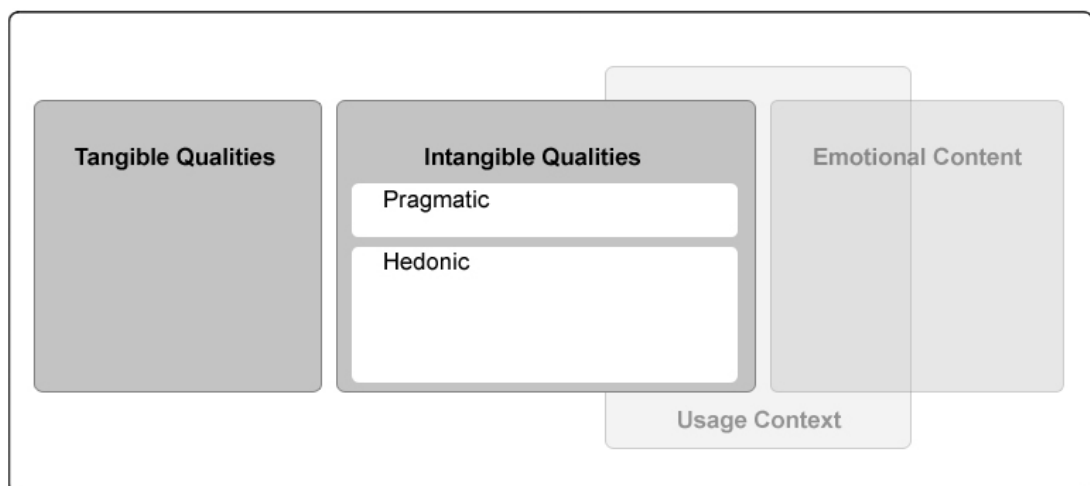


Figure 4.1 The scope of Chapter 4

#### 4.1 Product Qualities

As explained earlier, user experience (UX) has come to increased prominence in recent years. UX research has been seen to add value to the products by enhancing their basic dimensions of functionality and usability. It encourages a holistic view of

the product, judging the quality of a design on the basis of the relationship between a product and the people for whom it is designed for. The user-product interaction is a mutual process, where both sides have influence upon the quality of interaction. Not only are the physical qualities of the products important in the usage, but also the way that the users interpret these qualities is vital. As a matter of fact, positive experiences are not just a property of the product but of the interaction between the user and the product (Jordan, 2000).

All products make statements through their appearance. Jordan (2000) entitles these objective elements of the products as their 'formal qualities' (p. 87). When the users perceive the formal qualities of a product, they evaluate these qualities according to their motivations, attitudes, expectations and concerns, and then assess the value and meaning of the product (see Appraisal theory in Chapter 5). These assessments are called the 'experiential qualities' (Jordan, 2000, p.87). The formal and experiential qualities correspond with the 'tangible' and 'intangible' qualities of the user experience framework that was presented in the third chapter. These are the basics of the user-product interaction which will be elaborated in the following sections.

#### **4.1.1 Intangible Qualities**

The products communicate with users through their design and function. Accordingly, centering the evaluations on the products' physical features and context, the users construct their own product images according to their views, attitudes and expectations. These assessments are the intangible qualities of the products, which create positive or negative perceptions, emotions, values and associations about the products (Wikström, 1996, in Demirbilek & Sener, 2003).

As noted before in the third chapter, the interaction between the user and the product actually answers two basic needs of the users. These are instrumental needs (i.e. need of achieving goals) and non-instrumental ones (i.e. need of getting pleasure, sustaining well-being). Consequently, the users interpret the products according to these needs and divide their intangible qualities into two. While the pragmatic qualities help fulfill the instrumental needs, the hedonic qualities fulfill the non-instrumental ones (see Hassenzahl's user experience model in Chapter 3).



First of all, pragmatic qualities refer to the attributes that are related to the product's function and usage sequences. For instance, functionality and usability are pragmatic qualities since they help achieving goals, provide efficiency and satisfaction. Moreover, the qualities such as performance, safety, recyclability and comfort are pragmatic because of their direct influence on the effectiveness of the usage.

On the other hand, hedonic qualities signify the sensory and aesthetic pleasures, and symbolic meanings associated with products. Within the UX literature, these dimensions of the products have yielded several theoretical studies. For instance, Jordan (2000) concentrates on pleasurable products and categorizes four kinds of pleasure that a product brings by its certain qualities. These are: physio-pleasure, socio-pleasure, psycho-pleasure and ideo-pleasure. Some of the product qualities that may give rise to these pleasures are illustrated in Table 4.1. The arguments of Jordan are in parallel with the findings of Desmet (2002) who specifies the hedonic product attributes to evoke positive emotional experiences as delighting the senses, complying with social standards, being novel, and offering challenge. These two studies investigate the different types of positive experiences that products bring.

Table 4.1 Jordan's 'four pleasures' associated with eliciting product qualities

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Physio-pleasure	Being pleasurable to touch Offering olfactory pleasures
Socio-pleasure	Suitability to cultural codes and conventions Showing status Identifying the user as a member of a specific social group
Psycho-pleasure	Offering engagement during usage Enhancing the users' cognitive capabilities
Ideo-pleasure	Reflecting the values of a particular era Reflecting the values of a particular culture Provide ideological associations Developing particular lifestyle associations

Although there might be some exceptional situations when a user can possess a product just for its hedonic qualities (e.g. ornaments, souvenirs), a great number of studies in the literature claim that pragmatic qualities are pre-requisites before integrating hedonic ones. For instance, Schneidermann (2004) asserts that an object should have the right functions to accomplish its goals at the first place. Secondly, it should be usable to prevent frustration and only when these conditions are met can an object have additional fun features. Correspondingly, Jordan (2000) states that the users are no longer surprised when a product is functional and usable, but are unpleasantly surprised when these are lacking. Therefore, the pragmatic attributes of functionality and usability are expected from the products before enhancing the usage process with any kind of hedonic attributes.

In summary, the possible evaluations of different users on products in terms of their pragmatic and hedonic attributes are aptly exemplified on Battarbee and Mattelmäki's (2002) study on meaningful user-product relationships, in which they assert:

People have many, overlapping relationships to meaningful objects at the same time. For example: the guitar looks cool, sounds good, it lends a rock'n'roll image, it facilitates playing in a band, it poses a challenge for learning to play, provides a medium for expressing feelings through music, it becomes a friend and companion, reminds of people, places, events, accomplishments. No new, better guitar can replace the very first one. (p.342)

The statements mentioned above on diverse qualities of a guitar are actually based on its physical features. By combining the specific elements of the guitar's appearance with their personal considerations, each user attains their own image of the product.

#### **4.1.2 Tangible Qualities**

The tangible qualities of the products are those that can be objectively measured or that have clear definitions within the context of design. These qualities such as color, dimension, form, texture, material, sound, weight, geometry and graphics are the objective aspects of the product appearance. The appearance of the products

plays a major role in conveying the intended message of the designers, enabling the users to comprehend how to use the product simply by looking at it (Demirbilek & Sener, 2003).

There are several elements that constitute the overall impression of the product appearance. Therefore, the manipulation of each element can help to identify opportunities to generate particular user inferences through a product. A brief discussion on some of the most significant elements of product appearance is as follows:

### *Color*

Color is an important element of product design that is capable of evoking strong symbolic associations and emotional responses. Color has the ability to affect the mood of a person (Pavey, 1980, in Demirbilek & Sener, 2003); and also, specific color combinations can create various symbolic associations with certain ideologies or social groups (e.g. football team colors, flag colors of the countries).

Color can contribute to the effectiveness of both pragmatic and hedonic product qualities. For instance, the high visibility it provides in some circumstances (e.g. 'red' fire extinguisher, yellow fluorescent jackets of the policeman) or showing the status of a product (e.g. red lights on the printer indicating that the paper has finished), are related to the functionality and effective use of the products, therefore, pragmatic. On the other hand, it certainly contributes to the aesthetic appearance of products and is associated with certain concepts (e.g. red cars are associated with high performance), which definitely are hedonic qualities.

### *Form*

The form of products brings practical, emotional and cultural references to users. Like color, they are also influential in constituting the pragmatic and hedonic image of products. In terms of pragmatic aspects, form is useful to communicate the product's function, performance and comfort. These inferences about the effectiveness of the products can be 'measurable' or they can be perceived associations (Jordan, 2000). For instance, take the streamlining trend in design during the 1950s. The aerodynamic forms used in automobiles and trains are meaningful as they make a direct contribution to the performance of these.

However, it is a bit 'ornate' when these forms are applied to irons or pencil sharpeners. The aerodynamic forms are unrelated with the main functions of these products; however they support their speediness image. Consequently, the effect of the form in the first case is pragmatic, while in the latter it is hedonic.

#### *Material and Surface finishing*

The material of the products can play a significant role in affecting users' evaluations. The physical and mechanical properties (e.g. density, strength, surface roughness, elasticity), tactile and visual qualities of the materials provide many pragmatic and hedonic benefits to those who experience them. In terms of pragmatic qualities, the example of plastic usage in the kitchen utensils can be given. Plastics are preferred in the kitchen since they are hygienic materials, therefore protect the foods effectively. However, when it comes to the hedonic qualities, the hygienic plastics can be associated with cheapness and low quality by some users. Therefore, some other 'higher quality' materials such as glass or metal can be chosen instead, since they are associated with sophistication.

Besides material choice, the surface finishing of the products is also significant in determining how effective or pleasurable these products are. For instance, glossy lacquers applied to the products are used for making inferences about their pragmatic and hedonic qualities. As these lacquers have no texture, they are more hygienic; consequently, they are used in bathroom faucets and kitchen utensils. This is a pragmatic approach. Also, they provide a sophisticated appearance for products, which is widely used in car bodies and white goods (Jordan, 2000). In this case, glossiness is associated with high quality, therefore, it is hedonic.

#### *Sound*

Sounds of products can give useful feedback to the users. In fact, in some situations, sound can be the only appropriate medium for communicating a particular message (Demirbilek, & Sener, 2003). The sound of the alarm clock or pressure cooker can be considered as examples for this, since they convey their messages mainly by using sounds.

Sounds can be helpful to inform the user about the product's state. The 'door open' alarms of the cars and refrigerators, or boiling water sound of the kettle strengthen

the pragmatic qualities of these products. Sound may also contribute to hedonic qualities in terms of giving the impression of quality and power (e.g. motorcycle sounds).

#### *Interaction style*

This element of the product design refers to the physical interaction sequences of the users with products. It involves the controls, buttons and knobs, together with their positions on the product and effectiveness in communicating their purpose. This is the subject that traditional usability mostly deals with. The functional grouping of the similar buttons (e.g. channel, volume and adjustment controls are grouped together on the remote control), the feedback that the controls provide (e.g. a light is switched on when the on/off button of the washing machine is pressed), and explicitness of the functions of the controls (e.g. door knob) provide fluent user-product interactions. In these cases, they influence the effectiveness of the products, therefore, they are pragmatic. Furthermore, when the products offer smooth interactions, they provide a sense of control over the product, and also engagement during usage. Therefore, there appears to be a link between the interaction style of the product and the states of control and engagement, which are hedonic.

#### **4.1.3 State of the Literature**

As explained in the preceding sections, user-product interaction is a two-sided process, which involves a relationship between a product and the people it is designed for. In fact, the tangible and intangible qualities are the factors behind all kinds of product experience. Understanding these factors may lead to a deeper comprehension on the nature of the user experiences. Consequently, there are a number of studies investigating this subject in the User Experience and Design & Emotion literatures, in close collaboration with HCI. However, these studies discuss the experiential product qualities in general terms, conveying the subject under the heading of positive experiences. Within these domains, fun is mostly used for referring to any kind of positive, pleasurable experience without differentiating its distinctive dimensions. Furthermore, most of these studies examine the subject through computer applications and interfaces. Consequently, the literature lacks a

study which particularly focuses on the users' fun experiences with the purpose of revealing the qualities of 'consumer products' which are associated with fun.

Fun-related products have their own specific qualities linked to their physical features and symbolic meanings. Accordingly, the following empirical study examines fun-related products in terms of their tangible and intangible qualities.

## **4.2 Empirical Study**

### **4.2.1 The Research Framework**

The aim of this study is to reveal users' experience and perception of fun in relation to products, investigate the role of fun-related products for their users, and to identify the product qualities that can be entitled as fun-features. The main questions addressed in this study are:

- (1) How do the users describe fun in relation to products?
- (2) Which characteristics of the products can be categorized as fun-features?

### **4.2.2 Methodology**

In order to examine the fun-features of products, a set of interviews was carried out. The participants were first introduced to the subject and then interviewed with regard to their understanding of fun concept. They were asked open-ended questions to create a keyword pool comprising the attributes of fun-related products. These interview questions were:

- In your opinion, what kind of qualities does a fun-related product have?
- In your opinion, what kind of qualities a fun-related product cannot have?
- Do you have any fun-related products at your home? If yes, why do you consider them as fun?
- Do you have any not-fun-related products at your home? If yes, why do you consider them as not-fun?

- Do you have any fun-related products at your office? If yes, why do you consider them as fun?
- Do you have any not-fun-related products at your office? If yes, why do you consider them as not-fun?

Asking the participants to describe the attributes of the not-fun-related products besides fun-related products was to check if the fun and not-fun aspects were actually polarized. It also gave the participants an opportunity to express the product attributes using a wider vocabulary. Furthermore, it was thought that talking on concrete examples would be helpful for the participants to think of different aspects of the products and communicate their ideas. Therefore, the participants were also asked to exemplify their understanding of fun with the products they own.

The interviews were audio taped. The durations of the sessions varied between 10 to 15 minutes. The tapes recorded during the interviews were transcribed and combined with the notes taken by the researcher; and both were used as a basis for the data analysis.

#### **4.2.3 Sampling**

The study was conducted with 39 participants (22 female – 17 male). 30 of the participants were chosen from the graduates or employees of the Middle East Technical University, Department of Industrial Design. The 5 of the remaining 9 participants were graduates of medicine school; 2 were interior designers; and the last 2 participants were economists. It was taken into consideration that the participants carried certain qualifications as being a university graduate and currently holding a job (i.e. have financial freedom). It was aimed to constitute a homogeneous sample according to the age, the mean age was 29.53, ranging from 22 to 48.

#### **4.2.4 Results and Analysis**

Each participant's considerations that played a role in their understanding of fun were listed on keyword level, and these keywords were used as the basis for the

analysis (see Appendix A). As the study was carried out in Turkish, all keywords were translated into English. Then, a pool was created comprising terms that describe the users' perception of fun in general, and attributes of products they considered as fun. The keywords in the pool were content analyzed and categorized under two main subject headings: tangible qualities and intangible qualities. Then, the intangible qualities category was divided into two sub-headings: pragmatic qualities and hedonic qualities. These categories include the keywords that are related to fun-related and not-fun-related products together. The categories and the keywords they cover can be seen in Table 4.2.

Table 4.2 The keyword categories

Intangible Qualities		
Pragmatic Qualities	Hedonic Qualities	Tangible Qualities
<b>+*</b>		
<ul style="list-style-type: none"> <li>- Multi-functionality</li> <li>- Usability</li> <li>- Usefulness</li> </ul>	<ul style="list-style-type: none"> <li>- Play/Interactiveness</li> <li>- Originality/novelty</li> <li>- Personalization</li> <li>- Being associated with cute and humorous personalities</li> <li>- Surprise factor</li> <li>- Smartness</li> <li>- Having references to pleasant memories</li> <li>- Challenge</li> <li>- Contributing to usage environment</li> <li>- Being aesthetically pleasing</li> <li>- Attention drawing</li> <li>- Being relevant to hobbies</li> <li>- Having references to toys &amp; games</li> </ul>	<ul style="list-style-type: none"> <li>- Bright colors</li> <li>- Organic form</li> <li>- High-quality material</li> <li>- Unexpected sound</li> <li>- Mobility</li> <li>- Having references to human body</li> </ul>
<hr/>		
<b>-**</b>		
<ul style="list-style-type: none"> <li>- Pure functionality</li> <li>- Usability problems</li> <li>- Non-functionality</li> </ul>	<ul style="list-style-type: none"> <li>- Interaction problems</li> <li>- Typicality</li> <li>- Personalization problems</li> <li>- Being associated with serious personalities</li> <li>- Lameness</li> <li>- Having references to unpleasant memories</li> <li>- Being aesthetically unpleasing</li> <li>- Being irrelevant to hobbies</li> <li>- High-tech look</li> </ul>	<ul style="list-style-type: none"> <li>- Dark colors</li> <li>- Cornered form</li> <li>- Low-quality material</li> <li>- Annoying sound</li> </ul>

\* (+) Product attributes related to fun

\*\* (-) Product attributes related to not-fun



- The intangible qualities category refers to the users' assessments on products that are derived from the combination of products' physical features and users' personal considerations. This category consists of two sub-groups:

Pragmatic qualities category comprises keywords that concern the utilitarian functions, effectiveness and efficiency of products. The keywords in this category are multi-functionality, usability and usefulness for the fun-related products; and pure functionality, usability problems and non-functionality for the not-fun-related products.

Hedonic qualities category refers to the concepts, memories and events that the users associate with the products. These are the product qualities that enhance the usage process. For the fun-related products, play factor/ interactiveness, originality (novelty), personalization, being associated with cute and humorous personalities, surprise factor, smartness, having references to pleasant memories, challenge, contribution to the usage environment, being aesthetically pleasing, attention drawing, being relevant to hobbies and having references to toys & games take place. Conversely, interaction problems, typicality, personalization problems, being associated with serious personalities, lameness, having references to unpleasant memories, being aesthetically unpleasing, being irrelevant to hobbies and high-tech look are related to not-fun-related products.

- The tangible qualities category consists of keywords related to the appearance of the products which can be objectively measured. This category comprises statements concerning the bright color, organic form, high-quality material, unexpected sound, mobility and references to human body for fun-related products; conversely, dark colors, cornered form, low-quality material and annoying sound for not-fun-related products.

Analyzing the keywords reveals a consistency between fun-related and not-fun-related keywords. The participants mentioned the same concepts when they were evaluating the product qualities, only the keywords expressed opposite meanings.

For instance, the participants declared to expect originality from the fun-related products and entitled typical products as not-fun; or some of them considered bright colors and rounded outlines as the tangible qualities of the fun-related products, while others named products with dark color and sharp edges were not-fun. This indicates the fact that some aspects are strongly related to the fun concept as they were mentioned either positively or negatively. Furthermore, each not-fun related keyword is paired with its opposite in fun-related keywords, except the high-tech look. It is the only keyword in the not-fun category that does not have a counterpart in the fun category.

Listing each keyword together with the data of how many participants mentioned them revealed the hierarchy between the keywords. The distributions of the keywords in relation to fun-related and not-fun-related products are presented in Figure 4.2 and Figure 4.3, respectively.

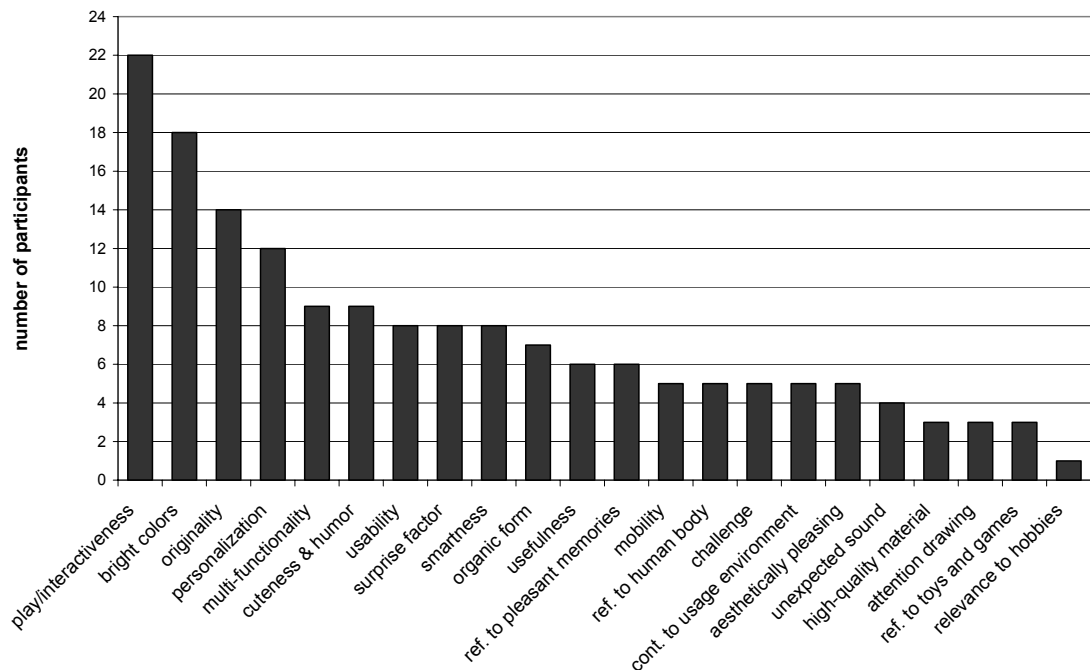


Figure 4.2 The keywords related to the fun-related products

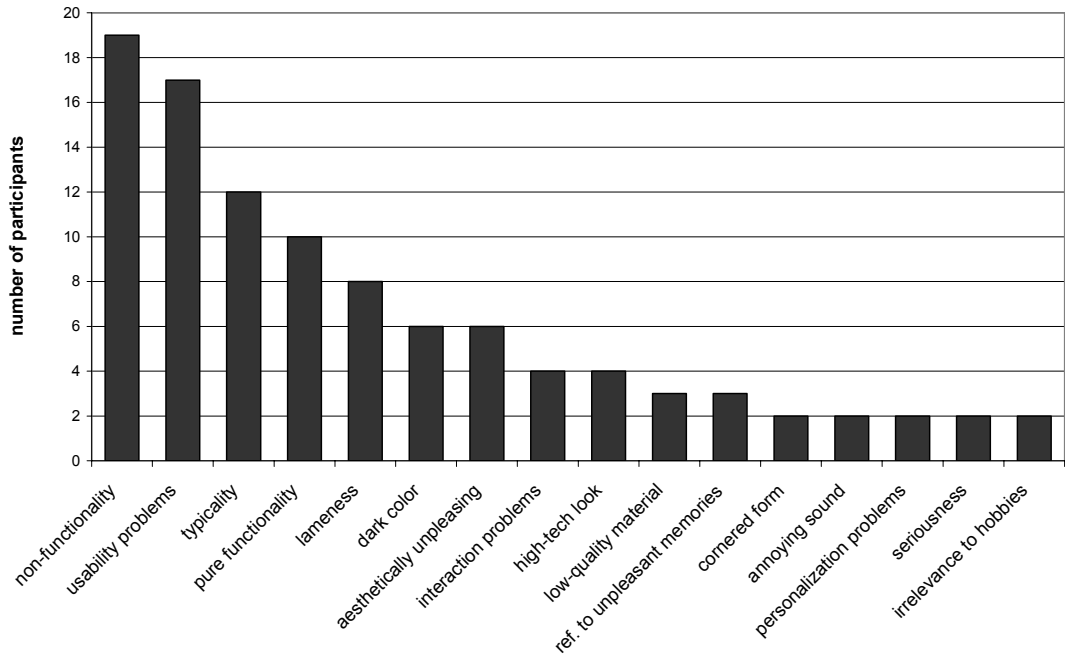


Figure 4.3 The keywords related to the not-fun-related products

Pertaining to the intangible qualities of the products, cross comparisons for the distribution of the construct groups of both for fun and not-fun-related products show the hedonic qualities to be the dominant category when considering fun aspects of products, and pragmatic qualities to be dominant in relation to not-fun aspects. Figure 4.4 and Figure 4.5 presents the distribution of these qualities in percentage with respect to the fun-related products and not-fun-related products, respectively.

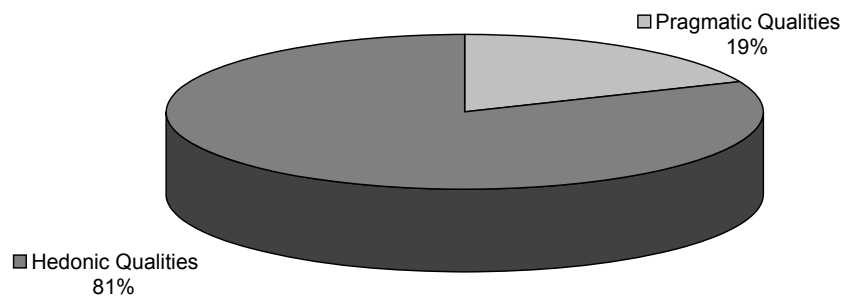


Figure 4.4 The percentages of mentioning the categories in relation to fun-related products

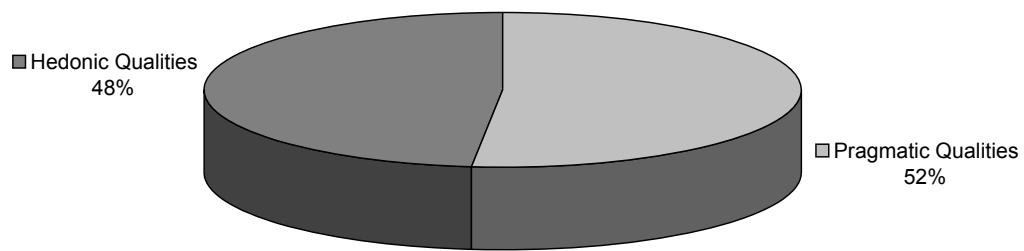


Figure 4.5 The percentages of mentioning the categories in relation to not-fun-related products

#### 4.2.5 Discussion

As can be seen in Figure 4.4 and Figure 4.5, the values of the hedonic and pragmatic qualities vary between the fun-related products and not-fun-related products. The hedonic qualities that are expected from the fun products are significantly more than that of the not-fun products. On the other hand, the pragmatic qualities category gains extensive prominence when considering the not-fun aspects of the products. This was an expected result of this study, since functionality and effectiveness are the fundamentals of a product. Even if the product is designed for 'fun', functionality is unquestionably demanded from it. The similar findings of Rafaeli and Vilnai-Yavetz (2003) would be helpful to discuss this situation. The results of their study illustrate that lacking usefulness and usability causes a product to elicit negative emotions, however when these are adequate they do not promote positive emotions. Therefore, when the participants were asked about fun attributes of the products in this study, they took pragmatic qualities like functionality and usability for granted and listed the complementary hedonic attributes which promote fun experiences. However, when they were asked about not-fun aspects they had started from the very first condition of an object being not-fun which is not being functional. In this situation, hedonic qualities lose their importance relatively.

In addition to this, the aspects that the participants had paid attention displayed personal differences with regard to the fun-related products. While some aspects

were shared by majority of the users, there were some additional qualities mentioned by the participants with a smaller number. The latter has a weaker relation with the fun concept since it is based on personal tastes, specific products or usage contexts. However, all of the keywords mentioned in this study are noteworthy to investigate the users' perception and understanding of fun. Consequently, it would be appropriate to discuss the subject according to the keyword categories in the following sections, comprising both fun and not-fun related aspects.

#### **4.2.5.1 Pragmatic Qualities**

##### *Fun-Related Aspects*

*Multi-functionality* of the fun products was found to be a significant aspect within this category which was mentioned by some participants (9 out of 39 participants). These participants asserted to expect additional functions from the fun-related products in terms of answering more than one functional need or offering supplementary hedonic attributes beyond just being functional.

*Usability* is another aspect contributing to a product being fun (8 out of 39 participants). Usability of the products was mentioned in both physical terms (e.g. being comfortable, easy to hold, not slipping from the hand), and cognitive terms (e.g. being easy to understand, communicate its purpose, provide guidance). These aspects are quite significant as they smooth the interaction of the users with products, which in turn, make it efficient and effortless (Tractinsky & Zmiri, 2005). Consequently, usability of the products prevents frustration in the usage process and enriches the user experience. Similar to usability, *usefulness* was also mentioned as another factor influencing the products to be considered as fun (6 out of 39 participants). Usefulness refers to the utilitarian functions that a product can perform. Some of the participants asserted that fun-related products should be designed for a purpose, satisfy a functional need and provide goal-achievement.

##### *Not-Fun Related Aspects*

When it comes to the not-fun related aspects, this category gains considerable importance. The most significant factor in this category is the *non-functionality* of the products (19 out of 39 participants). It is followed by *usability problems* which were

also mentioned by majority of the participants (17 out of 39 participants). The importance of these two qualities was mentioned earlier. They are the pre-requisites before integrating fun aspects to the product design; and lack of these qualities causes a product to elicit negative emotions (Rafaeli & Vilnai-Yavetz, 2003).

Although functionality and usability are extremely important for the products, being *pure functional* was considered to be a negative attribute by some participants (10 out of 39 participants). Participants stated their dislike of objects that are solely functional, and suggested that fun-related products should offer some features beyond usefulness as mentioned before while discussing multi-functionality.

Figure 4.6 presents the keywords within the pragmatic qualities category according to the number of participants that mentioned these.

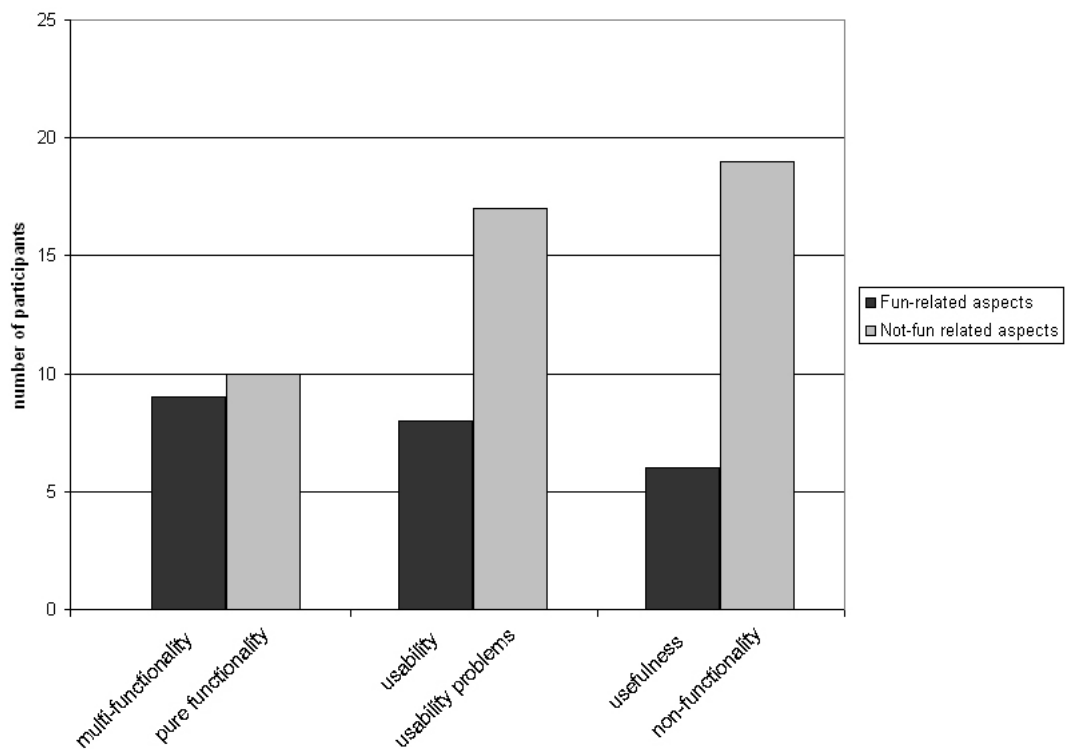


Figure 4.6 The keywords of the pragmatic qualities category

#### 4.2.5.2 Hedonic Qualities

##### *Fun-Related Aspects*

When the participants were asked about fun in relation to the products, the dominance of hedonic qualities was apparent. The *play factor* that the fun-related products involve and their *interactivity* were considered to be the most significant attribute of the study (22 out of 39 participants). The majority of the participants emphasized the importance of fluent interactions with the products; and expressed their desire to contribute to the whole usage process and communicate with the products in terms of getting efficient feedback. The products that allow creative use were also mentioned in this category, referring to the opportunities for producing new and usual interaction scenarios. This kind of imaginative, inventive and spontaneous usage involves a play dimension in itself (Noyes & Littledale, 2002, in Demir, Desmet & Hekkert, 2006). The findings of this study are in parallel with this statement, since the participants stated that they play with their fun-related products frequently, even though these products were not designed for playing (i.e. not a toy or game).

*Originality/novelty* is another significant aspect within this category, since the majority of the participants mentioned that they look for distinctive properties in fun products (14 out of 39 participants). Novelty comes from exceeding the expectations of the users and it may be derived from the new features, atypical look, or unusual meanings of the products. Novelty is a significant part of the user experience model of Hassenzahl (2004) as well. In this model, stimulation and novelty are considered as the requirements for personal development since they provide proliferation of knowledge and development of new skills. On the other hand, novelty is a product quality that wears off with time. It might be fun and exciting to play with the novel products and discover their features at the first place; however they may lose their stimulating qualities over time (Hassenzahl, 2004). When novelty fades away, its excitement can be replaced by other product attributes for the continuity of fun.

Another attribute that the participants strongly relate with the fun concept is *personalization* (12 out of 39 participants). This attribute involves different dimensions in itself. Firstly, the products that reflect their users, and express their values and attitudes take place in this category. This kind of products conveys

information about how their users want to be seen by the others and what kind of a person they want to be. Correspondingly, Dittmar (1992, in Crilly, Moultrie & Clarkson, 2004) asserts that products communicate two kinds of meanings about their users. The first one is related to the user's personality and identity, and the second one allows the expression of group membership, status and social position. Accordingly, these are the attributes that were mentioned by the majority of participants. Secondly, the products that are unique to their users are also considered in the personalization category. Hassenzahl, Burmester and Beu (2001) explain the product's uniqueness for a user as being able to afford something that the others cannot afford, or possessing something that others desire. They further argue that these attributes are strong driving forces that evoke a state of importance. Lastly, the products that are created or modified by their users also appear in this category. Being the creator of a product brings in the pride and sense of accomplishment to the users, and also makes their product original and unique. The importance of this attribute has been discovered by the manufacturers and designers as well. Today, many companies offer customization services, which allow special orders and specifications, or provide a flexible product that can be altered by its users after the purchase (Norman, 2004). All of these aspects can be considered as promoting an emotional bond with the products, offering the users pleasure and fun.

Furthermore, personality association was also found to be a common approach followed by the participants when evaluating fun-related products. Especially, the products that are *cute* and comprise a *humorous character* were considered to have fun aspects (9 out of 39 participants). This association certainly comes from the physical features of the products. Demirbilek and Sener (2003) assert that the roundness and the variations in proportions give the perception of cuteness in products. Moreover, the facial expressions have also great power in conveying cuteness and designers exploit this through the use of facial arrangements in products (Crilly, Moultrie & Clarkson, 2004). Similarly, humor is related to the incongruity that the product offers by its physical features. Dormann and Biddle (2006) assert that humor enhances social presence and bonding, which evokes the feelings of friendship, trust and sympathy. Therefore, the humorous products offer warmth to their users while making them laugh by their incongruent elements. These



cute and humorous personalities the users associate with products bring in the sense of intimacy and friendliness, which makes the experience fun.

Besides personality associations, Norman (2004) also emphasizes the importance of *surprise factor* in fun-related products. The findings of the study illustrates that the participants share similar thoughts (8 out of 39 participants). Surprise comes from the disconfirmation of the person's expectations, and it involves elements of suddenness and incongruity. Ludden, Schifferstein and Hekkert (2004) assert that surprising products are beneficial both for the designer and the user. The designer benefits of surprise because it captures attention of the users, which leads to increased recall and recognition, and consequently makes the product special for users. It is important for the user, because the surprise factor makes the product more interesting to interact with, since it involves learning something new about its aspects. On the other hand, as in novelty, surprise also fades away with frequent interaction with the products. Desmet (2003) considers surprise as one-time-only emotion, referring to the fact that once the users become familiar with the novel aspects of products they will no longer elicit surprise. However, novelty and surprise are vital to create a bond with the product at the first place, and then the sustainability of fun is provided by other product qualities.

Furthermore, the products that have a kind of *smartness* built into them were considered to comprise a fun factor by some participants (8 out of 39 participants). Smartness refers to the features that are well-thought and cleverly designed; these factors were appreciated in fun-related products.

As a more personal aspect, some participants mentioned that fun objects are *associated with pleasant memories* (6 out of 39 participants). The products that remind of past events, experiences or people were considered to be fun. A souvenir that was bought from a previous vacation, and a gift received from a friend were two of the reasons stated for this aspect. Some of the participants also mentioned the general appeal of the fun-related products (5 out of 39 participants). They defined these products as being *aesthetically pleasing*, beautiful and nice-looking, anchoring their evaluations on the appearance.

*Challenge* is another quality that was illustrated as a fun aspect (5 out of 39 participants). These participants stated that they enjoy puzzle-like products, since they invite their users to discover how they are used and construct interpretations. Challenge is significant in evoking curiosity and stimulating exploration, which keeps the user-product interaction appealing and fun (Wensveen, Overbeeke, Djajadiningrat & Kyffin, 2004).

In addition to challenge, the products that make a *contribution to their usage environment* were also considered as fun by some of the participants (5 out of 39 participants). This aspect involves the relationship between the product and the environment in which it is placed. The products making the room colorful or changing its atmosphere were mentioned within this category. Similarly, a few participants (3 out of 39 participants) regarded products as fun if they have *attention-drawing* aspects. They entitled the products that are noticeable and eye-catching as fun and emphasized their enjoyment in seeing them as the first things when they enter the room. This aspect is based on the physical features of the products; especially, striking color and atypical size were the two reasons of this evaluation.

Lastly, a *connection* of fun-related products *to hobbies* and their *references to toys and games* were also mentioned within this category by a few participants (1 and 3 out of 39 participants, respectively).

#### *Not-Fun Related Aspects*

Conversely, when it comes to the (non)hedonic qualities of not-fun products, the keywords with opposite meanings are included. Within these, *typicality* was a major concern for the participants (12 out of 39 participants). This aspect is the opposite of originality, and it refers to the resemblance of the product with other products in that category. Since uniqueness and novelty are very important in fun-related products, a typical appearance would decline the preferences when the product becomes more widely available. As Meyers-Levy and Tybout (1989, in Creusen & Schoormans, 2005) found out, users appreciate the products that differ slightly from the prototype the most, rather than products that are either very typical or atypical. In addition to typicality, *lameness* of the products was also mentioned by some of the participants (8 out of 39 participants). Lameness refers to the products that do not offer any

special attributes, and that are dull and monotonous. Furthermore, the general appeal of the not-fun-related products was also evaluated by some participants (6 out of 39 participants). They considered this kind of products as *aesthetically unpleasing*, ugly and visually irritating.

The products that exhibit *interaction problems* are also considered as not-fun by some participants (4 out of 39 participants). This aspect refers to the products that do not allow any contribution of the users to the usage process and do not provide feedback. In relation with interaction problems, the *high-tech look* of the not-fun-related products was stated to be disliked by a few participants as well (4 out of 39 participants). The high-tech products were defined as complex black boxes which make the decisions by themselves without any contribution from the user. Correspondingly, Overbeeke and Wensveen (2004) criticize the opaqueness of the electronic world in which the processes that happen inside these technologic products are intangible. These products do not impose any interactions for design. However, as aforementioned, interaction is significant for users to have pleasurable experiences. Therefore, it can be assumed that the main dislike for these high-tech products is the users' inability to interact or communicate with them.

Lastly, a product's *references to unpleasant memories* (3 out of 39 participants), *association with a serious and formal character* (2 out of 39 participants), *personalization problems* (2 out of 39 participants), and *irrelevance to hobbies* (2 out of 39 participants) take part within this category. These are the aspects that are opposite of formerly mentioned fun-related attributes, which support the validity of the statements.

The distribution of the keywords within the hedonic qualities category can be seen in Figure 4.7.

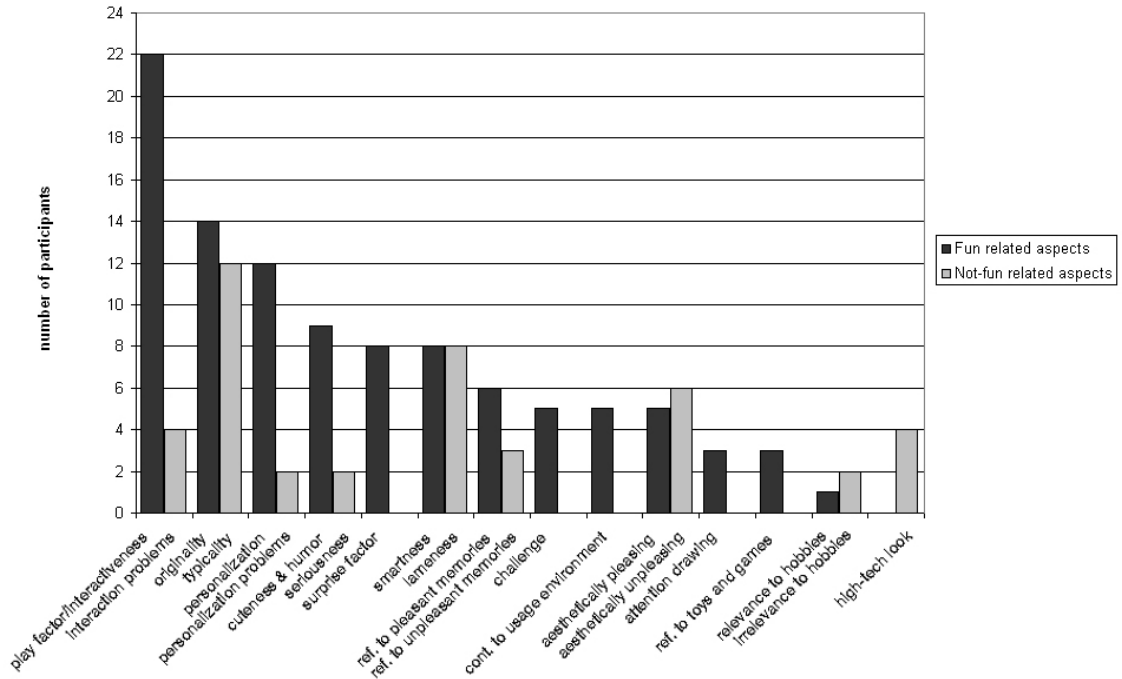


Figure 4.7 The keywords of the hedonic qualities category

#### 4.2.5.3 Tangible Qualities

##### *Fun-Related Aspects*

Within this category, color was the most mentioned aspect; more specifically, *bright colors* were strongly associated with fun-related products (18 out of 39 participants). Demirbilek and Sener (2003) emphasize the relation of color with the hedonic aspects of product design, since it has the ability to affect the emotional well-being of users and generate associations. Similarly, the results of the study indicate that bright colors and the colorfulness of products are widely enjoyed by the participants and associated with fun experiences.

Furthermore, form characteristics of products were mentioned occasionally in relation to fun (7 out of 39 participants). Especially, *rounded outlines* and *organic forms* were found to summon up feelings of fun. Form has an influence on the perception of the symbolic value, where roundness is associated with softness, friendliness and warmth (Janlert & Stolterman, 1997). Some participants stated that

fun is associated with products that have *references to human body* (5 out of 39 participants), indicating the reflection and incorporation of human-related attributes within products, such as the abstraction of the body, and the emphasis on certain body parts in a cartoon-like manner. Therefore, the reason of mentioning the organic forms of the fun-related products and their references to the human body and toys can be based on the association of the shapes to the symbolic values.

Mobility and sound are the other two aspects within this category to evoke fun experiences. A few participants (5 out of 39 participants) remarked that some of their products exhibit *mobility* which makes them fun. The movements of shaking, bouncing, or revolving were given examples of this aspect. Enjoying the *unexpected sounds* that fun products make whilst in use was mentioned by some of the participants as well (4 out of 39 participants). Sound is a powerful and appealing tool in products to change user behavior (Effrat, Chan, Fogg & Kong, 2004). The studies on the effect of different sounds would be beneficial for the companies to determine which sounds to consider when designing for specific contexts. As Norman (2004) states, “sound can be playful, informative, fun and emotionally inspiring.” (p.123), however it should be designed carefully as other components of the product to give the intended effect.

Lastly, a few participants mentioned that *material* is also important and that fun-related products should have a memorable texture and surface qualities (3 out of 39 participants).

#### *Not-Fun Related Aspects*

In terms of not-fun aspects within the tangible qualities category, the keywords carry opposite meanings. In color, some of the participants associated *dark colors* with not-fun products (6 out of 39 participants); in form, *cornered and sharp outlines* were related with not-fun products (2 out of 39 participants). These two aspects together were asserted to be associated with seriousness, formality, high technology, black boxes and boredom, in contrast with the fun-related products. A few participants also mentioned the cheap and *low-quality material* of the products (3 out of 39 participants), and some others asserted the *annoying sounds* of some products to be the not-fun related aspects (2 out of 39 participants).

The distribution of the keywords within the tangible qualities category is illustrated in Figure 4.8.

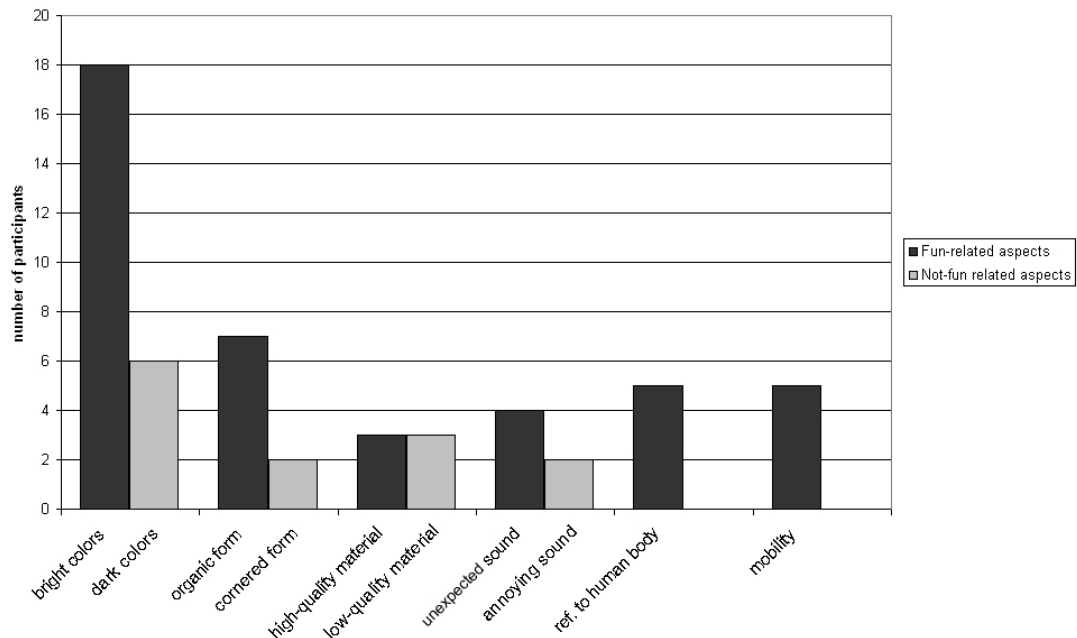


Figure 4.8 The keywords of the tangible qualities category

As a conclusion, the results of the study illustrated the importance of functionality and usability as requirements for attaining fun. When these factors have been accommodated in design, adding extra hedonic touches generate fun experiences with the products. These touches may relate to the physical features, symbolic meanings, and usage-related qualities of the products.

In Figure 4.9, the findings of the study on these product qualities are integrated into the formerly constituted framework of user experience. This figure illustrates the tangible and intangible qualities of the products that play a role in users' fun experiences.

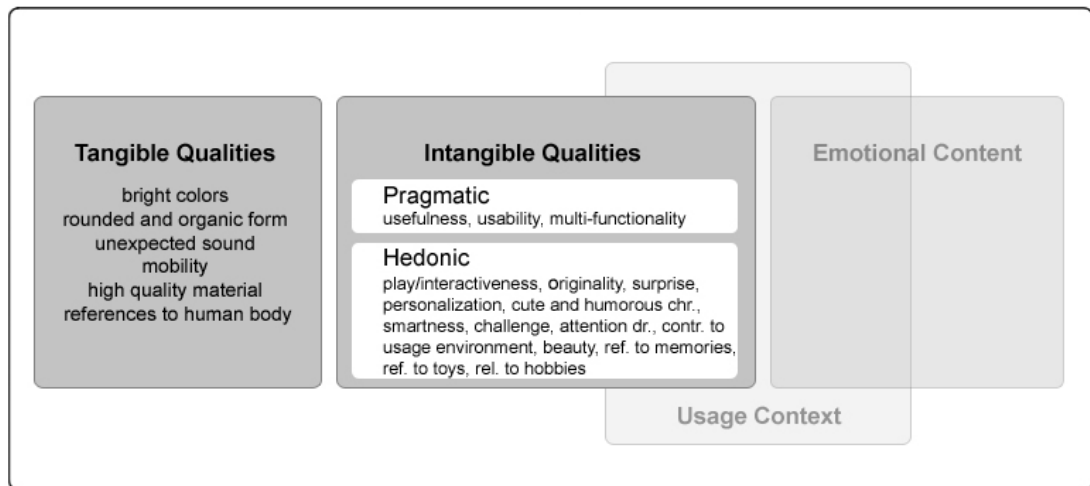


Figure 4.9 The tangible and intangible product qualities of the users' fun experiences

The findings indicate that the most notable product attributes that are strongly associated with the fun experiences are play factor/interactivity, bright colors, originality, personalization, multi-functionality and cuteness and humor. These keywords are followed by more personal evaluations about fun attributes. Surprise factor, smartness, organic form, unexpected sound, mobility, challenge, attention drawing, contribution to the usage environment, beauty, high quality material, references to human body, references to memories, references to toys and games, and relevance to hobbies were mentioned as attributes of fun-related products additionally, however these were specific to the usage context and user's characteristics. Whether it is shared by majority of the users or based on personal evaluations, these qualities are noteworthy in users' perception and understanding of fun in relation to the products.

## CHAPTER 5

### EMOTIONAL CONTENT OF THE FUN EXPERIENCES

Based on the framework presented in Chapter 3, this chapter focuses on the emotional content of the user experiences (see Figure 5.1). The psychological perspective is reviewed in this part of the thesis to reveal the emotions elicited by fun products. The first section of the chapter explores the relationship between emotions and product design by first defining the terms of emotion and appraisal with the involvement of psychology literature; then discussing the current methods for measuring emotions elicited by products. The chapter proceeds with the empirical study on emotional content of fun experiences.

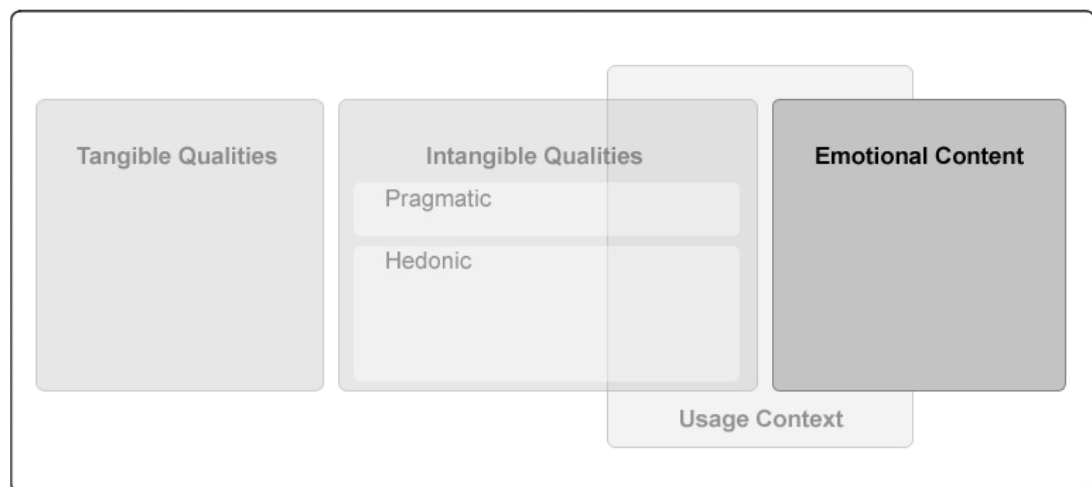


Figure 5.1 The scope of Chapter 5

#### 5.1 Emotions and Design

As mentioned in the preceding chapters, the limits of the traditional usability concept have been broadened recently to encompass pleasure-based approaches of design.



Besides being functional and usable, the products are now expected to possess such hedonic qualities as being pleasurable, enjoyable, seductive or playful; all creating rich and engaging emotional experiences. With the recognition of the role of cognition and affect in evaluating these qualities, there occurred a growing interest in the design research literature to understand the users' affective responses to the products. Several theoretical approaches have been developed with the purpose of studying the subject comprehensively. In these studies, adopting traditional usability methods to measure, design and evaluate the affective responses to the products considered to be problematic because the major concern of these methods is productivity and efficiency (Dormann, 2003). To overcome these drawbacks, the theoretical grounds have been obtained from the models and theories found in the psychology literature. These models are useful as they attempt to explain the basics of the affect and the processes behind their elicitation (Desmet, 2002). Therefore, addressing the models found in the psychology literature is essential in order to understand the emotional experiences of the users with the products. This section presents an overview on the psychological concepts that are referred frequently to explain the affective dimensions of the products, which are emotion and appraisal.

### **5.1.1 Emotion**

Before starting with emotions, it is required to define the terms of affect and cognition which are the means for an individual to evaluate the world and respond accordingly. Norman (2004) regards affect and cognition as information-processing systems. In his definition, the cognitive system interprets and makes sense of the world; the affective system makes judgments about the stimuli if it is dangerous or safe, good or bad. In other words, cognition assigns meaning, affect assigns value. The affect can be an either conscious or subconscious act, and it is an umbrella term to cover emotions, feelings, and moods (O' Shaughnessy, 1992, in Crilly, Moultrie & Clarkson, 2004). Within these affective phenomena, emotion is a 'conscious' experience of affect, which can be influenced by cognition or often shapes cognition (Norman, 2004).

For many years, psychologists have been attempting to make a solid definition of emotion. As asserted by Chapman and Nakamura (1998, in Cabanac, 2002): "Although an enormous literature exists on the psychobiology of affect, there is no

singular or even preferred definition of emotion.” (p.69). The huge number of definitions are found in the study of Kleinginna and Kleinginna (1981), who compiled 92 definitions of emotion and 9 skeptical statements from a variety of sources in the literature of emotion. These definitions vary according to their complexity and also the theoretical issues they emphasize. Everyone seems to know what an emotion is; however making a solid definition is unpredictably difficult (Desmet, 2002). Therefore, it may be a better approach to distinguish emotions from other affective states in order to define their characteristics.

Many researchers claim that the word ‘emotion’ is used for explaining a number of affective phenomena that do not refer to emotions by any means (Desmet, 2002; Ekman, 1999; Scherer, 1999; Scherer, 1997, Ortony, Clore & Foss, 1987). For instance, the words referring to feelings, sentiments, preferences, attitudes, moods, or personality traits are used interchangeably with the words referring to emotions; however these, in fact, signify different experiential phenomena. With the purpose of differentiating these states, Ortony, Clore and Foss (1987) developed taxonomy of the affective words with paying specific attention to the words that refer to emotions. They studied approximately 500 words, and classified them according to their certain qualities. Within the taxonomy they propose, emotions refer to internal and mental conditions (instead of biological or physiological conditions) which involve ‘affect’ rather than behavior or cognition. Likewise, Scherer (2005) lists the attributes of emotions that distinguish them from other affective phenomena. These attributes are:

- (1) Emotions are *event-focused*. They are elicited by specific events which trigger a response. These events may be external such as environmental stimuli (e.g. thunderstorm, fire alarm), behavior of other people (e.g. an insulting employer, a joking friend), or behavior of own (e.g. winning a football game, failing in exam); and also internal such as sudden physiological changes, or evoked memories.
- (2) Emotions are *appraisal driven*. They are elicited when the eliciting event and its consequences are relevant to the major concerns of a person.
- (3) Emotions are *synchronized with responses*. As emotions prepare appropriate responses to events, these responses correspond with the appraisals of the presumed implications of the events.

- (4) Emotions have *rapidity of change*. The appraisals of events change rapidly in order to adapt to changing circumstances or evaluations.
- (5) Emotions have a *behavioral impact*. They have an effect on action tendencies, which interrupt ongoing behavior sequences and generate new goals and plans.
- (6) Emotions have relatively *high intensities*.
- (7) Emotions are relatively *short in duration*. As they have massive behavioral impact, their duration is relatively short in order not to coerce the resources of the body.

These specific attributes of emotions differentiate them from other affective states. For example, when compared to emotions, preferences and attitudes are low in intensity and involve long-term evaluative judgments and beliefs. As in emotions, they do not need to be triggered in direct contact with the stimuli; rather they refer to the predispositions towards specific objects, events or persons.

Similarly, Desmet (2002) makes a distinction between emotions, moods, sentiments, and emotional traits in terms of two aspects. The first one concerns whether or not they involve a relation between the person and the object (i.e. intentional / non-intentional), and the second one involves whether the state is limited in time or has no identifiable beginning or ending (acute / dispositional). On the basis of these two aspects, Table 5.1 presents these four affective states.

Table 5.1 Differentiating affective states (Desmet, 2002)

	<b>Intentional</b>	<b>Non-Intentional</b>
Acute	Emotions	Moods
Dispositional	Sentiments	Emotional traits

In this framework, emotions are defined to be intentional and acute. They are intentional, because they are elicited by an interaction between the person and a particular object. Therefore, the object of the emotion is identifiable (e.g. ‘something’

annoys us, 'someone' makes us jealous). Furthermore, the emotions are acute, which means that they exist for a short period of time. Generally, emotions last for seconds or minutes at most (Ekman, 1994, in Desmet, 2002).

On the other hand, the other three affective states present different qualities. For example, moods are characterized by their enduring qualities that affect the behavior of a person for several hours or even several days. Still, they are acute like emotions, because their existence is limited in time. The depressed, buoyant or gloomy mood of a person disappears as time passes by. However, moods are different than emotions in terms of their non-intentional characters. Moods emerge without an apparent cause, and they are not directed at a particular object (Scherer, 2005). Besides moods, emotional traits have also different qualities when compared to emotions. These are lifetime personality characteristics, such as being a cheerful, an anxious, or a jealous person. They are, like moods, not directed at a particular object. Lastly, sentiments are also long-term dispositional states; however their difference from emotional traits is that they involve a person-object relationship. They refer to likes and dislikes, and also attitudes to certain objects or events. For example, being afraid of dogs is a kind of sentiment; however it should not be confused with being frightened by a dog which refers to an emotion (Frijda, 1994, in Desmet, 2002).

In addition to being acute and intentional, emotions are also characterized by their expressive reactions (e.g. smile, frown), physiological reactions (e.g. increased heart rate, enlarged pupil size), instrumental coping behavior (e.g. running, hiding), and cognitions (e.g. evaluations about the unfairness of the event, judgments about a person being unreliable) (Cornelius, 1996). Many psychologists agree on these components to constitute the emotion concept; however they cannot decide which one of them should be used for making a definition. In the psychology literature, there are four dominant perspectives on emotions, and these perspectives are distinguished from each other by the component of emotion they attend to (Cornelius, 1996). These are: the Darwinian, Jamesian, social constructivist and cognitive perspectives. These perspectives define and study emotions in their own set of assumptions.

To begin with, the Darwinian perspective gets its name from the studies of Charles Darwin (1872, in Cornelius, 1996) and claims the universality of emotions. Since humans and other mammals share a similar evolutionary history, this perspective argues that emotions are universal among humans and animals. In this viewpoint, emotions are considered to be adaptive in nature, and functional in survival. A follower of the studies of Darwin, Plutchik (1980, in Desmet, 2002) asserts that each emotion is related to a basic need, such as fear for protection, happiness for reproduction or surprise for exploration. Secondly, the Jamesian perspective is pioneered by William James who connects the experience of emotion to the experience in bodily changes. James (1884, in Desmet, 2002) claims that the emotions are the outcome of the bodily feedbacks. For instance in fear, the heart rate increases and the muscles contract; and then the person evaluates these reactions as being afraid. The third perspective, that is the social constructivist perspective, rejects the assumptions made by Darwin and James, which relate emotions to biological phenomena. This perspective claims that “emotions are cultural constructions that serve particular social and individual ends and they can only be understood by attending to a social level of analysis.” (Cornelius, 1996, p. 12). The last perspective, the cognitive perspective, emphasizes the role of thought in generating emotions; which claims that the way people make judgments about the events in their environments lead to emotions (Desmet, 2002). This perspective has a core element called ‘appraisal’ -which will be explained in the next section- referring to the process of judging whether the stimulus is good or bad.

All of these four perspectives are remarkably important in shaping the contemporary studies on emotions. Even the theories of Darwin and James have been studied by some contemporary psychologists (Cornelius, 1996). However, it is the cognitive perspective that currently constitutes the current theorizing about emotions. This perspective is also helpful within the scope of this thesis which is focused on products, because it is able to explain how products elicit emotions. Rather than focusing on the universality and the biological antecedents of the emotions, this perspective takes the people’s cognitive evaluations into account. Therefore, it allows understanding the reasons of different people having different emotions towards the same product (Desmet, 2002).

### 5.1.2 Appraisal

The cognitive perspective on emotions has a functional approach to the subject. It asserts that emotions help to mediate between the environment and behavior, preparing the person to cope with the circumstances. Emotions are considered to be the adaptive responses to the environmental demands, and this functionalist perspective brings in the necessity to appraise these demands in some way (Ellsworth & Smith, 1988). Cornelius (1996) states that there can be no emotion without an appraisal; all emotions are initiated by a person's appraisal of his/her circumstances.

The influential work of Arnold (1960, in Cornelius, 1996) started the modern cognitive approach to emotion. She brought the term 'appraisal' to describe the psychological phenomena that give rise to emotions. Appraisals are the interpretations and evaluations of the events in terms of being potentially beneficial or harmful to well-being. Arnold states that, "To arouse an emotion, the object must be appraised as affecting me in some way, affecting me personally as an individual with my particular experience and my particular aims" (1960, in Cornelius, 1996, p. 116). These particular experiences and particular aims of the individuals lead them to perceive and appraise the same situations differently, resulting in elicitation of different emotions. It is also stated that the same person who appraises the same situation in a different way at a different time may experience different emotions (Roseman & Smith, 2001). Therefore, it is the 'assessment of the situation' that causes the emotion, rather than the situation itself.

There are many researchers who worked at creating different models of appraisal theories (Frijda, 1986; Lazarus, 1991; Oatley, 1992; Ortony, Clore & Collins, 1988; Roseman, 1984; Roseman, Spindel & Jose, 1990; Scherer, 1988; Smith & Ellsworth, 1985; Solomon, 1976, in Scherer, 1997); their research introduce a variety of different but related frameworks to the subject, bringing a comprehensive view of the emotions based on the individual's subjective appraisals. These theories generate empirical findings that provide support for the contention that claims the role of appraisals in the elicitation and differentiation of emotional experiences (Scherer, 1997).

### 5.1.3 Emotions Evoked by Products

The cognitive perspective is also promising for studying the emotions elicited by products. Desmet (2002) adopts the appraisal model to explain how products evoke emotions. In his studies, the personal significance of a product is considered to cause the emotion, rather than the product itself. Therefore, the individuals who appraise the same product differently will experience different emotions. With regard to products, the outcome of the appraisals is the evaluation of the product if it is beneficial, harmful or not relevant for personal well-being which would lead to pleasant emotions, unpleasant emotions or absence of emotions towards products respectively. For instance, a couple may respond differently towards buying an expensive pair of shoes. The wife may be elated by its look and the thought of making her friends jealous; on the contrary, the husband may get annoyed as he thinks it is a prodigal waste of money. These different emotions are stemmed from the match/mismatch between the object and the concerns of the person.

Measuring the emotions elicited by products is important in order to understand the users' affective responses to them, which would provide designing accordingly. There are some methods created for measuring and evaluating the emotional responses to the products which are adopted from usability and consumer behavior domains. These are physiologic measures, questionnaires and pictorial tools (Dormann, 2003).

First of all, physiologic measures refer to the physically measurable signals of emotions. They measure responses of skin, pupil, brain waves, blood pressure or facial expressions by using cameras, microphones and sensors, and evaluate the emotions that the participant experiences at the moment. However, these methods are limited in precision; it is not always possible to know which emotions were evaluated.

The second method of measuring product-related emotions is questionnaire. Questionnaires comprise different types of emotional scales such as adjective checklist, semantic differential scale and free labeling. These scales vary in the scope and range of emotion that is assessed. Therefore, they should be examined

and compared before determining which one to be used according to the aim, questions and limitations of the research.

Lastly, pictorial tools are based on pictures of faces to represent emotions which the participant chooses according to his/her emotional state at the moment. These methods are easy to use especially with children and they are also culture free as they do not rely on verbal adjectives. An example of this method was used by Desmet (2002) to measure emotions elicited by product appearance. This instrument is called Pr-Emo and it comprises 18 animation characters to represent 9 positive and 9 negative emotions, in which the participants choose after seeing an image of a certain product. Each of these methods have their own limitations and advantages, therefore, they should be adapted according to the aim and scope of the research.

The methods that are employed in measuring emotions are useful in understanding the emotional dimensions of the products. Since this thesis is focused on users' fun experiences, it is aimed to investigate the emotions evoked by fun-related products in order to determine the product attributes that evoke that particular emotion. Each emotion has unique appraisal dimensions leading to different experiences. Hence, studying the appraisals behind the fun-related emotions would allow understanding the qualities of fun products. This approach was adopted for the following case study.

## **5.2 Empirical Study 2**

### **5.2.1 The Research Framework**

This study aims to investigate the emotions elicited during fun experiences with consumer products and discuss the possible appraisal patterns behind these emotions. The research questions addressed in this study are:

- (1) Which emotions are elicited during fun experiences with consumer products?
- (2) Which emotions are felt most intensely in fun experiences with consumer products?



(3) What are the appraisal structures behind these particular emotions?

(4) To which product attributes these appraisals refer to?

In order to find answers to these questions, the participants were asked to recall a 'fun experience' with a consumer product, and report the emotions they had experienced in these situations. These emotions are later investigated according to their appraisal dimensions with comprehensive literature research; and the findings were translated into product qualities.

### **5.2.2 Methodology**

In order to reveal the emotions that are elicited during fun experiences, a questionnaire was designed. In this questionnaire, the participants were asked to recall a 'fun experience' with a consumer product, write about the certain aspects of this experience in detail and finally grade the intensity of the emotions they felt during this experience. The questionnaire can be seen in Appendix B.

The questionnaires were sent to the participants by e-mail. With a brief explanation about the aim of the study, participants were asked to fill out the questionnaire. In the first part, they recalled an experience of fun that they had with a consumer product then answered the following questions:

- What was the related product?
- What were you doing with the product when you experienced fun?
- When/where/with whom did this experience take place?
- What caused this fun experience (e.g. certain product qualities, usage context, usage process)?

The main purpose of these questions was to encourage the subjects to recall their experiences as detailed as possible before completing the ratings; also they were helpful to investigate the experiences of the participants and eliminate the ones that are irrelevant to the scope of the study. In the second part of the questionnaire, the participants were asked to recall the emotions that they felt during their fun

experiences and rate the intensity of these emotions in a five-point scale ranging from 'not at all' (1) to 'extremely' (5).

### 5.2.2.1 Stimulus Emotions

The 36 emotions that appeared on the questionnaire had been taken from 'affect categories' of Scherer (2005, p. 714). The reason of this selection is the extensiveness of this list such that it comprises different types of affect-related experiences chosen from empirical studies and published surveys of emotion terms (Scherer, 2005). Since fun is considered as a pleasant experience, at first it was planned to include only the positive emotions in the study. Later, it was decided to involve negative emotions as well, in order to find out the relation of fun with these emotions which might lead to richer findings.

With respect to this study, some minor changes have been made in the original list of Scherer (2005). Firstly, three of the affect categories were not taken into the list (feeling, positive, negative) as they do not refer to particular emotions. Secondly, the affect category of *longing* separated into two categories as *desire* and *nostalgia* since it was decided that they signify two different emotions, unrelated from each other. The final list of emotions that take place in the questionnaire was:

Admiration/Awe (*fascination, wonder*), Amusement (*humor, playfulness*), Anger (*furious, madness, resentment*), Anxiety (*nervous, worried*), Being Touched, Boredom, Compassion (*empathy, pity*), Contempt, Contentment (*satisfaction*), Desire, Desperation (*hopeless*), Disappointment (*disenchantment, frustration*), Disgust, Dissatisfaction, Envy, Fear (*afraid, fright, panic*), Gratitude (*thankfulness*), Guilt (*blame*), Happiness (*cheerfulness, delight, enjoyment*), Hatred, Hope (*optimism*), Humility, Interest/Enthusiasm, Irritation (*annoyance*), Jealousy, Joy (*elation, exhilaration*), Lust, Nostalgia, Pride, Relaxation/Serenity (*peacefulness, tranquility*), Relief, Sadness (*grief, melancholy, sorrow*), Shame (*embarrassment, humiliation*), Surprise (*amazement, astonishment*), Tension/Stress (*discomfort*).

The words in brackets were used to help the participants to have a better understanding of what is meant by that particular emotion, since some of the emotions may not be clear. These words were chosen from the related adjective

lists offered by Scherer (2005). Across all the subjects, the emotions appeared in the alphabetical order on the questionnaire.

### **5.2.3 Sampling**

The study was conducted with 23 participants (an additional nine participants were not included in the sample because six of them wrote about toys and games which is beyond the focus of this study, two of them mentioned about experiences occurred more than five years ago, and one made contradictory remarks about his experience being fun). It was taken into consideration that the participants have a good level of English since the study was conducted in none of the participants' native language. Of the participants, 16 were female and 7 were male. The mean age for the sample was 25.47, ranging from 16 to 33.

### **5.2.4 Results, Analysis and Discussion**

This section presents the results of the study, analyzes the data with supporting arguments from the literature and finally discusses the findings in order to reveal the emotions that are elicited by fun experiences with consumer products, together with their appraisal patterns.

#### **5.2.4.1 Results**

The results reported below are designed to address the issue of revealing the emotions that the participants feel most intensely during fun experiences. In order to do so, the experiences of the users were listed and categorized according to the questions found in the first part of the questionnaire (see Table C.1 in Appendix C). This chart helped to determine the experiences that are beyond the scope of this study, and limit the study on the recent experiences with 'consumer products'. This part of the questionnaire was designed to facilitate the participants to recall their experiences in detail; therefore it does not aim to contribute to the data analysis process. On the second part of the questionnaire, the participants were given a list of emotions to grade in a five-point scale. These grades were analyzed in terms of their average scores and standard deviations, which can be found in Table 5.2.

Table 5.2 The average scores and standard deviations of the given emotions

<b>Happiness</b> (cheerfulness, delight, enjoyment)	<i>M</i> = 4.48	s.d. = 0.79
<b>Contentment</b> (satisfaction)	<i>M</i> = 4.43	s.d. = 0.66
<b>Amusement</b> (humor, playfulness)	<i>M</i> = 4.39	s.d. = 0.84
<b>Interest/Enthusiasm</b>	<i>M</i> = 4.39	s.d. = 0.72
<b>Joy</b> (elation, exhilaration)	<i>M</i> = 4.39	s.d. = 0.84
<b>Surprise</b> (amazement, astonishment)	<i>M</i> = 3.78	s.d. = 1.17
<b>Admiration/Awe</b> (fascination, wonder)	<i>M</i> = 3.74	s.d. = 0.96
<b>Desire</b>	<i>M</i> = 3.26	s.d. = 1.42
<b>Gratitude</b> (thankfulness)	<i>M</i> = 3.17	s.d. = 1.15
<b>Relaxation/Serenity</b> (peacefulness, tranquility)	<i>M</i> = 3.17	s.d. = 1.37
<b>Being touched</b>	<i>M</i> = 2.83	s.d. = 1.27
<b>Hope</b> (optimism)	<i>M</i> = 2.83	s.d. = 1.19
<b>Pride</b>	<i>M</i> = 2.65	s.d. = 1.56
<b>Relief</b>	<i>M</i> = 2.30	s.d. = 1.36
<b>Lust</b>	<i>M</i> = 2.09	s.d. = 1.27
<b>Nostalgia</b>	<i>M</i> = 1.96	s.d. = 1.15
<b>Envy</b>	<i>M</i> = 1.86	s.d. = 1.42
<b>Compassion</b> (empathy, pity)	<i>M</i> = 1.70	s.d. = 0.97
<b>Jealousy</b>	<i>M</i> = 1.70	s.d. = 1.11
<b>Humility</b>	<i>M</i> = 1.57	s.d. = 1.08
<b>Anxiety</b> (nervous, worried)	<i>M</i> = 1.39	s.d. = 0.72
<b>Contempt</b>	<i>M</i> = 1.27	s.d. = 0.63
<b>Guilt</b> (blame)	<i>M</i> = 1.26	s.d. = 0.62
<b>Tension/Stress</b> (discomfort)	<i>M</i> = 1.26	s.d. = 0.62
<b>Dissatisfaction</b>	<i>M</i> = 1.22	s.d. = 0.42
<b>Irritation</b> (annoyance)	<i>M</i> = 1.13	s.d. = 0.34
<b>Boredom</b>	<i>M</i> = 1.09	s.d. = 0.29
<b>Desperation</b> (hopeless)	<i>M</i> = 1.09	s.d. = 0.29
<b>Disappointment</b> (disenchantment, frustration)	<i>M</i> = 1.09	s.d. = 0.29
<b>Fear</b> (afraid, fright, panic)	<i>M</i> = 1.09	s.d. = 0.29
<b>Sadness</b> (grief, melancholy, sorrow)	<i>M</i> = 1.09	s.d. = 0.29
<b>Shame</b> (embarrassment, humiliation)	<i>M</i> = 1.09	s.d. = 0.29
<b>Anger</b> (furious, madness, resentment)	<i>M</i> = 1.04	s.d. = 0.21
<b>Disgust</b> (aversion, detest, dislike, loath)	<i>M</i> = 1.00	s.d. = 0.00
<b>Hatred</b>	<i>M</i> = 1.00	s.d. = 0.00

As can be seen in Table 5.2, fun experience was mostly associated with pleasant emotions and states. Within these, happiness, joy, contentment, interest/enthusiasm and amusement took the highest scores. Their relatively less standard deviations indicate that majority of the participants agree on the elicitation of these emotions during fun experiences. This attitude can also be seen in the negative emotions. Their standard deviations are also very low pointing out the irrelevance of these with fun experiences which is agreed by majority of the participants. The emotions of compassion, jealousy, humility, anxiety, contempt, guilt, tension/stress, dissatisfaction, irritation, boredom, desperation, disappointment, fear, sadness, shame, anger and disgust took the lowest scores with low standard deviations.

On the other hand, there are some context specific emotions. These are surprise, admiration/awe, desire, gratitude, relaxation/serenity, being touched, hope, pride, relief, lust, nostalgia and envy. Their high standard deviations indicate that the elicitation of these emotions is specific to the experiences that the participants have. For example, some of the participants graded pride with the highest score because they enjoyed owning the product or showing it to the others in their particular experiences. Therefore, these emotions were graded differently by different participants depending on the usage environment, product qualities or usage process.

#### **5.2.4.2 Analysis of the Findings Based on Literature Review**

In the literature, fun is studied in relation to positive product experiences. Correspondingly, the results of this study support that fun experiences are strongly associated with pleasant emotions. As aforementioned, happiness, joy, contentment, interest/enthusiasm and amusement were considered to be the emotions that are elicited most intensely during fun experiences.

In order to understand the relation of these emotions with fun and fun-related products, it would be convenient to briefly define these emotions and mention the appraisals behind their elicitation before discussing the findings of the study. The questionnaire used in this study was not designed for providing an in-depth analysis on the subject; rather, it was aimed to determine the ranking for emotions elicited during fun experiences. The reasons of this ranking and the appraisal patterns of the most intense emotions were planned to be studied from the psychology literature. Therefore, the analysis in this section will be based on an extensive literature review. Then, these findings will be discussed and integrated into product design in the 'discussion' section.

It should also be noted that, only amusement lacks a specific study of appraisals in psychology literature between the emotions of happiness, joy, contentment and interest. Therefore, the possible appraisal structure of amusement was collected from humor psychology literature and the appraisal patterns of similar emotions (e.g. exhilaration). The appraisals of remaining emotions can be found in the psychology

and design research literature, and they are briefly summarized in here by collecting data from various studies.

#### **5.2.4.2.1 Happiness and Joy**

The results of the analysis signify that *happiness* is the emotion that is elicited during fun experiences mostly (M=4.48) and *joy* takes the third place (M=4.39). Although they were listed separately in the questionnaire, it is convenient to combine them together in this part. The reasons behind this decision are that these two concepts are studied together within the literature and also the results of the analysis indicate that the ratings of the participants are parallel between these two emotions.

Lazarus (1991, in Demir, 2007) considers happiness and joy as almost the same phenomena because of their same appraisal patterns. They are used interchangeably in other studies as well (Berenbaum, 2002, Ellsworth & Smith, 1988; Robins, 2003), however Cabanac (2002) puts forward their difference in terms of their time dimension and intensity. He defines joy as a transient, dynamic and pleasant experience; however happiness as a stable indifference which is generally considered as the main aim of the life. Therefore, his suggestion is to prefer joy to happiness when it comes to identifying emotions. Similarly, Averill and More (1993, in Demir, 2007) consider happiness as general contentment of an individual, based on his/her goal achievements in different levels of life. Joy is sourced by the appreciation of a person about progress toward an instrumental goal; however happiness is not sourced by any event particular, but the existence as a whole (Robins, 2003). Therefore, happiness can be considered as a stable condition in life whereas joy is more ephemeral and goal-oriented. Studying happiness is a bit risky as it is a generic, undifferentiated response to every pleasant circumstance (Weiner, 1985, in Ellsworth & Smith, 1988). The word 'happy' may appear sufficient to define most of the positive emotional experiences; however, differentiating these emotions by studying their appraisal patterns is important.

The dominant appraisal behind happiness/joy seems to be the consistency of the situation with the motives of a person. The stimuli/action/event should be relevant to an individual's well being; Lazarus (1991) suggests that happiness emerges when a

person is “making reasonable progress toward the realization of a goal” (Lazarus, 1991, in Lazarus 2001, p.64). This goal or *motive consistency* can be explained as satisfaction of a need, attainment of a goal or facilitation of a final goal attainment (Demir, 2007). Moreover, Roseman (2001) states that happiness/joy is appraised with an appetitive motive which results with moving toward an object or getting more of the object.

Secondly, Smith and Ellsworth (1985) describe happiness as an extremely pleasant state. *Pleasantness* is a significant appraisal that determines the fundamental reaction of a person towards a stimulus by encouraging him/her to approach it (Scherer, 2001). In Scherer’s definition, this pleasantness is an attribute of the stimuli and it is something separate from goal or need conduciveness. This means that something can be found pleasant; however it still may be disruptive in an individual’s goals. Therefore, although he supports the pleasantness of happiness/joy experiences, he points out the lack of evidence about the role of pleasantness on joy (Scherer, 2001, in Demir, 2007).

There are also some other appraisal components of happiness/joy that are encountered in literature, however their validity is still on debate. For instance, Scherer (2001) mentions about the *certain probability* of the happiness/joy circumstances. This appraisal refers to the ‘possible’ or ‘definite’ occurrence of motive relevant aspects of the event. Smith and Ellsworth (1985) share his point of view by specifying the *high level of certainty* of the happy or joyous situations.

Another appraisal dimension is the agency factor signifying the thing responsible for the event in a particular situation. In happiness/joy condition, it is considered to be the *circumstance* (instead of self or other person) that causes the elicitation of the emotion; this circumstance-caused situation is under a *high control potential* of the person (Roseman, 2001). This second aspect is similar with what Lazarus (2001) entitles as ‘accountability’ or Scherer (2001) calls ‘control’, and it refers to whether there is something one can do about the aspects of the event, or influence and control the event. Smith and Ellsworth (1985) mentions about this as well by asserting that happiness/joy is associated with human control and sense of responsibility. However, it should be noted that the literature still lacks detailed

empirical evidence studying the relation between agency and control dimensions with the emotions of happiness/joy.

#### **5.2.4.2.2 Contentment (Satisfaction)**

In relation to fun experiences with products, contentment takes the second place (M=4.43). The term is encountered both in psychology and consumer behavior literature and it is defined as the result of a confirmation of a desirable outcome expectation (Ortony, Clore & Collins, 1988, in Demir, 2007). Satisfaction is an anticipatory emotion and it involves an expectation match (Desmet, 2002). It means that, it comprises not only a desirable outcome, but also an expectation about that outcome to be answered (Demir, 2007). Therefore, in addition to being *motive consistent*, contentment/satisfaction involves an *expectation confirmation* dimension, differentiating itself from happiness/joy situations.

#### **5.2.4.2.3 Interest / Enthusiasm**

Interest shares the third place with joy and amusement in relation to the emotions elicited during fun experiences with products (M=4.39). In the psychology literature, interest has received little attention relative to other emotions. It is a contradictory emotion that many studies questioned whether it is an emotion or not. Some psychologists do not consider interest to be an emotion (Mandler, 1984; Oatley & Johnson-Laird, 1987, in Ortony & Turner, 1990; Ekman, 1992; Lazarus, 1991, in Silvia, 2005) and regard it as a cognitive state instead of an affective one. Ortony and Turner (1990) assert that interest may be the outcome of some emotions or it may cause some emotions to be elicited; however interest itself is no more an emotion than is thinking. On the contrary, recent studies pay attention to interest as an emotion. According to Izard (1977, in Cornelius, 1996) interest is “the most prevalent motivational condition for the day-to-day functioning of normal human beings” (p. 205), and he considers it as the most frequently experienced positive emotion. Interest is seen as the emotion underlying exploration, curiosity, information seeking and attention (Fredrickson, 1998; Izard, 1977; Tomkins, 1962, in Silvia, 2005), and it functions to explore, collect information and learn about the environment (Izard, 1977, in Cornelius, 1996).



In order to reveal the appraisal structure of the interest and to differentiate it from other emotions, recent studies present two different models. First one is proposed by Smith and Ellsworth (1985). Within their model, interest involves *high attentional activity* as an appraisal of whether something deserves attention, consistent with the function of the interest as encouraging exploration and understanding. The *pleasantness* and *moderate certainty* of the interesting situations take the second and third place; and lastly, in interesting experiences events were considered to be *controlled by the situation*, responsibility or control was not attributed to the self or to other people.

Another model for appraisal structure of interest is proposed by Silvia (2005). This model suggests that interest comprises an appraisal of *novelty-complexity* (if the event is new, unexpected, or complex), followed by an appraisal of *coping potential* (the ability to understand, evaluate, control or deal with this new and complex thing). Other than these two essential components of interest, Silvia (2005) also presents three candidate appraisals for the third component. These are the appraisals of pleasantness, goal and motive consistency and expected reward. On the other hand, he asserts that considering these appraisals dominant in interest would be unlikely. Contrary to Ellsworth and Smith (1988), Turner and Silvia (2006) state that pleasantness is not the necessary condition for interest. The results of their recent studies strongly suggest that interesting things need not be pleasant. There is no reason that it should be limited to pleasant things as the function of interest is to encourage exploration and information collecting (Silvia, 2005). In addition to this, goal consistency and expected reward are also not central for interest because of the main function of interest again. Exploration may also occur in the absence of information about relevance to goals. Therefore, these appraisal candidates do not take a central place in interest's appraisal structure in his view.

#### **5.2.4.2.4 Amusement**

Amusement also takes the third place when it comes to emotions elicited during fun experiences with products (M=4.39). In order to study amusement, humor research literature should be taken into consideration, since amusement is the emotion that is brought out as response to humor. Humor is an elicitor of amusement and exhilaration but humor itself is not an emotion; therefore, studying amusement

bonds the study of humor into general emotion research (Ruch, 1993). Amusement seems to be strongly related to the terms of exhilaration, fun and playfulness.

The most apparent attribute of amusement is its association with positive affect. Berlyne (1972) emphasizes that if a person does not derive pleasure from a certain event, it is not humorous or amusing for him. Therefore amusement is considered to be a *pleasant* experience as it is a state we enjoy being in (Ruch, 1993).

The other mostly mentioned appraisal of amusement is *incongruity*. In the case of humor, individuals are confronted with stimuli that contain incongruous, contradicting or opposing elements. It depends on the combinations of objects that are normally unrelated (Berlyne, 1972). However, the important thing in here is the way this incongruity is processed. If the degree of abnormality and unusualness strays too far from the regular and understandable, incongruity may cause puzzlement and can be considered as odd or strange. Certainly, this would not lead to amusement, and it may even frustrate the individuals. Therefore, another appraisal for amusement is needed. Suls (1972) presents a model that starts with perceiving incongruity in the first stage, and solving this incongruity in the second phase results with amusement. Similarly, Rothbart (1973, in Desmet, 2002) also defines a term called “challenge-mastery sequence” (p. 158). In his view, the basis of amusement is the sudden overcoming of a challenge, providing *resolution of incongruity* and enlightenment.

As amusement comprises overcoming challenges, some level of *complexity* and an *effort to cope* with this complexity is required. The humorous stimuli should have an intermediate degree of incongruity; as aforementioned difficult jokes may produce bewilderment because of their high level of incongruity which the person is not able to make sense of and ‘get the point’, on the other hand easy jokes also make no demands on the person’s intellectual capacities (Berlyne, 1972). Therefore, in order to have a rich amusement experience one should make some effort to be able to understand and solve the incongruity with his/her cognitive abilities. However, Nerhardt (1970, in Langevin & Day, 1972) states that humor is not of only incongruity, it is rather divergence of the situation from an expected state. This unexpectedness is strongly related with the *novelty* of the stimuli. When the individuals are confronted with any sudden stimulus; the mechanism of ‘schema matching’ steps in to determine the degree of familiarity of the object or the event

(Scherer, 2001). In terms of humor, the studies show that the stimuli corresponding to the intermediate degrees of deviation from the familiar caused the most laughter and enjoyment (Berlyne, 1972). Therefore, an appraisal of novelty is needed in amusement experience and this appraisal of novelty is provided by *unfamiliarity* and *unexpectedness* (Desmet, 2002).

Another significant appraisal of amusement is stated to be *cues precluding seriousness* which refers to some discriminative cues of humor, indicating what is happening should be taken as a joke (Berlyne, 1972). As such in play or games, the person is aware of the un-seriousness of the event and he is not expecting any possible threats to his well-being and motives in amusement experience. This aspect is also parallel with the term 'playfulness', proposed by Ellsworth and Smith (1988). They associate playfulness with the appraisals of pleasantness and *low importance* which indicates that the situation is a safe one. The function of playfulness is to encourage the person to play or fool around, providing attainment of new skills. Similarly, Apter (1982, in Wyer & Collins, 1992) asserts that amusement is more likely to be elicited when the person's main objective is to understand and enjoy the stimuli. When he/she tries to achieve a more specific goal, humor or amusement may interfere with the current objectives. Therefore, it may be suggested that amusement is *not goal-oriented* and it is evoked during less important and safe situations.

Based on Apter's reversal theory (1982), Wyer and Collins (1992) put forward another factor that affects humor elicitation, named as *diminishing attribute*. They assume that when people are confronted with a stimulus, they make an interpretation about it. However, in the humor condition, further information about this stimulus suggests that this initial interpretation is incorrect. This new perception of reality (reinterpretation) provided by further information diminishes the importance of the initial interpretation and this situation elicits humor. The lion in the movie 'Wizard of Oz' is given as example to evoke amusement: it is expected to be brave; however it turns out to be a coward in truth. The lion's true attributes are less favorable than the way it should be, which makes people laugh because of the diminishing attribute. Also, this appraisal can be considered to be parallel with the previous one (cues precluding seriousness). When people reinterpret the stimulus

and find out that it is less important than they originally interpreted it, they realize the un-seriousness and low importance of the event which leads them to amusement.

#### **5.2.4.3 Discussion**

When the appraisal structures of these four emotions are studied, amusement seems to be the most relevant emotion in fun elicitation. Happiness/joy, contentment and interest have an inferential relation to fun, whereas amusement has a direct effect on making the users smile. As a matter of fact, happiness is a generic response to all pleasant circumstances; instead of signifying a specific emotional state it is used for referring to most pleasant emotional experiences. This may be the reason why Ellsworth and Smith (1988) group 21 emotions under the heading of 'happiness' in their study (e.g. happy, elated, excited, satisfied, thrilled). This group is very large and they entitle it as a general dimension of pleasantness. Likewise, contentment is also a pleasant emotional state originating from an individual's expectation confirmations with an overall evaluation of a stimulus (Demir, 2007). Therefore, it is convenient to say that these emotions are elicited during fun experiences because of their general pleasantness qualities; however, elicitation of these emotions is not limited solely to fun experiences. Similarly, interest does not necessarily contribute to all fun experiences as well. Interest's main function is to encourage the individuals to explore, collect information and learn about the environment (Silvia, 2005). Therefore, it may be stated that interest lies behind all of our interaction with the environment, it provides engagement with the world; it is related to interaction which is not specific to the fun. All of the circumstances in which the users are experiencing happiness, contentment or interest may not directly lead to fun; on the other hand, when we consider the appraisals of amusement, it is the only emotion that may make fun experiences possible without any other contributing emotions or factors.

The reasons behind the high scores of these emotions can also be discussed in terms of their appraisal structures. Table 5.3 summarizes the proposed appraisals of happiness/joy, contentment, interest and amusement.

Table 5.3 The appraisal structures of happiness, contentment, interest and amusement

<i>Emotions</i>	<b>Happiness/Joy</b>	<b>Contentment</b>	<b>Interest</b>	<b>Amusement</b>
<i>Appraisal Types</i>	Motive consistency	Motive consistency	-	Motive consistency
	Pleasantness	-	Pleasantness	Pleasantness
	High level of certainty	-	Moderate certainty	-
	Circumstance caused	-	Controlled by the situation	-
	High control potential	-	Coping potential	Effort to cope with complexity
	-	Expectation confirmation	-	-
	-	-	-	Resolution of incongruity
	-	-	Novelty	Novelty
	-	-	-	Cues precluding seriousness
	-	-	-	Diminishing attribute

These four emotions share some common appraisals which are highly possible to affect the elicitation of particular emotions during fun experiences. These common appraisals and their translations into the attributes of products are as follows:

(1) The first common appraisal is *motive consistency* that takes place in the emotions of happiness/joy, contentment and amusement. This appraisal refers to the satisfaction of a need, attainment of a goal or facilitation of a final goal attainment (Demir, 2007). In terms of product design, this appraisal signifies the relevance of an object with an individual's well being. A product that helps a person to achieve something, fulfills a need or satisfies a goal is appraised as motive compliant (Desmet, 2002). This quality can be interpreted as functionality of the products, which is one of the attributes that contribute to the fun experiences.

(2) *Pleasantness* is another appraisal that is shared by the emotions of happiness/joy, contentment, interest (only in Smith & Ellsworth, 1985) and amusement. It is the attribute of the product that encourages a person to approach it. The products that take place in the fun experiences motivate their users to move toward themselves; and they are the products that the users enjoy spending time with in terms of using, playing, holding, interacting etc.

(3) The appraisal of *novelty* is shared by interest and amusement. Silvia (2005) considers the appraisal of novelty in a family of related appraisals that is focused on new, unexpected, uncertain, contradictory or ambiguous events. Similarly, Scherer (2005) associates the suddenness and familiarity of the events with the appraisal of novelty. These views are also applicable for products, because the products which deviate from what we know (unfamiliar) and the ones that are discrepant with the users' expectations (unexpected) are appraised as novel (Desmet, 2002); and these can be considered as the characteristics of fun-related products.

(4) Another appraisal dimension is the *agency* factor in emotions elicited during fun experiences. This appraisal refers to the thing/person/event responsible in that particular situation. In the emotions of happiness/joy and interest, it is considered to be the circumstance itself that causes the emotion (Roseman, 2001; Smith & Ellsworth, 1985). Therefore it can be stated that, in fun experiences it is the product or its context that leads to the elicitation of certain emotion, rather than the characteristics of the users or another person.

(5) The person's ability to cope with the situation or *high control potential* is closely related with the previous appraisal dimension and it is mentioned between the appraisals of happiness, interest and amusement. In the aforementioned circumstance-caused situations there should be a high control of the person by being able to manage or influence the event (Scherer, 2001). In terms of products, this appraisal refers to the complexity of the product and the user's capacity to deal with this complexity. In fun experiences, this complexity is expected to be moderate and the users should be able to manage to understand, appreciate or use the product.

These five appraisals are common between certain emotions; however there are some other appraisal dimensions that are specific to a particular emotion among happiness/joy, contentment, interest and amusement. The first one is *resolution of incongruity* which takes place between the appraisals of amusement. When it comes to experiences with products, incongruity may also contribute to the emergence of fun. It may be found within the qualities of product itself (e.g. unrelated, contradictory or opposing elements in material usage, color, form, function) or it may be in the usage context (e.g. the irrelevance of a product in the environment it is located, incongruity between the product and the characteristics of the person owning the product). In the fun experiences, the user should be able to understand and appreciate the incongruity, which would prevent him/her to consider the product as strange, absurd or meaningless.

Another appraisal dimension of amusement is *cues precluding seriousness* which refers to the individual's awareness of the un-seriousness of the event. In this condition the event is considered to have a low importance and the person is not expecting any threats to his motives and well-being. During these experiences the person's main aim is to understand and enjoy the stimuli (Apter, 1982, in Wyer & Collins, 1992). Similarly, Ellsworth and Smith (1988) associate this appraisal dimension with the term 'playfulness' which is a pleasant state that encourages the person to play or fool around. When it comes to products, these attributes are acceptable as well. The products that make the users smile have some cues that should not be taken into consideration too seriously; they do not interfere with the user's goals and well-being. The product encourages the user to interact inventively with itself, it allows exploration and playing; evoking fun experiences.

The last unique appraisal of amusement is *diminishing attribute*. This appraisal refers to the falsification of the initial interpretation of a stimulus by further information which diminishes the importance or value of this initial interpretation (Wyer & Collins, 1992). When the true attributes of the stimulus are less favorable than the way they are expected, this situation leads to amusement. In order to explain the relation of this attribute to products, Ludden, Hekkert and Schifferstein (2006) give the example of a plastic vase which looks as if it is made out of crystal. When the users perceive the incongruity in terms of material, some of them may evaluate plastic as a diminishing attribute relative to crystal, because plastic is given

less value in general. If this attribute of plastic does not conflict with the concerns of the users, the vase may be considered as amusing. Therefore, the initial interpretation of the product is falsified by the interaction with it which may be one of the attributes of fun-related products.

The last emotion-specific appraisal dimension worth mentioning here is the *expectation confirmation* appraisal of contentment. Contentment requires an expectation match (Desmet, 2002) which would seem to be contradicting with the unexpectedness dimension of novelty appraisal that was mentioned before. However, unexpectedness in novelty is used for getting attention or surprising the users at the first place. Each interaction with the same product causes the unexpectedness to lose its power and later it is replaced by other aspects of the usage. On the other hand, expectation match in contentment is related with the desirable outcome that the users want to achieve. Therefore, it is something more general and it is not limited to the first time usage only.

As a conclusion, the results indicate that fun is an extreme positive state associated with the emotions of happiness, joy, contentment, interest and amusement mostly. This emotional content of the fun experiences are integrated in the framework of user experience that was constituted in Chapter 3 (see Figure 5.2).

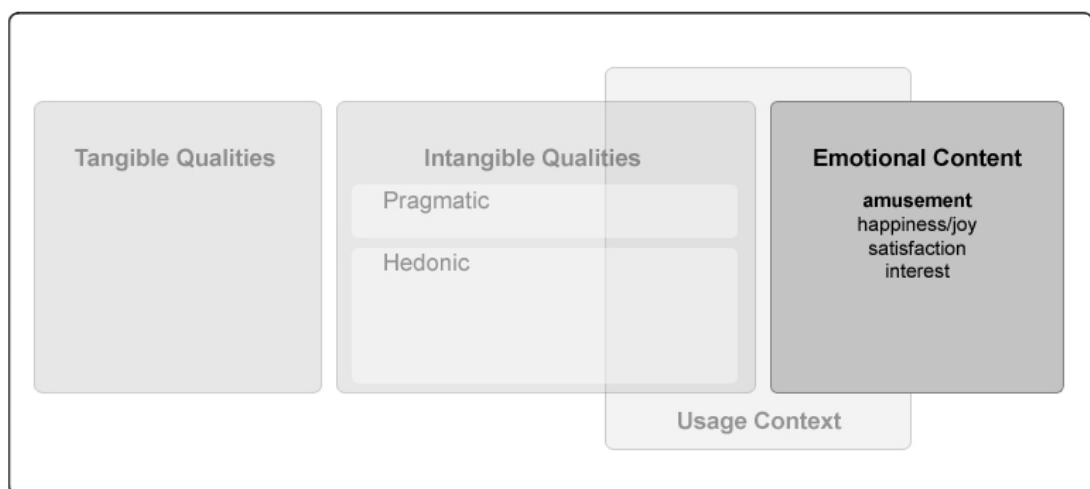


Figure 5.2 The emotional content dimension of the users' fun experiences.



The common appraisals behind these particular emotions reveal some of the qualities of fun experiences related to products such as helping a person to achieve something or fulfill a need (*motive consistency*), encouraging a person to approach it (*pleasantness*), deviating from the familiar and expected (*novelty*), having a medium level of *complexity* while the users are able to deal with this complexity by understanding, appreciating or using the product. These results are also in parallel with the findings of the previous empirical study on the qualities of fun-related products. For instance, the motive consistency appraisal corresponds to the 'usefulness', pleasantness appraisal matches with the 'play factor/interactiveness' attributes of the former study. These were the two of the most mentioned aspects of fun-related products and they refer to the products that satisfy a goal and motivate their users to spend time with, respectively. Besides, the products that are different than what we expect them to be, namely 'novel' or 'original' products are observed to be a significant result of both studies. Lastly, dealing with complexity appraisal is also echoed in the findings of the previous study in terms of 'challenge' attribute. The pragmatic quality of 'usability' also partly signifies this aspect as it refers to being able to cope with the product. Consequently, the empirical studies conducted within the scope of this thesis have common results that emphasize some attributes of the products that take place in fun experiences, and verify the findings of each other.

In addition to this, when the appraisal structures of these particular emotions are investigated, amusement seems to be the most relevant emotion to fun experiences. This is because amusement seems to be the only emotion that has a direct effect of making the users smile without the contribution of other emotions. On the other hand, the other four emotions are different in terms of their function, aim or qualities which cause them to have an inferential relation to fun. Therefore, further studies that investigate the appraisal structures of these emotions, especially amusement, in depth, would be a contribution to the field.

## CHAPTER 6

### CONCLUSION

This chapter presents a brief review of the answers to the main questions of the study that are acquired from literature research and two empirical studies, and draws conclusions from the conjunction of the two. The chapter concludes with a section that discusses the opportunities for further research.

#### 6.1 Concluding Remarks

User experience (UX) is a multi-dimensional user-product interaction that involves positive and emotional usage. UX encourages a holistic view of the users, placing emphasis on their non-instrumental needs and expectations as well. This understanding extends the scope of the traditional usability in which it is referred to more than simplicity and ease of use, to encompass affect-based approaches to design.

'Fun experience' is a component of UX that has come to an increased prominence in recent years. It retains unique qualities setting it apart from other affective phenomena. Fun is related to playfulness, humor and laughter; it is a kind of experience that distracts the person from himself/herself. The literature presented in the second chapter depicts the differences of fun experiences from pleasure which is one of the other prominent hedonic concepts. Nonetheless, the results of the first empirical study indicate that the users are not much sensitive about differentiating these experiences. The interview questions in this study addressed the fun attributes of the products; however the answers not only comprised the fun-related aspects, but also the product qualities that referred to giving pleasure. It seemed that fun and pleasurable experiences were barely distinct for the users, even though their differences are discussed by a limited number of studies found in the UX literature.

As a matter of fact, still there is not any comprehensively constituted framework in the literature to explain what the 'fun element' is. The literature survey reveals several studies investigating the product qualities that create emotional experiences; however, these studies focus on positive experiences collectively, not concentrating specifically on the fun concept. Furthermore, in these studies, fun is studied mostly in relation to computer applications and interfaces which inherently have different characteristics than 'physical' products. The literature lacks a coherent understanding and a theoretical base of fun for products in the physical domain. In order to fill this gap, two empirical studies were conducted according to the UX framework that was presented in the third chapter. This framework is derived from the review of the theories and models found in the UX literature. The common aspects mentioned by these models were used for ascertaining the components of the user experience. Within this framework, the components of experience that each empirical study examined are presented in Figure 6.1.

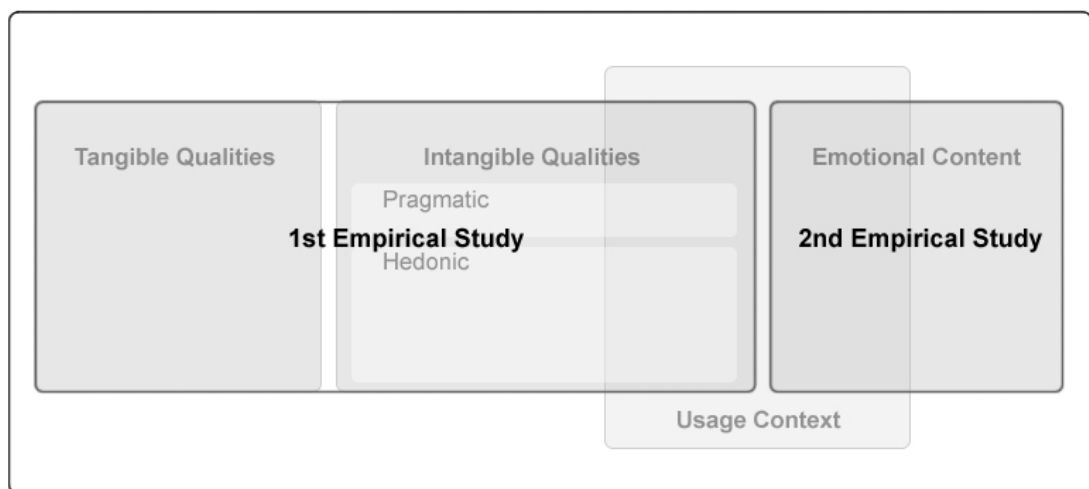


Figure 6.1 The elements of the UX framework that each empirical study covers

Confining the extent of the thesis on users' fun experiences with consumer products revealed some additional issues that are not covered by the literature, and also provided a more systematic approach to the subject. The first empirical study explored the product qualities that play a role in fun experiences, which were found

to be categorized under three subject headings: tangible qualities, pragmatic qualities, and hedonic qualities. In the second empirical study, the emotional content of the fun experiences were investigated. When the findings of these studies are integrated in the UX framework, the components of the users' fun experiences are collected (see Figure 6.2). Within this framework, the 'usage context' component has been omitted since it cannot be examined due to the time limitations. A brief summary on the components is as follows:

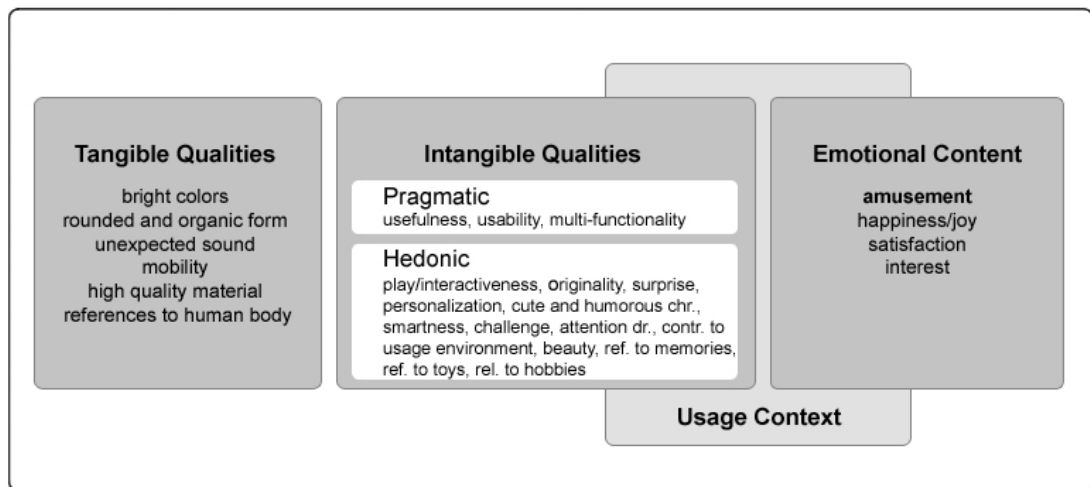


Figure 6.2 The components of users' fun experiences

### *Tangible Qualities*

As can be seen in Figure 6.2, the tangible qualities of the fun products involve the elements of their appearance. Surely, it cannot be expected from every product that takes place in fun experiences to possess all of these elements. Instead, they should be considered as common qualities shared by most products that are entitled as fun, which lead to fun-related associations and inferences of the users.

### *Intangible Qualities*

The intangible qualities category comprises keywords related to the pragmatic and hedonic dimensions of the products. These keywords involve various qualities of the fun-related products concerning their symbolic meanings, effectiveness and

aesthetics; which are derived from the users' evaluations of the tangible qualities. Within this category, the results of the studies revealed the importance of pragmatic qualities as pre-requisites for attaining fun. It seemed that users' fun experiences are provided when the hedonic qualities are added on the products to enhance their functionality and usability.

#### *Emotional content*

Figure 6.2 illustrates that the emotions of happiness/joy, satisfaction, interest and amusement are most intensely elicited during fun experiences. When the appraisal patterns of these particular emotions were investigated by deriving ideas from the cognitive psychology literature, the common appraisals behind them explained their occurrence. However, the appraisal pattern of amusement exhibited its relatively higher relevance with users' fun experiences. This finding is also supported by the literature review that was presented in the second chapter, which highlights the presence and importance of humor and laughter elements in fun experiences.

The two empirical studies conducted within the scope of this thesis have shown similarities in terms of their results. Although they had different aims, the findings of both studies signified some common product qualities that contribute to the users' fun experiences. Consequently, their results corresponded in a way that verifies each other. Furthermore, the findings also extended the scope of the subject by integrating some points that are not included by definitions and explanations of fun in HCI. When the results that are based on fun-related aspects of the 'products' are compared with the data found in the HCI domain, a distinction of products is apparent. Although there have been overlaps, the differences between products and computer applications were shown to be primarily originated from the three-dimensionality of the products (i.e. products are distinctly tangible, therefore they involve dynamism, mobility and stimulation of the five senses), interpreting the products within the wider usage environment they are in and the higher opportunity of emotional attachment with them (Cila, Erbug & Sener, 2007). This distinction brings additional perspectives on the concept of fun.

To conclude, the product attributes that have been mentioned in the related literature and by the participants in the present thesis constitute a valuable data for

the product designers to understand users' perceptions and expectations in relation to fun. However, the designers' purpose cannot be designing a fun experience. As mentioned earlier, the designers can only 'design for experience' (Wright, McCarthy & Meekison, 2003), indicating that they combine the appropriate product qualities to create the intended effect. Therefore, the intuition of the designer is still essential since the effect of combining these different qualities cannot be predicted. Though the tangible and intangible qualities of the products are different in nature, the designer can bring them together and 'design for fun experiences' by analyzing the users thoroughly, investigating their expectations and needs, and then generating design possibilities. At the same time, research efforts like this thesis can be helpful to the designers in creating more successful, engaging and 'fun' products.

## **6.2 Further Research**

During different phases of the research, there aroused several new questions related to the issues mentioned in this thesis. These questions detailed below can be considered as suggestions for prospective studies.

First of all, it would be noteworthy to conduct a study that is focused on the 'usage context' component of the user experience model that was presented in the third chapter. In this thesis, the other three components of user experience (i.e. tangible and intangible product qualities, emotional content) were studied, however the influence of usage context to the outcomes of fun experiences have not been investigated.

A second research can be carried out with the purpose of gaining a thorough comprehension on 'amusement'. Humor and amusement were found to be important contributors of fun experiences based on the literature review and the findings of empirical studies. Therefore, it would be fruitful to explore the amusement concept in depth, and reveal the product qualities that amuse users in order to constitute a broad understanding on fun.

Another opportunity for research can be focused on the qualities of the fun-related products again, however, this time investigating the subject with a quantitative

method. By using the keywords that were obtained from the first empirical study, a questionnaire can be designed in order to measure the importance of these qualities in relation to the fun concept. Such a study would confirm the validity of the findings of the first empirical study, consequently, provide more credible results.

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## APPENDIX A

### THE ORIGINAL KEYWORDS AND KEYWORD GROUPS

#### Eğlenceli olarak adlandırılan ürünlerin özellikleri:

##### Renk

- Canlı renkler
- Renkleri neşeli
- Canlı renkli
- Renkli
- Rengarenk
- Renk önemli
- Cıvıl cıvıl renkler
- Parlak renkler

##### Form

- Yuvarlak hatlar
- Yuvarlak hatlı
- Amorf şeyler

##### Malzeme

- Malzemesi kaliteli

##### Hareket

- hareketli olması eğlenceli
- hareketi hoşuma gidiyor
- kayarak geliyor böyle çok eğlenceli
- yaptığı hareket çok eğlenceli
- mekanik ilişkileri takip edebildiğim
- mekanik süreçleri saklamayan
- mekanik süreçleri izleyebiliyorum

##### Ses

- garip bir ses çıkarıyor
- ses çıkarıyor
- horluyor
- komik bir ses çıkarıyor
- sesi çok güzel

##### Fonksiyonellik

- işe yarıyor
- işe yaraması lazım
- hayatı kolaylaştırması lazım
- yaptığım işi kolaylaştırıyor

##### Çok-fonksiyonluluk

- çok fonksiyonlu

- temel fonksiyonunun dışında başka özellikleri de olanlar
- yanında başka fonksiyonları da olan
- farklı işlevleri olabilir
- olması gereken işlevinden farklı işlevleri de varsa
- hem fonksiyonel hem esprili

##### Kullanılabilirlik

- kullanışlı
- rahat kullanım
- kolay
- basit
- kolay kavranan
- kolay anlaşılır
- beni zorlamayan ürün

##### İnteraktivite / Oyun

- sürece katkıda bulunuyorsun
- sürece birebir katkı
- değişik bir interaktivite sağlıyor
- senin müdahale edebildiğin ürünler
- bana bir tepki veren
- interaktif ürünler
- iletişime geçebildiğim
- kendisiyle ilgilendiren
- etkileşimi eğlenceli olan
- kafama göre senaryo uyduruyorum
- yaratıcılığa olanak veren
- yaratıcı olabilirdik
- nasıl yerleştireceği kişinin kendisine bırakılmış
- birçok alternatif sağlayan
- olanaklar bakımından çok alan açan
- değişik kullanım alternatifleri sunan
- sizin zevkinize bırakılmış
- istediğiniz yere takıyorsunuz

- onunla çok komik şeyler yapabiliyoruz
- amacı dışında kullanıyorum
- yaratıcı gücü ortaya çıkaran
- kendime göre ayarlayabiliyorum
- yaratıcı çözümlere yönlendiren
- içine istediğin fotoğrafı koyabiliyorsun
- üzerine istediğim şeyleri yapıştırıyorum
- onunla oynuyorduk
- sıkıldıkça oynuyorum
- elim altında, sıkıldıkça oynuyorum
- oynayabiliyorsun
- oyalayıcı
- vakit geçirtiyor
- uğraştırıyor
- yaparken canım sıkılmıyor
- oyalayan
- can sıkıntısı geçiren
- can sıkıntısını azaltan

##### Kişiselleştirme

- oluşumuna katkıda bulundum
- kendim yaptım
- oluşumuna katkıda bulunabileceğin ürünler
- biz tasarladık
- kendi tasarımı olan bir ürün
- her yerde olmayan ürünler
- herkeste olmayan ürünler
- herkesin giymeye cesaret edemeyeceği
- bana özel
- yalnızca benim kullandığım
- kimsede olmayan
- beni yansıtan
- kendimden birşeyler katan
- kişiselleşmiş ürünler

### Orijinallik / Yenilik

- Alışılmıyın dışında
- Değişik
- Doğal değil
- Alışılmamış
- Dizaynı farklı
- Farklı
- Yeni bir etkileşim süreci sağlıyor
- Kişilikli
- Sıradışı
- Olağandan farklı

### Sürpriz etkeni

- Esprisini zamanla keşfedeceksin
- Sürprizli
- Kullanırken ne tepki vereceğini tamamen bilmediğim ürünler
- Bunun ne olduğunu bilmeyen şaşırabiliyor
- Şaşırtıcı
- Umulmadık tepkiler veren
- Hala yeni özelliklerini keşfediyorum

### Zeka etkeni

- zeka kıpırtısı olmalı
- zekice
- esprili
- kullanış esprisi olan

### Keşfetmeye yönlmesi

- elime aldığımda çözmesi zevkli
- keşfetmek zevkli
- bulmacamsı
- bulmaca çözer gibi
- birşeyi başarma hissi vermesi

### İlgi çekmesi

- ilgi çekici
- dikkat çekici
- göze çarpıcı

### Genel görünüm

- Hoş
- Görünüşü güzel
- Tasarımı güzel
- Estetik olarak hoşuma giden
- Görüntüsü pozitif
- Görüntüsü mutlu ediyor

### Form benzetmeleri

- İçinde insan tiplmesi var
- Karikatürize
- Komik
- Kuşa benziyor ama komik

### Ürün karakteri

- şirin
- sevimli
- sempatik
- komik
- gülümseten

- matrak

### Ortama katkısı

- ortamı renklendiriyor
- ortamı değiştiriyor
- ortamı eğlenceli yapıyor
- bulunduğu mekanla uyumlu olması lazım
- bulunduğu mekana aykırı olmaması lazım

### Eğlenceli anları

#### çağırıştırması

- eğlenceli birşey çağırıştırarak
- eğlenceli bir anımı çağırıştırıyor
- Budapeşte gezimi hatırlatıyor
- anısı var
- hediye geldi
- eğlenceli şeylerle bağdaştırıyorum

### Oyun / Oyuncak ilişkisi

- bir tür oyun gibi
- oyuncaksı
- oyuncagımsı
- oyuncak gibi
- içinde oyun faktörü var

### İlgi Alanları ile ilişkisi

- ilgimi çeken konuda olması önemli

## **Eğlenceli olmayan ürünlerin özellikleri:**

### Renk

- koyu renkler
- koyu renkli
- rensiz

### Form

- köşeli
- maskülen
- sivri hatlar
- sert hatlı
- resmi görünen
- ciddi görünen

### Malzeme

- malzemesi kötü
- malzemesi, dokusu kötü
- çok kalitesiz

### Ses

- sesine tahammül edemiyorum
- çok ses çıkaran

### Fonksiyonellik

- fonksiyonel değil

- işe yaramayan
- işimi zorlaştıran
- pencere kapanmıyor
- çok problem çıkarıyor
- makina iyi basmıyor
- her zaman çalışmıyor
- habire problem çıkarıyor
- zor çalışıyor
- çekmecesini açılmıyor
- sürekli çöküyor
- kartuşu hemen bitiyor
- zorluk çıkaran
- işini iyi yapamıyor
- işe yaramıyor
- temizliği zor olan
- ortalığı kirletiyor

### "Sadece" fonksiyonellik

- Sadece iş görsün diye bulunuyor
- Çok amaca yönelik
- Sadece fonksiyonel olan
- Sadece kendi işini gören ürünler
- Sadece kendi işine yarıyor

- Sıf fonksiyonuyla var olan
- Tamamen bir işe yönelik
- Fonksiyonunun dışında birşey sunmayan
- Salt fonksiyonel olan
- Az fonksiyonlu
- Sadece fonksiyonunu yerine getiriyor
- Saf fonksiyon
- Temel fonksiyonları karşılıyor
- Çok sade

### Kullanılabilirlik

- açması kapaması zor
- prizi ters yerde
- hareket imkanını kısıtlıyor
- açması zor
- zor açılıyor
- sürekli çarpıyorum
- devrilmeye meyilli duruyor
- kullanışlı değil
- yakarken zorlanıyorum
- kafa ve bacak çarpmalık
- kullanışsız



- çekmecesini çıkarmıyor
- kabloları ayağıma dolanıyor sürekli
- çok komplike
- kullanımı zor
- kullanımını bilmediğim
- kullanmadığım ürünler
- karmaşık
- içinden nasıl çıkacağını bilmediğim
- zihnen çok meşgul eden
- her kullanımda yeniden öğrenmeyi gerektiren
- anlamadığım
- zor çalışan şeyler
- çözemediğim ürünler
- çok kompleks
- anlamakta zorluk çektiğim
- çok karışık
- anlaşılmaz ürünler
- çok düğmesi var
- zor

#### Sıradanlık

- klasik
- alelade
- standart
- sıradan
- gözüm çok alışık olan
- devamlı kullandığım
- bildiğin vazo

- anonimliği yansıtıyor
- kendine ait kimliği yok
- birbirine benziyor
- adı gözüküyor
- herkesin kullandığı
- alışlagelmiş şeyler

#### Monotonluk

- monoton
- tekdüze
- hiçbir özelliği yok
- çekici bir özelliği yok
- düz
- sıkıcı
- dümdüz
- dikkatimi çekmeyen

#### Teknolojiklik

- elektronik şeylerle donatılmış ürünleri sevmem
- çok teknolojik ürünler hoşuma gitmez
- çok teknolojik şeyler
- high-tech ürünleri sevmem

#### Genel görünüm

- görüntüsü hoşuma gitmeyen
- çirkin
- göze hoş görünmeyen
- bakınca hoşlanmıyorum

- kötü gözüküyor

#### İnteraktivite

- sürece katkıda bulunulmayan
- düğmeye bas sonucunu al hiç sevmem
- süreci göstermeyen
- tek harekete bağlı ürünler
- kapalı kutu gibi
- senin ekleyebileceğin şeyleri olmayan
- müdahale edemediğin
- sana göre bir ayar yapmayan
- istediğin rengini alamadığın

#### Eğlencesiz şeyleri

##### çağırıştırması

- eğlencesiz şeyleri çağırıştırıyor
- sıkıcı büro estetiğini çağırıştırıyor
- spor, ter, pislik hatırlatıyor

#### İlgi alanlarıyla ilişkisi

- ilgi alanıma uzak
- ilgimi çekmiyor

## APPENDIX B

### THE FUN QUESTIONNAIRE

# “Fun” Questionnaire

This questionnaire is aimed to reveal the feelings that are elicited when the users are having “fun experiences” with consumer products.

Your answers will be kept confidential and they will be used only for research purposes. If you have any questions, please do not hesitate to ask.

Thank you very much.

Age:

Gender:

In this questionnaire, we ask you to recall an experience of **fun** that you went through while you were in contact with a **product** (e.g. seeing, using, holding, or thinking about a product). Note that, we are focusing on experiences initiated by the products themselves in this particular study; therefore please confine your reports to the products where the content is not the primary factor (e.g. you might have fun while you were listening to music, however please do not write about your CD's or music player if your fun experience is mainly related to the music itself instead of the particular features and/or properties of the product, or memories and associations triggered by the product).

Now, please spend a few minutes to **recall a fun experience** with a consumer product, and describe what happened to make you experience fun by answering following questions **as detailed as possible**:

(1) What was the related product?

.....  
.....  
.....  
.....

(2) What were you doing with the product when you experienced fun?

.....  
.....  
.....  
.....

(3) When/where/with whom did this experience took place?

.....  
.....  
.....  
.....

(4) What caused this fun experience (e.g. certain product qualities, usage context, usage process)?

.....  
.....  
.....  
.....  
.....

(5) If there are any other aspects related to your fun experience, please add here.

.....  
.....  
.....

In this part of the questionnaire, we ask you to recall **your feelings** during the peak of your fun experience. Please indicate **how intensely you were experiencing** the following emotions by marking the rectangle that represents your choice with an (x).

not at all                      moderately                      extremely

**Admiration / Awe**

(fascination, wonder)

--	--	--	--	--

**Amusement**

(humor, playfulness)

--	--	--	--	--

**Anger**

(furious, madness, resentment)

--	--	--	--	--

**Anxiety**

(nervous, worried)

--	--	--	--	--

**Being touched**

--	--	--	--	--

**Boredom**

--	--	--	--	--

**Compassion**

(empathy, pity)

--	--	--	--	--

**Contempt**

--	--	--	--	--

**Contentment**

(satisfaction)

--	--	--	--	--

**Desire**

--	--	--	--	--

**Desperation**

(hopeless)

--	--	--	--	--

**Disappointment**

(disenchantment, frustration)

--	--	--	--	--

**Disgust**

(aversion, detest, dislike, loath)

--	--	--	--	--

**Dissatisfaction**

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	not at all	moderately	extremely		
<b>Envy</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Fear</b> (afraid, fright, panic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Gratitude</b> (thankfulness)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Guilt</b> (blame)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Happiness</b> (cheerfulness, delight, enjoyment)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Hatred</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Hope</b> (optimism)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Humility</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Interest/Enthusiasm</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Irritation</b> (annoyance)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Jealousy</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Joy</b> (elation, exhilaration)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Lust</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Nostalgia</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Pride</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

not at all                      moderately                      extremely

**Relaxation/Serenity**  
(peacefulness, tranquility)

**Relief**

**Sadness**  
(grief, melancholy, sorrow)

**Shame**  
(embarrassment, humiliation)

**Surprise**  
(amazement, astonishment)

**Tension/Stress**  
(discomfort)

**Thank you very much for your time and patience.**

## **APPENDIX C**

### **ANSWERS TO THE FIRST PART OF THE QUESTIONNAIRE**

Table C.1 Answers to the first part of the questionnaire

	<b>Product</b>	<b>What were you doing with the product?</b>	<b>When?</b>	<b>Where?</b>	<b>With whom?</b>	<b>What caused the fun experience?</b>
<b>P1</b>	wooden bench, double of the size of common	sitting, climbing, being in it (playing)	fall 2006	UK, Sheffield	With a friend	trying hard to sit on it, the feeling of being too small, being in a fairy tale, being a little girl
<b>P2</b>	Custom made electric guitar	playing, trying to make different sounds (using)	2001	TR, Izmir	alone	chose parts one by one, assembled them myself, sound was perfect
<b>P3</b>	mobile phone	customizing the phone (using)	whenever bored		shows it to people	creating new interfaces and seeing them everytime using the phone
<b>P4</b>	super sampler lomography camera	taking photos (using)	April 2007	NL, Delft	friends	unusual than technologic cameras, toylike, childish, pink, pulling the rope, waiting the four lenses, waiting for the print, people become curious and give different poses
<b>P5</b>	pencil	playing with it and using it	whenever bored			shaking, haptic feel, usage process of lead comes out by shaking, rotating the pencil in hands
<b>P6</b>	i-Pod nano	listening to music and carrying (using)	everytime			carrying is easy, the looks, it does not have the space-crafty look, a personal item like a watch or phone, high capacity of music
<b>P7</b>	installation of Moroso with translucent straws	visiting the exhibition (seeing)	April 2007	Milan	With friends	from a distance it looks like foam, looks amazing with light, playing games with lights, so simply constructed
<b>P8</b>	a children's book	reading (using & playing)	May 2007	Ankara, home	With a friend	transparent pages allows different perceptions, the details of drawings, the story
<b>P9</b>	Mixer	stirring flour with eggs (using and playing)	May 2007	Home	with 2 friends	rotating arms touched the metal container made a unique sound, trying to find a tune, friends participating in the music with forks and knives
<b>P10</b>	Camera	taking photos (using)	April 2007	Amsterdam	with 2 friends	panaromic photo shot option
<b>P11</b>	laundry basket	seeing it everytime	seeing it first time	Ikea, istanbul		not a necessary product but it seems a right character for my bathroom, I am talking to it



Table C.1 Answers to the first part of the questionnaire (continued)

	<b>Product</b>	<b>What were you doing with the product?</b>	<b>When?</b>	<b>Where?</b>	<b>With whom?</b>	<b>What caused the fun experience?</b>
<b>P12</b>	Leatherman Swiss tool	fixing with the tool (using) or just fiddling the tool	Not specific			Feeling of omnipotence, quality of tool, feeling of coolness, mc gyver flashbacks, simplicity of the tool
<b>P13</b>	SLR camera	trying to discover features (using and playing)	2005	Ankara	friends	trying to discover the zoom lens and picture delay feature
<b>P14</b>	fisheye lomography camera	taking pictures (using)	April 2007	Various places	with 2 friends	adds a little joke to the meaning of taking pictures, allows to make experiments, being included in a social group
<b>P15</b>	Palm M500	using stylus when playing simcity, drawing roads (using)		in train to delft	alone	Using stylus
<b>P16</b>	i-Pod nano	getting a gift, listening to music (using)		USA	Friends	sleek design features, getting a gift, thoughts about possible usage
<b>P17</b>	cube of chocolate on a stick for making hot chocolate	using it	April 2007	Delft	Friends	different than the others, original, new, usage process in fun, playing with the stick, eating chocolate, interacting with the friends, serving this kind of hot chocolate
<b>P18</b>	shelf for magazines	putting magazines, adjusting their positions	everytime			putting new magazines changes the atmosphere of the room, it is different than its alternatives (seeing the front covers), adjusting magazines
<b>P19</b>	digital camera	exploring new features, taking photos, showing its	A year ago	Ankara, home	alone	bragging to others, design element, features, battery lasts longer
<b>P20</b>	mobile phone	taking photos (playing)	A year ago	Ankara, home	alone	photo effects, shooting options offer various things to experiment different than classical photos.
<b>P21</b>	a meter by mini	measuring something (using)		Istanbul, home		simple, transparent, very small, round corners, makes a click sound in every 5 cm, you can see the spring, smooth design combined with click sound makes me happy
<b>P22</b>	Nokia 7310	looking, holding, turning	first time of usage	Oslo, home	Mother	beautiful and different from other mobiles, it was like a jewellery, very fancy not my style but it made me excited

Table C.1 Answers to the first part of the questionnaire (continued)

	<b>Product</b>	<b>What were you doing with the product?</b>	<b>When?</b>	<b>Where?</b>	<b>With whom?</b>	<b>What caused the fun experience?</b>
<b>P23</b>	Heart shaped ice tray	Having drink	Summer 2006	Delft, home	friends	Jokes about melting heart, nice to put heart shaped ices instead of boring ones
<b>P24*</b>	A toy called 'bump it!'	Playing with it	2003 Summer	Italy	Friends	Being best in the group, competing with friends, getting complex every time
<b>P25*</b>	5 lt plastic bottle	Making a small boat from it with a sail and candle	4 years ago	Antalya	brother	Being able to do many things with a plastic bottle
<b>P26*</b>	Balloon animals kit	Making a balloon dog	Last year	Ankara	alone	Competitive character to finish all of them, giving them as gifts
<b>P27*</b>	Can opener	Preparing dinner and trying to open the can	March, 2007	Delft, home	alone	Simple tool can be the most important problem of your life at the moment, it is funny
<b>P28*</b>	Rubik's cube	Playing		Delft, home	With a friend	Looks simple but actually very profound behind
<b>P29*</b>	Miniature ping pong table	Playing	At Christmas	Lisbon	With family	The concept of the game to distract you in office
<b>P30*</b>	Kaleidoscope	Looking around in the shop	February 2007	Paris	With friends	Relaxed me somehow
<b>P31*</b>	Sound recorder	Recording voice and singing	Six years ago	Ankara, home	alone	Fun to record and listen again
<b>P32*</b>	Slippers	Considering them as cars	19 years ago	Ankara	With friends	Using imagination, colors and sizes of them

\* The participants who were not included in the sample

