GENDER DIFFERENCES IN PRODUCT FORM PERCEPTION

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ABSTRACT

GENDER DIFFERENCES IN PRODUCT FORM PERCEPTION

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Product form is the principal factor that affects the consumer response. It influences the consumer preferences in many ways and affects the success of the product in the market. The response is moderated by several influences including individual tastes and preferences, personal characteristics, cultural and social context and other situational factors. The purpose of this study is to find whether gender as a personal characteristics, has an influential effect on the perception of the product form. A survey was conducted with a sample set of mobile phones. To quantify the participants' perceptions, semantic differential method was used in which participants were asked to rate characteristics over a set of opposite adjective pairs. It is found out that, with respect to particular adjectives, responses to product form might be significantly different for males and females.

Keywords: Product Form Perception, Consumer Response, Gender, Mobile Phone, Semantic Differential Method

ÖZ

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Tüketicinin tepkisini etkileyen en temel faktörlerden biri ürünün dış görünümüdür. Dış görünüm tüketici tercihlerini ve ürünün pazardaki başarısını etkiler. Tüketici tepkisi, kişisel beğeniler ve tercihler, kültürel ve sosyal etmenler, kişisel karakteristikler ve durumsal faktörler gibi birçok etken tarafından yönlendirilir. Bu çalışmanın temel amacı, kişisel özelliklerden biri olan cinsiyetin, ürünün dış görünüşünün algısında etkisinin olup olmadığını ortaya çıkarmaktır. Bu amaçla, cep telefonunu temel alan bir çalışma yapılmış, katılımcıların algısının ölçümü için, her katılımcının belirli zıt sıfat çiftlerine göre ürün görünümünü değerlendirdikleri 'anlamsal farklılaşım tekniği' kullanılmıştır. Çalışma sonuçları, cinsiyetin, tüketici tepkisinde önemli farklılıklara sebep olabileceğini göstermiştir.

Anahtar Kelimeler: Ürün Dış Görünümü Algısı, Tüketici Tepkisi, Cinsiyet, Cep Telefonu, Anlamsal Farklılaşım Tekniği

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CHAPTER 1

INTRODUCTION

Product appearance plays a key role in affecting consumer response and its marketplace success, since consumer preference is dependent on how they perceive and evaluate the form of a product (Bloch, 1995; Veryzer, 1995).

Consumer response is a well studied topic in literature in which different ways the appearance of a product plays a role in consumer product evaluation and the factors controlling or affecting these responses are analyzed (Bloch, 1995; Monö, 1997; Crilly et al., 2004; Creusen, 2005). In general, the response can be viewed in three aspects, cognition, affect, and behavior. *Cognitive* responses are the judgments that the consumer makes about the products based on the information perceived by their senses. Perception of a product's form may lead to *affective* responses from consumers ranging from positive responses such as simple liking, to negative responses including dislike. *Behavioral* responses follow the psychological responses (cognitive and affect) and are in between approach and avoidance towards a product.

The context in which the consumer evaluates and prefers the product is an important consideration, because, the culture, background and experiences of the consumer are significant determinants in their responses (Monö, 1997; Dittmar et al., 1995). Hence, there are influences that moderate or disturb the cognitive, affective and behavioral responses to the form of the products. These influences are generally grouped as personal characteristics, cultural influences, innate design preferences and situational factors (Bloch, 1995; Crilly et al., 2004). In that respect, the strategies consumers use to process information may be affected by personal characteristics, such as age, gender, experience and personality.

There are numerous studies investigating the effect of these factors on the consumer responses, however, few particularly stress on the influence of gender and the

properties that are likely to be perceived differently by males and females. The identification of differences in preference patterns and the design elements that are likely to be attracted or avoided by different genders is also studied by various researchers, (McElroy, 1954; Dittmar et al., 1996; Moss et al., 2003). In literature, studies investigating the effect of gender on consumer response focus on the behavioral responses that relate to the preferences and very few analyze the effect of gender on *cognitive* responses. There is a lack of studies arguing that different genders might provide different cognitive responses to the same product form. As Veryzer (1995) acknowledges, more research is needed to identify factors such as psychological factors, culture, socio-economic factors, visual organization principles, and *gender* that influence consumers' responses to product designs.

Consumers with different genders go through different experiences that may affect their judgments and preferences for visual information (Yun et al. 2003, Eckman et al, 1994). The environment, time, culture, age, psychological and physiological differences may cause each of us to require different products and may interact with the same product in a different way, these differences in the context of consumption, the degree of satisfaction towards products may vary accordingly. Consequently, it is important for designers to investigate the possible perceptual differences between different genders, since the ways the consumers perceive the product form are the indicators of the consumer's satisfaction toward that product.

Identifying possible perception differences between genders might help designers to gain insight about the degree of responses that will be provided by the consumers so that they can incorporate these factors in design activity.

This study concentrates on the perception differences between genders. It argues that the consumer's gender, as a physiological, cultural and social concept, might have an influence on how they perceive and respond to product form. Thus, the primary question of this study is to find out whether there are any differences between males and females in perceiving product's appearance. In order to answer this question, a survey is performed where semantic differential method was used on a sampler

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product. Due to its wide usage and having designs for both genders, mobile phones were selected. In the survey, participants are asked to rate the mobile phone designs over a set of adjective pairs and the analysis is performed over the results for the adjective pair ratings. The adjective pairs that are perceived differently and in similar degrees by both genders in general and in relation to the mobile phone design are determined.

Based on the ratings provided by the participants, the study also tries to investigate whether there are any relationships between these adjective pairs as well. The main goal in investigating the correlation between adjective pairs is to group them into similar groups of pairs. This would enable researchers to make important assumptions about possible outcomes for the ratings of adjective pairs that are in the same groups. That is, for instance, if a product form is perceived to be hot then one can infer that there is a high probability of having participants perceive it as colorful and feminine as well. In addition, grouping adjective pairs would also enable researchers to perform such surveys or analysis on less number of adjective pairs by using representative pairs from each group without sacrificing significant information.

In addition to above questions, the survey also included how consumers perceive their own mobile phones. It answers how users characterize the form of their own mobile form with respect to the same set of adjectives. It also tries to investigate, in terms of the mobile phones owned by the participants, whether each gender preferred products that are in accordance with their genders. In other words, the study asks if males use mobile phones that they perceive as masculine and females tend to prefer phones that they perceive as feminine.

Particularly, the questions that are answered in this study are as follows:

Q1. Are there any differences between males and females in perceiving product's appearance?

Q1.1: What are the adjective pairs that are perceived differently by genders in general?

Q1.2: What are the adjective pairs that are perceived differently by genders in relation to the mobile phone design?

Q1.3: What are the adjective pairs that are not perceived differently by both genders?

Q2. Are there any correlations between adjective pairs that are utilized in the study?

Q3. Does each gender prefer products that are in accordance with their genders?

A set of statistical tests were performed on the survey data in order to signify the conclusions. The details of the statistical tests and their assumptions are presented later in related sections.

The structure of the thesis is as follows:

Chapter 1 introduced the subject topic, the motivation and major questions that will be investigated throughout the study.

Chapter 2 summarizes the literature review on the consumer response to product appearance. After presenting some of the important frameworks, related work on the effect of gender on consumer response are referenced and discussed.

Chapter 3, the gender concept is explored. In the first part of this chapter, the terms related with gender and gender stereotypes are presented. In the second part, related work on the importance of gender in consumer society is discussed in terms of the gendering, consumer preferences and advertising.

Chapter 4 gives the details about the empirical study, the method followed, as well as the results and discussions.

Chapter 5 presents the summary of the research and conclusions.

CHAPTER 2

LITERATURE REVIEW ON PRODUCT APPEARANCE AND CONSUMER RESPONSE

Product appearance is a critical factor in influencing the consumer response and the success of the product in the market (Bloch, 1995; Veryzer, 1995; Han et al. 2000; de Mozota, 2002; Creusen, 2005) Consumer's preference is largely affected by how visual attributes of a product is perceived by the consumers (Crilly, 2004). Design creates form that meets the aesthetic preferences of consumers (Eckman et al., 1994); it is the facilitator, differentiator, integrator and communicator (Hayes, 1990). Hence, the choice is related to these perceived attributes and it is the main concept on the satisfaction of the consumers' wants and desires, rather than their needs (Lewalski, 1988).

There are several ways of product form contributing to product's success. Bloch (1995) identifies four major ways of how product form may play a role in this success. First, it is a means to gain consumer notice, particularly in markets with high degree of product design variation. Secondly, it is a way to communicate information to the consumers. It creates the initial impression and generates inferences related with other attributes of the products such as functionality, strength, power, and ease of use. Thirdly, it is significant in influencing the quality of consumer's lives in larger sense. They may gain pleasure and stimulation when they perceive and use a beautifully designed product. On the contrary, unattractive forms may evoke displeasure. Lastly, it can also have enduring effects, where the aesthetic characteristics may have impacts for years.

2.1 Consumer Response to Product Form

Wells et al. (1995) define perception as "the process by which receiving information through five senses and assigning meaning to it" (p124). Their study focuses on the

sense of sight, that is, what consumer sees on the product form and how she/he gives meaning and response to it. There are numerous studies in the literature related to response to product appearance and the studies by Bloch (1995), Monö (1997), Crilly et al. (2004) and Creusen (2005) are influential works that summarize and provide overviews of this concept. Following paragraphs discuss some of these works and their influence on the background of our study.

Figure 1 represents Bloch's (1995) model of the consumer responses to product form. Once the product form is developed, variety of psychological responses is evoked from consumers. According to Bloch, these include cognitive and affective responses, which may interact and influence each other and may occur simultaneously. The product form affects consumer's belief about the product. It may create or influence beliefs related to characteristics such as durability, technical sophistication, ease of use and prestige. Categorization is another type of cognitive response where the appearance of a product influences the ease with which a product is categorized and the category to which it will be assigned.
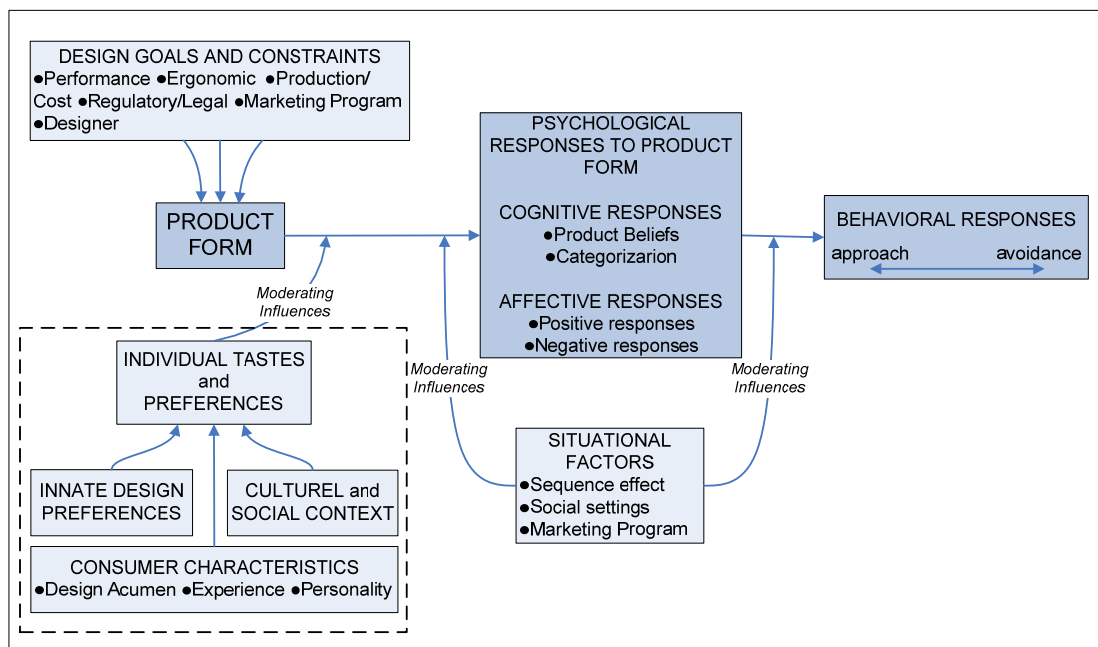
Figure 1 A Model of Consumer Responses to Product Form (Bloch, 1995)

As indicated in Figure 1, perception of a product's form may lead to affective responses from consumers. It may evoke positive -aesthetic responses- ranging from simple liking to stronger affection, or negative responses including dislike. Aesthetic responses are based on the design and sensory properties of the product rather than its performance or functional attributes. The psychological responses lead to behavioral responses that can be described as either approach or avoidance. Approach behaviors indicate an attraction to a design while avoidance behaviors represent the opposite.

The responses described so far are moderated by several variables including consumers' tastes and preferences. The product forms matching with individual tastes are positively responded while negative reactions occur when there is low congruence. According to Bloch (1995), these individual tastes and preferences consist of innate design preferences acquired early in life, cultural and social influences and consumer characteristics (e.g. design acumen, prior experience and personality). Though might be implicit in consumer characteristics, Bloch does not mention *gender* as a moderating influence.

Monö (1997) adopts the basic system of communication to the study of product design (Figure 2). Accordingly, the designer or the design team acts as the *source* of the message. They decide on the visual attributes of the product form. The product can be viewed as the *transmitter* of the message. The physical product may be characterized by its geometry, dimensions, textures, materials, colors, graphics and detailing (De Sausmarez, 1964). The consumer interacts with the product in the environment, which can be regarded as the *channel*. It is the medium that product is represented in. The *receiver* of the design message is the consumer's perceptual senses (vision, touch, taste, smell, and hearing) and consumer's response may be regarded as the *destination*.
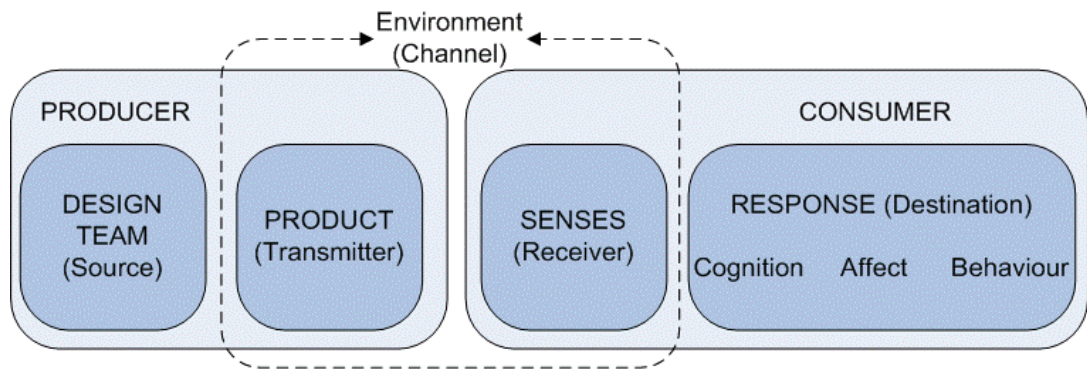
Figure 2 Basic framework for design as process of communication (in Crilly, 2004)

Crilly et al. (2004), referring to Bloch (1995), divides the destination (response) into three aspects as *cognitive*, *affective* and *behavioral*. However, the study by Crilly et al. (2004) provides a comprehensive view of these responses as it aims to review and combine the related literature on product form perception and consumer response.
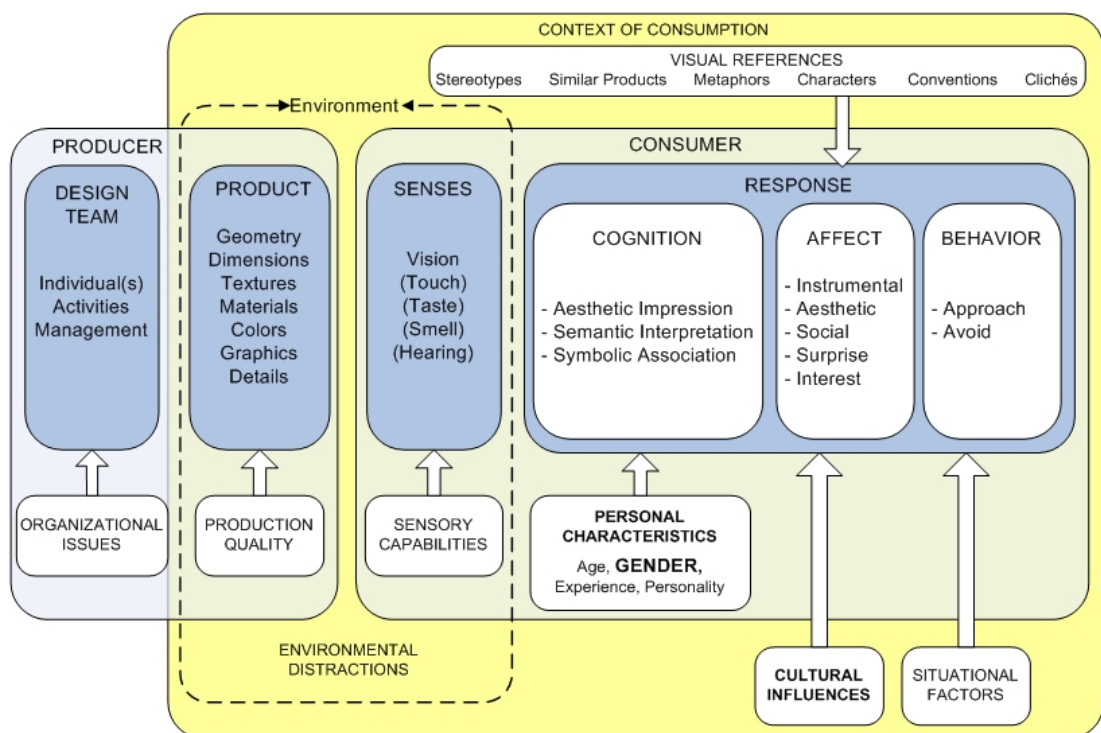
Figure 3 Framework for consumer response to the visual domain in product design (adapted from Crilly, 2004)

Crilly et al. (2004) define cognitive responses as the judgments that the consumer makes about the products based on the information perceived by the senses. Their study categorizes cognitive responses to aesthetic impression, semantic interpretation, and symbolic association (Figure 3). Aesthetic impression refers to the sensation that results from perception of attractiveness (or unattractiveness) in products. Semantic interpretation is referred as the evaluation of a design's apparent utility and perceived qualities, i.e. what a product is seen to say about its function, mode-of-use, and qualities. Symbolic association, on the other hand, may be defined as the perception of what a product says about its owner or user. Unlike Bloch (2004), the study by Crilly et al. (2004) refers affective responses from a broader spectrum of emotional responses other than positive and negative responses. Their study, by referring to Desmet (2003), proposes five categories for the emotional responses that products may elicit. These are instrumental, aesthetic, social, surprise and interest. As in Bloch (1995), behavioral responses follow the psychological responses (cognitive and affect) and are in between approach and avoidance towards a product.

Consumers, when inferring product form, refer to sources external to the perceived product as points of reference. Products reflect general designs, refer to other concepts or stimulate comparison with living things and this help the consumer to understand the product. Therefore, these visual references affect consumer responses (Figure 3). Consumer may compare the product with *stereotypes* of the product category or with *similar products* within the same category. Products may also make reference to other products, other entities or other styles, which can be detailed in terms of *metaphors*, *characters*, *conventions*, and *clichés*.

Consumer's response to the product is affected by a variety of moderating influences (Bloch, 1995) or disturbances (Monö, 1997). As indicated in Figure 3, design team may be affected by various organizational issues, such as communication and resources. The product form is also affected by the production quality, lack of which may lead to failure to meet design tolerances or poor surface finish (Monö, 1997)

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Consumer perception is certainly affected by the sensory capabilities of the consumer as well. Deterioration of senses may lead to perceptions that are different from that anticipated by designers.

The influences that are centre to our study are the moderating influences on consumer response. We discussed such influences in Bloch's (1995) study in above paragraphs. Similarly, Crilly et al. (2004) categorizes these influences as cultural influences, personal characteristics, and situational factors that also have interdependencies. Cultural factors may include established conventions of taste, general trends (Chang et al., 2003a), and transient fashion.

Crilly et al. (2004) details personal characteristics on age, *gender*, experience, and personality. Although Bloch (1995) does not refer *gender* as an affecting variable on responses, Crilly et al. (2004) claim gender to be one of the influencing moderators of consumer response. Based on these views, this study argues and tries to validate that the consumer's gender – as a physiological, cultural and a social concept – might have an influence on how she/he perceives and responds to product form. In the following sections, some of the consumer research studies, which investigate the influence of personal characteristics on design preference and product form perceptions, are discussed. Chapter 3 discusses the gender concept in consumer society.

2.2 Consumer Response and Gender Relationship

Changes in the social norms, technological improvements, and increasing participation by women in business life affected design. In general, the characteristics such as being functional, scientific, technological are associated with male characteristics, whereas being soft, decorative and weak are associated with female characteristics (Attfield, 1992; Hebdige, 1988). For example, the scooters of early days (1960s) are identified as products for women and defined as feminine due to their simple appearance, weak motor power and ease of use. The counter part of the scooter was motorcycles identified as masculine due to their complicated

appearance, high motor power and difficulty in use (Hebdige, 1998). Attfield (1992 p) interpreted such distinction as:

> *Design history has always placed it* [the design] *in the male domain. The dominant conception prioritizes the machine (masculine) over the body (feminine). It assigns men to the determining, functional areas of design-science, technology, industrial production – and women to the private, domestic realm and to the 'soft', decorative fields of design. It places form in the feminine realm where its role is to reflect the imperatives of the 'real'. According to this kind of aesthetic theory then, form (female) follows function (male)*

Table 1 summarizes the gender differences in terms of various consumption related perspectives based on the works of Dittmar et al (1995, 1996) and Moss et al. (2001, 2003).

Table 1 Women and Men in Consumption*

Women	Men
Value emotional and symbolic possessions	Value functional and leisure items
Self-expressive, personal identity: Personal qualities, values, history, relationship	**Functional use:** Control, independence
Categorical, social identity: Social standing, group membership	**Object qualities:** Financial worth, quality
Emotion related: Changes mood, cheers up, self-confident	**Use related:** Enjoyment
Form preference: Rounded shapes, bright colors, feminine	**Form preference**: Less rounded, linear, dark colors, masculine
Product preference: Clothes, jewellery, cosmetics, etc.	**Product preference:** High-tech, electronics, sports equipment, etc.,

* Based on the works by Dittmar et al, (1995 and 1996); Moss et al. (2001 and 2003)

As indicated in the table, women give value to the emotional and symbolic possession, whereas, men value functional items. Women generally buy clothes, jewellery and cosmetics, while, men tend to buy high-tech, electronic, sports equipment.

The study by McElroy (1954) is one of the early studies about gender differences on product form perception. He devotes the gender differences in the perception of product form to the psychological factors inherent in the two genders. Holbrook's studies (1986, 1995) are also influential researches exploring gender effects on product form perception. He (1986) investigates the aesthetic responses of consumers to product features and explores how gender and personality affect preferences for men's apparel. In the study, 64 college students (44 female and 22 male) participants are asked to evaluate a set of 32 black-and-white drawings of men's suits. He argues that different responses to the product form is attributed to personality differences associated with; visualizing/verbalizing tendency, intrinsic/extrinsic motivation, romanticism/classicism and *sex*. In his study, Holbrook found that sex (gender in our case) is a significant entity influencing consumer response to product form. For example, the study showed that visual females are not pleased with plaid jackets while verbal females like plaid sport-coats. On the other hand, males do not prefer either of above patterns by disliking clashing designs. As expected, women (that are visually oriented and intrinsically motivated) tended to be more romantic (versus classical) than men (that are verbal and extrinsically motivated men). Yet, we should refer to two limitations of this study. First, it focuses on the aesthetic responses to clothing and therefore neglects considerations involving the functional aspects of fashion design and perceptions of product form with respect to functionality and usage context. Secondly, using black-and-white drawings of clothing eliminates the representations of other visual dimensions such as color.

Holbrook investigated the possible effects of personal characteristics (including gender) on the perception of other concepts as well, such as travel and music preferences. These studies validated significant perception differences for genders. For example in Holbrook et al. (1995), the study tested whether an index of romanticism-classicism would account for shifts in the utilities attached to various features of vacation trips (pleasure, risk, viewing, warmth, and luxury). The results of these studies indicated gender-related differences.

Perception differences related to gender may also be diverse with respect to different cultures. Milner et al. (1996) investigated the connections between products and gender in different cultures namely; USA, Greece, China and Turkey. The study explores whether males and females perceive the products' gender differently. For example, the study found that Greeks consider wine to be both feminine and masculine while Americans consider it as feminine. Similarly, bank accounts, perceived as undifferentiated by US males and feminine by US women, are considered masculine by both Turkish men and women. One of the hypotheses of these studies is that men have a tendency to perceive more products as masculine than as feminine and women perceive more products as feminine than masculine. This argument is validated in all cultures except China. Although the emphasize on these studies are not on the form of the product alone, they demonstrate that, at least for the case of product gendering, consumers with different genders and in different cultures may perceive the gender of a product differently.

2.3 Differences in Product Form Perceptions

This section briefly discusses the studies in the literature related on the factors influencing perception of product appearances including gender and age.

Chuang et al. studied the relationship between expected images perceived in micro-electronic products -such as high technology, efficiency, lightness and handiness, nobility, and delicacy- and their correspondence to the critical form features of micro-electronic products (2001a). They also investigated the user's preference toward the product form for mobile phone design (2001b) and examined the relationship between the users' personal assessments of mobile phones and their design elements. 102 users (62 males, 40 females in the age range 19-25) participated in the semantic differential test (Osgood et al., 1957) and graded 26 mobile phone samples according to their first impression of the specific 11 image words and preference. The image words utilized in the study is given in Table 2 (Chuang et al., 2001b). The study does not, however, investigated the effect of factors such as age or

gender on perception, rather it focuses on the preference values indicating that the users prefer mobile phone designs with soft and compact styles.

In order to investigate whether there exist significant differences in product form perceptions among different age groups of Y generation (age btw. 8 to 26), Chang et al. (2003b) used semantic differential method to evaluate the preference and image perceptions of mobile phones of the elementary, junior high, senior high, and college students in Northern Taiwan. The participants are asked to rate each of the 15 image (adjective) pairs (Table 2 - Chang et al. 2003b) for 18 mobile phone designs. The statistical tests showed that to the same product sample, different age groups of Y generations might have different images; that is, different age groups might feel different about the same product form in some of the aspects (e.g. modern, mature, cute, feminine, hi-tech, etc.) of styling perception. The results of statistical analysis also demonstrated that elementary and junior high school students can be considered one group and senior high and college students another group.

Table 2 presents common image words (adjective pairs) used in the literature in semantic differential method for identifying possible perception differences between different factors.

Table 2 Image word pairs used in related semantic differential studies

Chuang et al. (2001b)	Chang et al. (2003b)	Hsu et al. (2000)	Hsiao et al. (2003)
traditional - modern	traditional - modern	traditional - modern	cute - not cute
heavy - handy	idle - active	heavy - handy	feminine - masculine
hard - soft	unadorned - splendid	hard - soft	futuristic - nostalgic
nostalgic - avant-garde	childish - mature	nostalgic - futuristic	elegant - not elegant
large - compact	conflicting - harmonic	large - compact	mature - immature
masculine - feminine	popular - individual	masculine - feminine	dynamic - static
obedient - rebellious	indifferent - cute	obedient - rebellious	simple - complex
hand-made -hi-tech	plagiaristic - creative	hand-made - hi-tech	streamlines - rugged
coarse - delicate	obedient - rebellious	coarse - delicate	steady - unsteady
plagiaristic - creative	large - compact	unoriginal - creative	contemporary - traditional
rational-emotional	masculine - feminine	rational - emotional	avant-garde - conservative
	coarse - delicate	conservative - avant-garde	formal - causal
	hand-made - hi-tech	childish - mature	delicate - rough
	practical - decorative	common - particular	dazzling - ordinary
	simple - complicated		rational - emotional
			reliable - unreliable
			innovative - imitative
			heavy - light
			varied - monotonous
			truthful - exaggerated
			consistent - inconsistent
			aggressive - submissive
			old - young
			gorgeous - plain
			comfortable - uncomfortable
			excited - calm
			strong - weak
			soft - hard

Hsu et al. (2000) investigated the differences in the product form perception of designers and users. They employed semantic differential method to examine the relationship between the subjects' evaluation of telephone samples and form design elements. Twenty-four telephone samples were presented to 40 participants (20 designers and 20 users) for subjective evaluation through 14 image-word pairs (Table 2 - Hsu et al., 2000). The results of the study showed that there are many differences between designers' and users' perceptions of the same real objects and their interpretations of the same image-words (adjective pairs). Designers are more

sensitive and discriminating with respect to product form than the user. The views of designers and users are significantly different regarding the telephone samples as well as the interpretation of evaluation adjectives.

Considering the findings in Hsu et al. (2000), in order to minimize or eliminate the designer-user effect in product form perceptions, neither of the participants were designers or pursued a design or related degrees (see section 4.2).

Yun et al. (2003) investigated the look-and-feel of 50 different mobile phones using a consumer survey with 76 participants. Participants evaluated the design of phones on the perceived scale of image/impression characteristics, including luxuriousness, simplicity, attractiveness, colorfulness, texture, delicacy, harmoniousness, salience, rigidity, and overall satisfaction (Table 3).

Table 3 Image and impression dimensions used in Yun et al. (2003)

Attribute	Survey question
Luxuriousness	How luxurious is the product?
Simplicity	How simple does the design or image of the product look?
Attractiveness	How attractive is the product to you?
Colorfulness	How attractive is the use of the color on the product?
Texture	Is the texture of the product attractive (visually or tactually)?
Granularity (Detail)	How delicate/detailed does the product look?
Harmoniousness	How harmonized does the product look?
Salience	Is a specific part of the product attractive?
Ruggedness	How rigid and stable does the product look?
Overall satisfaction	How satisfactory is the overall design?

Their study categorized 36 male and 36 female participants into three age groups namely teens, twenties, and thirties. For the analysis of variance (ANOVA) tests (ANOVA is described in Section 4.3), the scores for image and impression dimensions given in Table 3 are tested against the variables age, gender, product and the interactions among them. Table 4 summarizes the results of the statistically significant effects (at $p < 0.05$) of four of the evaluation dimensions. As shown in the Table 4, there were significant effects of *gender* for most image/impression dimensions as well as age-gender interactions. Specifically, for attributes

attractiveness, delicacy, harmoniousness, salience, simplicity, and texture, the effect of gender was significant. The effect of age-gender was significant for all image and impression dimensions. On the other hand, there were no significant effects of age itself ($p<0.05$).

Table 4 A summary of significant effects in Yun et al. (2003)*

	Age	Gender	Age Gender	Product	Age Product	Gender Product
Attractiveness		√	√	√	√	√
Colorfulness			√	√	√	√
Delicacy		√	√	√	√	
Harmoniousness		√	√	√	√	
Luxuriousness			√	√	√	
Rigidity			√	√	√	√
Salience		√	√	√	√	√
Simplicity		√	√	√	√	√
Texture		√	√	√	√	√
Overall satisfaction			√	√	√	√

* A checked cell indicates significance at p=0.05

Yun et al.'s analysis is significant to our study in the sense that, through an application of a similar method, it gives us important clues about the results of our hypothesis claiming that perception differences for product form between genders might exist for the case of mobile phones.

CHAPTER 3

LITERATURE REVIEW ON GENDER

One can observe differences in approaches to, gender perceptions and product diversity depending on time, technological improvements, cultural norms and social life. Hence, gender in design is interrelated with many areas including marketing, psychology, sociology, linguistics, and many others. This chapter summarizes the related research on the gender, discusses the terms and the role of gender in the consumer society and thus, briefly goes over the underlying causes influencing possible perception differences between genders.

3.1 Gender

Women's Studies Encyclopedia describes gender as, "*a cultural construct, the distinction in roles, behaviors, and mental and emotional characteristics between females and males developed by the society*" (Tierney, 1999 p563). The society also describes the degrees and properties of being feminine and masculine. When babies were born, they grow up and dominated by social values and norms associated to their sex (Basow, 1992). Dressing up babies in different colored clothes (blue clothes for boys and pink clothes for girls), giving them different toys (cars or trucks for boys and Barbie's for girls), charging dissimilar domestic rules and responsibilities to them are examples of such differentiation. Therefore, in its early life stages, a child is grown up around socially constructed gender roles that are attributed to his/her of belongings.

The attributes given to males and females have opposite meanings. Feminine role is recognized to be nurturant, expressive, cooperative, and sensitive to the needs of others. Masculine role, on the other hand, is being active, aggressive, dominant, and ambitious (Basow, 1992).

Sometimes the term 'sex' is used interchangeably with gender, but sex is a biological term and used to refer to biological differences of men and women. Gender, however, is a psychological and a sociological term. There are two conflicting views about sex and gender. One view argues that the biological differences (chromosomes, hormones, brain weight, etc) are the reasons to behave differently in society, and these distinctions determine the social roles of men and women (Garret, 1987). However, Kimmel (2000) and Wood (2003) state that gender is a dynamic term, and social values and norms are changeable across cultures, societies and time, but 'sex' is a static term, and variation by sex has little effect on the construction of gender in society. In Tierney (1999 p564), sex is referred as "the term that encompasses the morphological and physiological differences which humans (and other life forms) are categorized". Hence, sex should be used only in relation to characteristics and behaviors that arise directly from biological differences between man and woman.

Kimmel (2000) suggests four major facts identifying the meaning of being man and women. First, there are differences in the meaning of gender across the cultures. For example, Aboriginal people's attitude towards man and woman differs in Yukon Territories in Norway. Secondly, it changes with time. Thirdly, when a person grows up, his/her education, experience, profession and personality cause different appreciation in his/her perception of females and males. Finally, different groups in a culture may also change at the level of being feminine or masculine.

As discussed above, a child recognizes gender differences at a very early stage in life. Because of the impact of the society on the values and norms, the child grows up with predefined gender roles. In the toy stores, for instance, one can see gender stereotyped toys that fit the designated images of man and woman (Willis, 1991). Toys for boys are different from toys for girls. Boys generally play with trucks, cars, warriors; girls generally play with babies, tiny homes, miniature objects like make-up belongings, miniature home appliances. The powerful, instrumental, and active toys are meant for boys, and emotional, less powerful, beautiful, graceful and stylistic toys are meant for girls. Toys such as Barbie and Ken, He-Man and Scarlet (team

member of GI Joe) are examples of such distinctions (Willis, 1991). Barbie and Ken are for girls whereas, He-man and Scarlet are for boys (Figure 4). Barbie wears fashionable clothes and is elegant. He-man seems to be rude but powerful, warrior and overcome any trouble. Barbie is a feminine character and He-man is a masculine character, and they present their owners' gender roles of future. Although Ken and Scarlet show their sex by appearance, the stereotypical description of them is also obvious. Ken is male, but it gives the impression of being feminine with its style. Indeed, Scarlet is female, but its appearance seems masculine. Here, a generic understanding is obvious, girls play toys that have feminine characters even if the toy is male (feminine male), and boys play toys that have masculine characters even if it is female (masculine female) consistent with their own gender role generally defined by society.

Barbie and Ken   He-man and Scarlet

Figure 4 Barbie and Ken vs. He-man and Scarlet

3.1.1 Gender Stereotypes

Stereotypes are constituted by common beliefs about a group of people or phenomena in a society (Wood, 2003). Stereotypes classify selected groups according to their assumed or known information. Gender stereotypes are common traits that are associated to females and males. The traits are constructed in opposite meanings like 'hard - soft', 'active - passive', or 'agency - communion' (Tierney, 1999). In addition to personal traits, there are sub groups of gender categorization.

The subgroups can be related to abilities, physical appearance, behaviors, and occupations.

Wood (2003) believes these stereotypes may cause "to perceive others and ourselves in different manners" (p110). Females are generally on the negative side of these traits because of their biological formation (Lindsay, 2005). Common personality traits that are associated to males and females, as summarized by Caterall et al. (2002), are given in Table 5.

Table 5 Personality traits associated with masculinity and femininity (Caterall et al., 2002)

Masculine	Feminine
Authoritative	Friendly
Athletic	Timid
Aggressive	Creative
Domineering	Obedient
Competitive	Affectionate
Adventurous	Romantic
Self-confident	Talkative
Ambitious	Sympathetic

3.2 Gender Identity in Consumer Society

Gender identity in consumer society is one of the major subjects for marketers. Gender differences in social life enable marketers to differentiate the products and give them opportunity to increase their profit. Consequently, marketers try to investigate possible relationships between gender identity and consumption. Palan (2001) states three major measurement types used for gender identity in consumer behavior. These are California Psychological Inventory-Femininity Scale (CPI-FE), Bem Sex Role Inventory (BSRI), and the Personal Attributes Questionnaire (PAQ).

CPI-FE is a method used to observe the connection between gender identity and *product attitude/image* (Palan, 2001). Through years, this method was utilized for many types of products particularly for clothing, cigarettes, and personal hygiene.

Most of the studies found a correlation between gender identity and *product attitude* (Palan, 2001)

The PAQ method is used to describe gender identity and *attitudes/usage* of products, brands, media, and leisure activities and used to examine information-processing differences related to gender identity (Palan, 2001). This method constructs on strict masculine and feminine identities of customers. Although gender identity in leisure activities is observed, CPI-FE is more reliable than PAQ method since strict feminine or masculine differentiation in PAQ is questionable (Palan, 2001).

Finally, BSRI is a method used to examine several issues, including the relationship between gender identity and consumers' perceptions of masculinity and femininity in products; sex-role attitudes toward women business owners; female role portrayal in advertising; food/gendered product preference and so on.

These studies indicate that consumer behavior is influenced by the gender identity; different genders might pursue different consumption patterns and there are methods trying to identify the patterns and the degree of this effect.

3.2.1 Product Advertising and Gender

One of the major contributors to consumption is advertising. It uses the images that indicate one's gender identity or one's stereotypical role in a social life. There is also a distinction between male and female attitudes in the advertising of products. Hebdige (1988) states this difference as follows:

> *Advertisements adjudicate in the settling of gender differences. Sometimes the object is split, janus-like, into opposite aspects his and hers. His: functional, scientific, and useful. Hers: decorative aesthetic gratifying. The distinction correspondence to the separation of design functions: his/engineering, hers/styling. Relations of dominance/subordination inscribed in the sexual division of labour are transposed so that engineering perceived as super-ordinate and necessary (masculine/productive), styling as secondary and gratitous (feminine/non-productive). (p86)*

Portrayals of either genders reflect and contribute to cultural values generally depicted as masculine or feminine. The construction of portrayals is based on two main concepts: i) all meaning structured in opposition, and ii) the sign always signifies something else (Luke, 1996). I can be observed in our daily lives that powerful and functional attributes are used for males, whereas; weakness and decorative attributes are used for females. In Maker's Mark Alcohol Advertisement (Figure 5), one declares men to be good in physical condition and to have a fine character (the shape of the bottle also say similar things) but it is not the same for women.

Figure 5 Maker's Mark Alcohol Advertisement

Even if the product is a kitchen cleaner, it can be represented as a male because it requires power to help a weak housewife making the job better (Figure 6). Products like washing machines, irons and hoovers are made to ease housewives' lives by providing them with more time to spare with their husbands.

Figure 6 Mr. Propre, an advertisement of a cleaner

Despite the changing the roles of men and women representations in media, portraits of gender still remain limited to gender stereotypes (Luke, 1996) and the portrayals of both gender differs occasionally in a day time (Mark, 2001). Stereotypical images of caretaking and attractiveness for women and authority for men depicted in day time. Stereotypical images women in positions of authority or dominance and men in the role of fathers are represented in the afternoon (Mark, 2001). Majority of the advertisement started to illustrate sexuality of people especially sexuality of women rather than gender identity. The gender images depicted in media are linked to the cultural values of the intended audience and they are probably created to please their audience, but may also influence the gender values of the society.

CHAPTER 5

THE STUDY ON PERCEPTION DIFFERENCES BETWEEN GENDERS

Primary question of this study is to demonstrate whether there are any differences between genders in perceiving the form of a product. An empirical study was conducted in order to validate the arguments proposed. This chapter gives the details about the method followed including the survey conducted, the results, the analysis performed and then discusses the findings.

4.1 Method

In order to identify any possible perception differences between males and females a questionnaire survey was performed on a sampler product on selected participants. As mobile phone designs are directed to both genders, and majority of the population uses these phones (Bakalis et al. 1998), mobile phone is selected as the primary object of study to uncover any possible differences in perceptions.

The survey included a set of questions and a rating scale to be answered by the participants over a selected set of mobile phones. The first task in the study, thus, was to identify this sample set of phones. Coming out with a set of representative mobile phones was a challenging task since, there was a lack of literature indicating the criteria or characteristics of the type and style of the phones or products that can be utilized in such a survey. Similar studies in the literature relied on a set of experienced designers (Chuang et al., 2001b; Yun et al., 2003) in selecting the candidate products. Selection of phones representing different design concepts was important in order to help capturing and uncovering any perception differences between the two genders. In other words, it was important for the selected phones to represent different design concepts or directed towards different consumer groups. For this reason, first, a preliminary set of 36 phones, which were entered into the

market in years 2004 and 2005 and were regarded as being in the category of business, active, fashion or simple were selected. A group of eight industrial designers and an architect are asked to rate these 36 phones (9 for each category) beginning from 1 to 8 as 1 being the most representative for its claimed category and 8 being the least. Appendix A presents the first questionnaire that the designers are subjected to. The results of the questionnaire are given in Appendix B. Accordingly, two mobile phones were selected for each category, which totaled to eight phones as the primary set. The phones selected by the participants for business, fashion, active and simple categories are presented in Figure 7, Figure 8, Figure 9, and Figure 10 respectively.

The images of the selected phones are prepared for the second phase of the study, which was a questionnaire providing front, side, back and 3D views of each phone, and color printing of these views on A4 sheets with their true dimensions. Blind product evaluation (Yun et al., 2003) was performed, where the brand names were kept hidden in order to eliminate any bias that might arise due to any participant prejudgments against specific brands. Similarly, images on the phones' screens were also masked. This was to direct participants to focus solely on the physical form of the phone and the visual information that it conveys.

| **T1** | **T5** |

Figure 7 Business Phones

| **T2** | **T6** |

Figure 8 Fashion Phones

T3   **T7**

Figure 9 Active Phones

T4   **T8**

Figure 10 Simple Phones

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The second questionnaire (given in Appendix C) was used to uncover any perception differences between the two genders, and to observe any preference patterns for specific design attributes and for other factors such as brand or technical functionalities. The questionnaire was based on the semantic differential method (Osgood et al., 1957) in which participants were asked to rate products' characteristics over a set of opposite adjective pairs such as cold-hot and hard-soft. First, 20 candidate adjective pairs were selected from Osgood et al. (1957). The adjective pairs utilized in similar studies such as the ones given in Table 2 were also considered (Chuang et al., 2001b; Hsiao et al., (2003); Chang et al., 2003b; Hsu et al., 2000). Then, with the group of designers, 20 adjective pairs were analyzed and 11 pairs that were considered more applicable as a response to phone design were retained. The list of pairs is presented in Table 6 (As the questionnaire was delivered in participants' native language, adjective pairs were translated into English.

Table 6 Adjective pairs used in the questionnaire

	Adjective Pairs	(Original pair in Turkish)
A1	Traditional - Modern	Klasik - Modern
A2	Boring - Interesting	Sıkıcı - İlginç
A3	Hard - Soft	Sert - Yumuşak
A4	Cold - Hot	Soğuk.- Sıcak
A5	Youthful - Mature	Çocuksu - Olgun
A6	Inert - Energetic	Monoton - Enerjik
A7	Serious - Humorous	Ciddi - Eğlenceli
A8	Ornate - Plane	Süslü - Sade
A9	Proud - Humble	İddialı - Mütevazı
A10	Insane - Sane	Çılgın - Makul (Akla yatkın)
A11	Masculine - Feminine	Erkeksi - Kadınsı

The questionnaire has four sections. The first section informs participants about the aim of the questionnaire, gives directions to the participants about how they should fill in the questionnaire, and collects demographic information (name, age, occupation, and education level).

Second section, participants are given the cards with the pictures of phones and asked to rate each mobile phone with respect to all adjective pairs provided. An ordinal scale from 1 to 5 is used to rate the pairs. In this section, participants were also asked to give additional comments that might have about the design of each phone.

In the third section, participants were asked to rate their own mobile phones, if they have, with respect to the same set of adjective pairs. In the final section, participants are asked to give information about the brand name of their phones; whether they selected their phones themselves or not; the extent by which specific factors (e.g. brand, price, color and technical specifications) affected their selection; whether they are planning to change their phones or not, and if they do, what the reason is.

The phones were numbered and shown to the participants in a sequence where in every five participant, the sequence changed randomly. In doing this, it was aimed to decrease the order effect (Wang, 1998). One limitation to the randomized sequencing was that the participants were not subjected to two phones from the same category consecutively. Here the aim was to eliminate any impression that might be created on the participants about a specific sequencing (such as being sequenced according to price or according to the degree of being masculine or feminine, etc).

The questionnaire was conducted in a quiet venue mostly at the participants' working environments.

4.2 Participants of the Second Questionnaire

Twenty male and twenty-eight female (total 48) subjects participated in this survey. Majority of the participants (43 our of 48) are working at METU (Middle East Technical University), and involved in either academic or administrative duties. Five participants are software engineers working in software organizations in METU Technopark and one participant is a computer-engineering student in METU.

Three participants have high school degrees, 22 have bachelor degrees, 22 have graduate degrees, and one participant has PhD. In order to eliminate or reduce the designer-user effect in product form perceptions (Hsu et al., 2000), neither of the participants involved in the survey were designers or pursued a design or related degrees.

As it is demonstrated in studies (Yun et al., 2003; Chang et al., 2003b), age can be considered as a factor influencing how consumers perceive the visual attributes of products. In order to decrease the effect of age difference, this study is performed on participants within age group of 25 to 40 (with average of 30). Many sociologists categorize consumers into age groups such as X generation, Y generation, and Baby boom (Wikipedia, 2006). These three generations represent three different types of consumers (Chang et al., 2003b). Although there are debates on the exact times, Generation X refer to the adults born between years 1965 to 1977 (Poindexter et al., 1999) or 1981 (Wikipedia, 2006). In that respect, the participants involved in our study can be considered as in X generation, where mobile phone owning and usage rate is relatively high (Ling, 2001).

4.3 Results and Discussions

To recognize the perceived difference of the product form and increase the reliability of the results, certain statistical tests are performed on survey data. ANOVA (Analysis of Variance) is one of the most commonly used methods in order to identify any possible difference between the means of two or more groups with a particular confidence level. It is used for defining and segregating the cause of variability affecting a set of observations. Another method that can be used to test the differences between means is the 't-test' which demonstrates whether the variation between 'two' groups is 'significant' or not. The major difference between these two method is that, the 't-test' measures the difference between the means of *two* groups, while an ANOVA tests the difference between the means of two or more groups. A t-test would also be sufficient to test whether two groups -males and

females- rated the adjective pairs differently, but this study also tries to test whether other factors such as age, phone design and their interaction (age x gender, gender x phone, age x phone) have any influence on the ratings as well. In t-tests, as the number of groups grows, the number of needed pair comparisons increases quickly. For example, testing all these factors with t-test requires each of the pairs to be tested separately, which would end up 48 tests (2 gender x 3 age groups x 8 phones) to be performed instead of an ANOVA testing all in one. Therefore, ANOVA is used in order to find out whether gender, age and phone design and all together have any effect on the perception of the product form. It is apparent that, the phone design itself would have an effect on the perceptions; however, in order to observe whether gender and phone design together has any effect, phone is also included in the ANOVA test. As it will be demonstrated in later sections, this interaction effect is significant for some of the adjective pairs.

In statistical tests, the significance level is generally represented with the p value where '1-p' gives the confidence level. The significance level used in this study is 0.05 ($p < 0.05$), that is, the reliability of the results or confidence level is more than or equal to 95% (1 - 0.05).

One drawback to an ANOVA is that, it shows that there is a significant difference between groups, but it does not show which groups are significantly different from each other, that is, it does not give any ranking or clustering for the groups. To test for this, comparison tests are used to find out where the differences are – which groups are significantly different from each other and which are not. Some commonly used comparisons are Scheffe's and Tukey's. Scheffe's test is not recommended for pair wise comparisons, thus Tukey's comparison of means method is used in this study.

The analysis is performed in two levels: First, on each adjective pair over all phones and secondly, on each mobile phone over every adjective pair. Detailed results of the statistical tests are provided in Appendix E and F.

Table 7 summarizes the results of the first part of the statistical tests. Cells with 'check' marks indicate significant influences by related factors. Although the focus of the study was gender perception differences, 'age' is also included as another possible influencing factor in order to observe any interaction effect on the gender factor as well.

The significant findings can be found in following sections. Section 4.3.1 gives the results and discussions on the influence of gender differences for each adjective pair. Section 4.3.2 discusses the influence of gender and mobile phone together on the results. Section 4.3.3 gives the overall results for the second part of the statistical tests where each phone and each adjective pair is analyzed separately. Sections 4.3.3.1 through 4.3.3.8 give the details of these findings for each phone separately. Section 4.3.4 presents the findings for the cluster analysis of the adjective pairs and section 4.3.5 give the analysis results of the survey on participants' mobile phones.

4.3.1 Adjective pairs affected by gender

Table 7 shows the summary of the statistically significant effects (at $p < 0.05$) of evaluation dimensions. As given in table, there are differences between genders in responding to the form of the mobile forms in terms of specific adjectives. Analysis showed that, differences between gender perceptions for adjective pairs AP2 (boring - interesting), AP5 (youthful - mature), AP8 (ornate - plane) and AP10 (insane - sane) are significant.

Table 7 Summary of the Results for Each Adjective Pair - Gender Effect*

		Gender	Age	Age Gender	Phone	Gender Phone	Age Phone
AP1	Traditional - Modern (Klasik - Modern)		√		√	√	
AP2	Boring - Interesting (Sıkıcı - İlginç)	√	√		√		
AP3	Hard - Soft (Sert - Yumuşak)				√		
AP4	Cold - Hot (Soğuk - Sıcak)				√	√	
AP5	Youthful - Mature (Çocuksu - Olgun)	√	√		√		
AP6	Inert - Energetic (Monoton - Enerjik)		√		√	√	
AP7	Serious - Humorous (Ciddi - Eğlenceli)				√		
AP8	Ornate - Plane (Süslü - Sade)	√		√	√		
AP9	Proud - Humble (İddialı - Mütevazı)				√		
AP10	Insane - Sane (Çılgın - Makul)	√			√		
AP11	Masculine - Feminine (Erkeksi - Kadınsı)				√		

A checked cell indicates significance at p=0.05

Statistical tests indicate that, for boring – interesting adjective pair (AP2), males tended to perceive mobile phones as more interesting than females did (p = 0.03). This might be attributed to the idea that there is a tendency in males for being more interested with technological tools, high-tech equipments or micro-electronic products than females are (Dittmar et al., 1995).
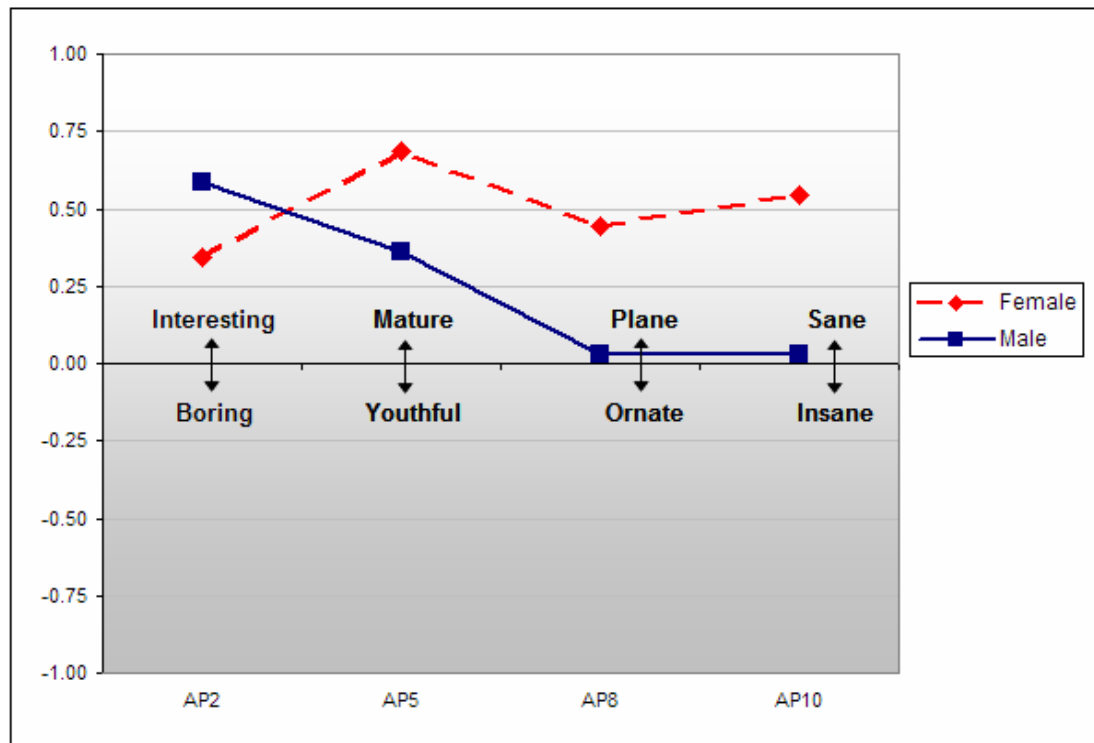
Figure 11 Gender differences for AP2, AP5, AP8 and AP10

Figure 11 gives the average values of each gender on statistically significant adjective pairs. For the adjective pair 5 - youthful vs. mature - females perceived phones as more mature than males did ($p < 0.01$).

As it is also demonstrated in correlation analysis discussed in section 4.3.4, there exists a strong correlation between pairs 'plane - ornate' and 'sane - insane', which can also be noticed in Figure 11. For both adjective pairs, females tended to perceive phones as planer and saner than males did ($p < 0.01$ for both) and this is realized as so for all mobile phones in the survey. That is, every phone is assessed as planer and saner by females.

Essentially, these adjective pairs are also likely to be correlated with mature - youthful adjective pair. Therefore, statistical tests assured that with respect to the mobile phone designs, males are more conservative than females in perceiving and assessing the product form. These finding might be attributed to females' tendency for more colorful, live and elaborate forms (Dittmar et al., 1995; Moss et al., 2001;

Moss, 2003). Due to this tendency, these attributes become routine and normal. Once they are sought and utilized, products with these attributes become regularized. As a result, a colorful fancy form of a product may well be perceived as rather mature, plane or sane by females while it may be found as rather youthful, ornate, or fancy by males.

Table 7 also shows the adjective pairs that are not perceived significantly different by both genders as well. Results indicated that, with respect to the form of the mobile phones, both genders shared the same view on hard – soft, serious – humorous, proud – humble and masculine – feminine adjective pairs. These adjective pairs are independent of gender or gender x phone effect in general.

4.3.2 Adjective pairs affected by gender and mobile phone together

It can be expected to observe an adjective pair which are affected purely by gender to be also affected by the gender x product together. However, this was not the case for this study. As highlighted in Table 8, for adjective pairs AP1 (traditional - modern), AP4 (cold - hot) and AP6 (inert - energetic) the effect of gender and phone together is significant (at $p < 0.05$).

This result implies that, there is a degree of difference between males and females in perceiving and assessing the form of phones as traditional vs. modern, cold vs. hot and inert vs. energetic. For a particular phone, females may tend to perceive it as rather traditional while males may perceive it as rather modern and the case might be vice versa for another particular mobile phone. According to findings, these cases are true for cold-hot and inert-energetic pairs as well.

Table 8 Summary of the Results for Each Adjective Pair - Gender x Phone effect*

		Gender	Age	Age Gender	Phone	Gender Phone	Age Phone
AP1	Traditional - Modern (Klasik - Modern)		√		√	√	
AP2	Boring - Interesting (Sıkıcı - İlginç)	√	√		√		
AP3	Hard - Soft (Sert - Yumuşak)				√		
AP4	Cold - Hot (Soğuk - Sıcak)				√	√	
AP5	Youthful - Mature (Çocuksu - Olgun)	√	√		√		
AP6	Inert - Energetic (Monoton - Enerjik)		√		√	√	
AP7	Serious - Humorous (Ciddi - Eğlenceli)				√		
AP8	Ornate - Plane (Süslü - Sade)	√		√	√		
AP9	Proud - Humble (İddialı - Mütevazı)				√		
AP10	Insane - Sane (Çılgın - Makul)	√			√		
AP11	Masculine - Feminine (Erkeksi - Kadınsı)				√		

* A checked cell indicates significance at p=0.05

Figure 12 shows the ratings for traditional vs. modern adjective pair by each gender. The difference is particularly significant for phones T1, T2 and T5. For example, T1 is found to be rather modern by males while it is found to be less modern by females. However, the situation is vice versa for T2. Females found it as more modern than males did.
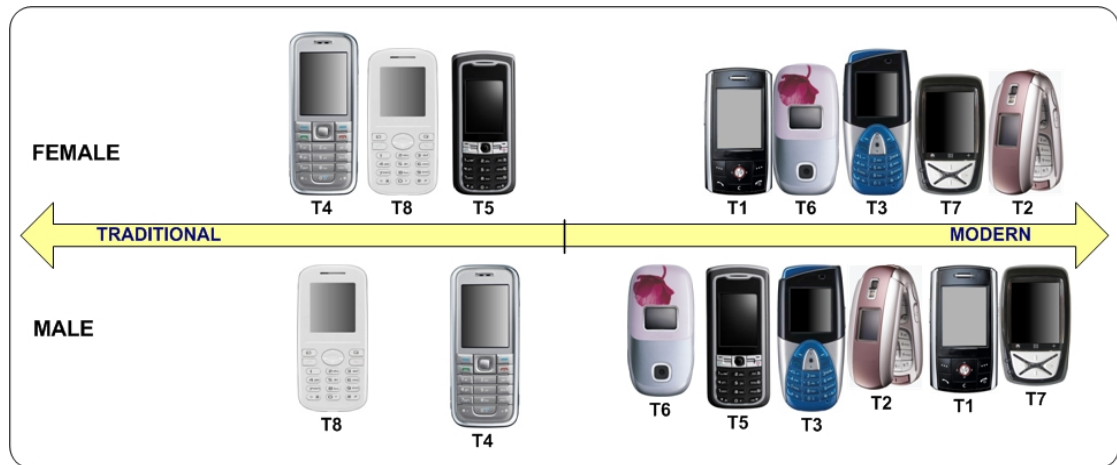
Figure 12 Ratings for each Gender for Traditional vs. Modern

Figure 13 and Figure 14 present ratings for cold vs. hot and inert vs. energetic adjective pairs by each gender respectively.

Figure 13 Ratings for each Gender for Cold vs. Hot

For instance, T2 is found to be hotter by females than it is found by males. On the other hand, the situation for T5 is vice versa. Females found T5 to be rather cold while males remained rather neutral. In general, the assessment for cold vs. hot can be related to the color. As expected, phones with live colors are tended to be perceived as hotter than the phones having grayscale colors.
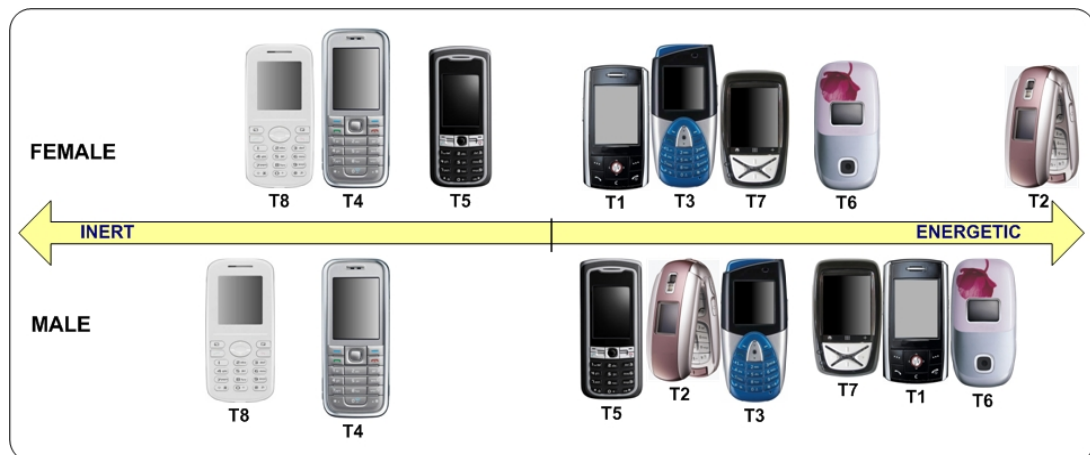
Figure 14 Ratings for each Gender for Inert vs. Energetic

Since both adjective pairs - cold vs. hot and inert vs. energetic - can be considered correlated, the situation depicted in Figure 14 for inert vs. energetic is quite similar to the case for cold vs. hot. As can be seen, again for phones T2 and T5 the perception differences are opposite and significant. T2 is perceived as the most energetic phone by females while males found it significantly less energetic. In contrast, females found T5 as inert while males found it rather energetic.

In order to signify these particular perception differences, separate tests are also performed for each phone and for each adjective pair. These are discussed in later paragraphs in this section.

4.3.3 Analysis results for each phone and for each adjective pair

The following paragraphs summarize and discuss the results of the second part of the statistical tests performed for each mobile phone over every adjective pair. The summary of the results is given in Table 9 and Table 10. Except for the mobile phones T6 and T8, significant perception differences are observed between genders for at least one adjective pair.

In some cases, one gender rated the form of a phone significantly closer to an adjective (either hot or cold, or soft or hard), while the other remained neutral. In

other cases, genders ratings were completely in opposite directions (such as males found it as energetic while females as inert, etc.).

For phones T6 and T8, where no significant differences between perception levels of genders are observed, it can be deduced that this situation is dependent upon their relatively obvious form directed to females (for T6), and simplicity (for T8). Although, for example, T2 is similar in form and color with T6, perception differences are observed for T2. The appearance T6 is much more feminine (a rose on its cover) and it is inferred that as form and color become planer the possibility of perceiving differences for genders increases.

Females found T1 as less modern, less interesting and plane when compared to ratings by males. T1 is in business phone category and due to its form (its sliding cover, its color, display, etc.) males stated that it has more technical functionalities (though they are not given any information about its technical functionalities or specifications). Hence, it can be concluded that the form is also attached to some preconceived properties in participants' minds. For example, participants assume that, phones that are likely to be in business category with respect to forms are rich in technical functionalities, while it is easy to use phones that are having simple and plane forms (Bloch, 1995; Creusen, 2005). This was one of the reasons why males were more interested with phone T1 and liked its form more than females did (Dittmar et al., 1995). Subjective opinions about this phone revealed that: males found its form to be high-class, high-tech, proud and interesting. They think that sliding covers, large displays and metallic black colors relate to masculine appearance. Particularly, males preferred large displays.

This preconception also affected the ratings of simple plane phones. Phones T4 and T8, which were rated as plane, simple and monotone, were considered simple to use. One remarkable property noted by participants for T8 was the 'lack of personality' and this might be the reason why five participants in their subjective opinions noted that this is the least preferred phone among others.

Table 9 Summary of the results for Each Mobile Phone over every Adjective Pair

	Traditional - Modern (A1)		Boring - Interesting (A2)		Hard - Soft (A3)		Cold - Hot (A4)		Youthful-Mature (A5)		Inert - Energetic (A6)		Serious - Humorous (A7)		Ornate - Plane (A8)		Proud - Humble (A9)		Insane - Sane (A10)		Masculine - Feminine (A11)	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
T1	modern	less modern													neutral	plane	proud	less proud	neutral	sane		
T2	less modern	modern					hot	hotter			less energetic	energetic										
T3									neutral	mature									insane	neutral		
T4															plane	more plane						
T5	modern	neutral	relatively interesting	relatively boring			cold	neutral	mature	more mature	energetic	inert							less sane	sane		
T6																						
T7			interesting	less interesting											neutral	plane						
T8																						

Table 10 'p' values for the tests (for each mobile phone over every adjective pair)

	Traditional - Modern (A1)	Boring - Interesting (A2)	Hard - Soft (A3)	Cold - Hot (A4)	Youthful - Mature (A5)	Inert - Energetic (A6)	Serious - Humorous (A7)	Ornate - Plane (A8)	Proud - Humble (A9)	Insane - Sane (A10)	Masculine - Feminine (A11)
T1	**0.040**	0.093	0.54	0.3	0.54	0.23	0.55	**0.006**	**0.03**	**0.001**	0.62
T2	**0.035**	0.46	0.32	**0.021**	0.10	**0.012**	0.19	0.69	0.65	0.3	0.62
T3	0.84	0.51	0.41	0.52	**0.05**	0.64	0.39	0.3	0.86	**0.006**	0.12
T4	0.23	0.57	0.84	0.94	0.65	0.97	0.94	**0.021**	0.5	0.13	0.53
T5	**0.02**	**0.056**	0.061	**0.029**	**0.047**	**0.008**	0.016	0.2	0.305	**0.005**	0.22
T6	0.36	0.88	1.00	0.86	0.22	0.82	0.46	0.12	0.19	0.34	0.48
T7	0.25	**0.013**	0.72	0.14	0.42	0.43	0.8	**0.016**	0.059	0.18	0.85
T8	0.61	0.76	0.088	0.4	0.12	0.71	0.25	0.4	0.56	0.11	0.28

Since the concepts for business, fashion and simple phones can be considered as relatively clear and reflected by their forms, ratings for these phones revealed these concepts. However, participants found it relatively difficult to rate active phones in terms of the adjectives. It can be related this to the fact that active phones (T3 and T7) have properties that can be considered to be new to the participants (blue and black color together, different button set design, uncommon forms). Participants had some difficulties in matching the form of these phones with the preconceptions that they have for phone designs. This was also reflected in ratings where for most of the adjective pairs, the participants remained neutral. Four participants found the metallic blue color of the T3 as cold and unattractive.

Males found fashionable phones (T2 & T6) to be so soft and feminine and noted in their subjective opinions that they would not prefer them. They were also not attracted by simple and plane phone designs. Although females were attracted by the form of fashion phones -their colors and softness- they declared these properties to be rather exaggerated particularly for T6 (rose on cover). Participants either clearly liked it or disliked it at all. The ones that were attracted by this phone also considered themselves to be relatively feminine in appearance, clothing, make-up and behavior.

Two female participants having conflicting opinions about this phone, (both in the same age category and working in similar environments) argued about its properties and rationale for their choices. The one that disliked this phone categorized it as a 'Barbie' phone and found it too feminine. The other participant liked it, in fact due to its feminine form. As a conclusion, it was observed that females that consider themselves as relatively feminine do not hesitate to reveal it and like the forms that also convey this characteristic. On the other hand, females that consider themselves to be relatively less feminine in terms of their appearances, hesitated to use that type of forms.

In general, soft and rounded designs are qualified as feminine, interesting and energetic as indicated by majority of the literature (Dittmar et al., 1995; Moss, 2003).

Females are attracted by color in this type of phones. On the other hand, black, straight bold lines, large displays are viewed as rather masculine and technological. Male participants noted these types of phones as more interesting than females did.

This second part of the statistical tests, performed on each phone and each adjective pair, also revealed that for three of the adjective pairs, there were no significant differences between genders in perceiving the form of the phones. For adjective pairs, hard vs. soft, serious vs. humorous and feminine vs. masculine, both genders' perceptions were not significantly different.

The following sections (4.3.3.1 through 4.3.3.8) discuss the details of the results found for each mobile phone.

4.3.3.1 Analysis of Mobile Phone 1 (T1)

T1 is a black, small mobile phone and it has a sliding front cover that hides the key pad. It is marketed as a high-class phone, which was also classified as a business phone by the designers and the participants.

Figure 16 presents the graph of T1 for each gender and adjective pairs. The graph indicates significant perception differences between genders for adjective pair 1 (traditional-modern), pair 8 (ornate – plane), pair 9 (proud - humble) and pair 10 (insane - sane).

Figure 15 Mobile Phone 1 (T1)
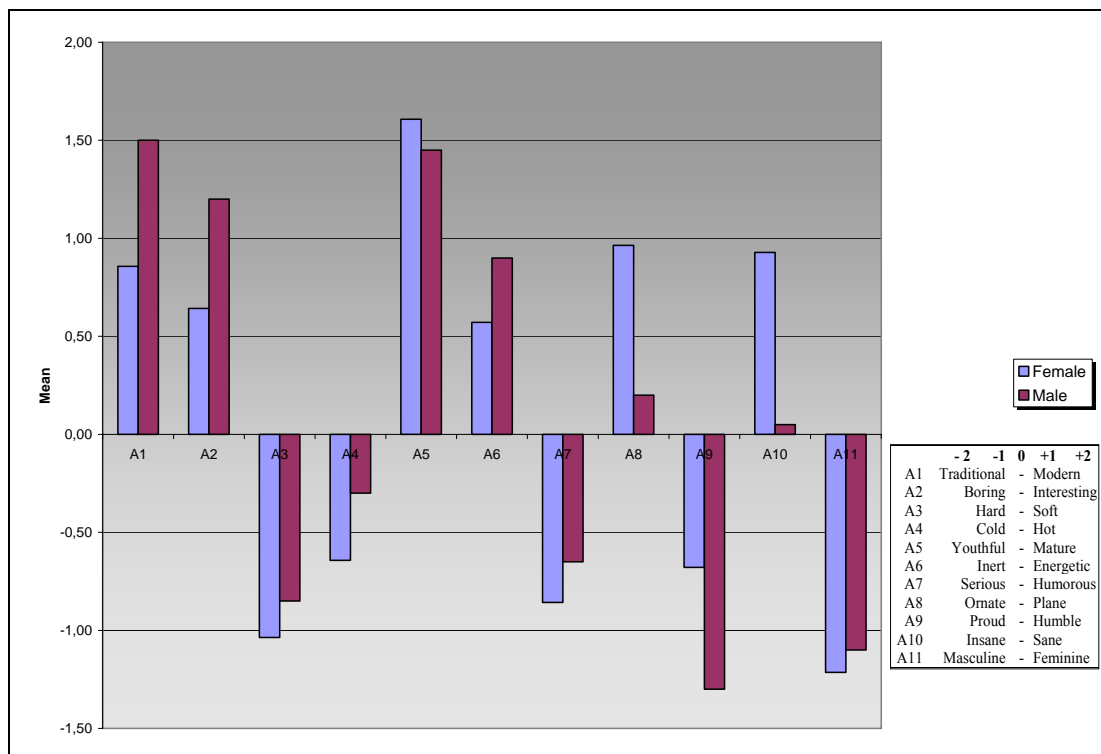
Figure 16 Mean values for adjective ratings of T1

ANOVA analysis (Appendix F.1) showed that for adjective pair 1, males found T1 as more modern than females (at $p_1 < 0.04$). The p values for other significant pairs are as follows: $p_8 < 0.006$, $p_9 < 0.03$ and $p_{10} < 0.001$. According to these values, we are at least 96% confident that males found T1 as more modern and prouder than

females. On the other hand, females found it planer and saner while males remained neutral. Male participants as their opinions stated that in general grayscale and metallic colors and large displays on the form indicated high technical functionalities, which is in line with the product group that the phone is promoted. Thus, this was the major motive for male participants for perceiving the phone as more modern than females did. Females, on the other hand, by not attaching these attributes with the phone, indicate the form as rather plane and less modern.

4.3.3.2 Analysis of Mobile Phone 2 (T2)

T2 is a fashionable mobile phone and it has colorful coverage (purple and purple-silver) and is in clamshell style.

Figure 18 represents the mean values for the adjective pairs. The results of ANOVA and Tukey's tests (Appendix F.2.) indicate significant differences for adjective pairs 1, 4 and 6. Related p values are as follows: $p_1 < 0.035$, $p_4 < 0.020$ and $p_6 < 0.012$. We can infer that females found T2 as more modern, hot and energetic than males. Males, on the other hand, found it as youthful while females stayed neutral about it. Both genders rate this phone as feminine and directed towards women.

Figure 17 Mobile Phone 2 (T2)

	- 2	-1	0	+1	+2
A1	Traditional		-	Modern	
A2	Boring		-	Interesting	
A3	Hard		-	Soft	
A4	Cold		-	Hot	
A5	Youthful		-	Mature	
A6	Inert		-	Energetic	
A7	Serious		-	Humorous	
A8	Ornate		-	Plane	
A9	Proud		-	Humble	
A10	Insane		-	Sane	
A11	Masculine		-	Feminine	
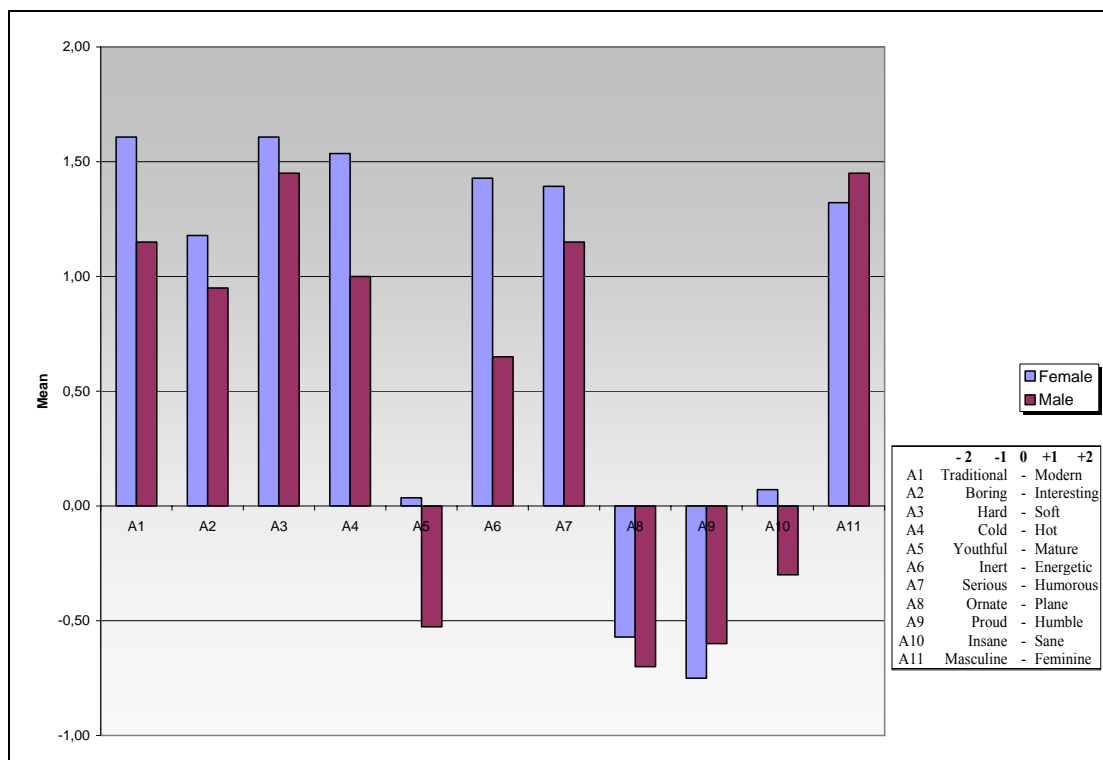
Figure 18 Mean values for adjective ratings of T2

4.3.3.3 Analysis of Mobile Phone 3 (T3)

T3 is intended for youth (Pantech, 2006) which is also stressed in its ads. It is classified as 'active' by the designers. Both genders found T3 to be modern, interesting, energetic and proud. However, due to its rather unique form, most of the participants encountered difficulties in categorizing and rating for adjectives. Figure 20 presents the graph of T3 for each gender and adjective pairs.

Figure 19 Mobile Phone 3 (T3)
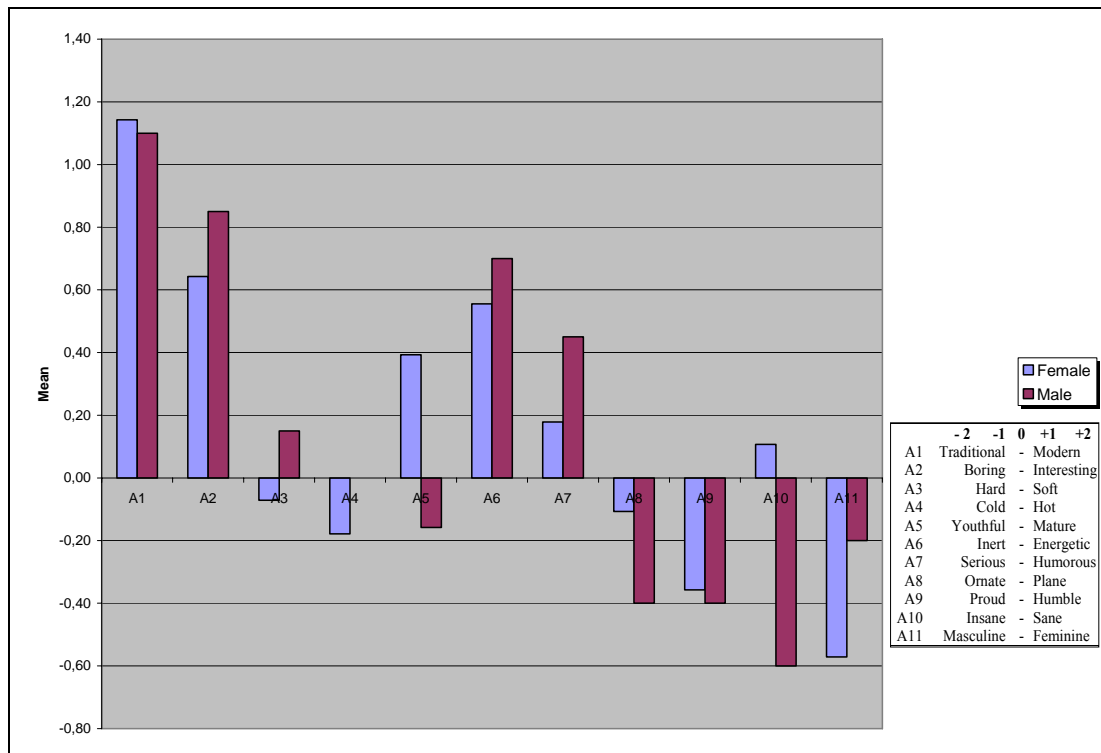
Figure 20 Mean values for adjective ratings of T3

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For adjective pair 5 (youthful – mature) and the pair 10 (insane-sane) ANOVA (Appendix F.3.) resulted a significant perception difference between genders ($p_5 < 0.05$ and $p_{10} < 0.006$,). Females tended to characterize T3 as mature, while, males characterized it as rather insane.

4.3.3.4 Analysis of Mobile Phone 4 (T4)

Figure 21 Mobile Phone 4 (T4)
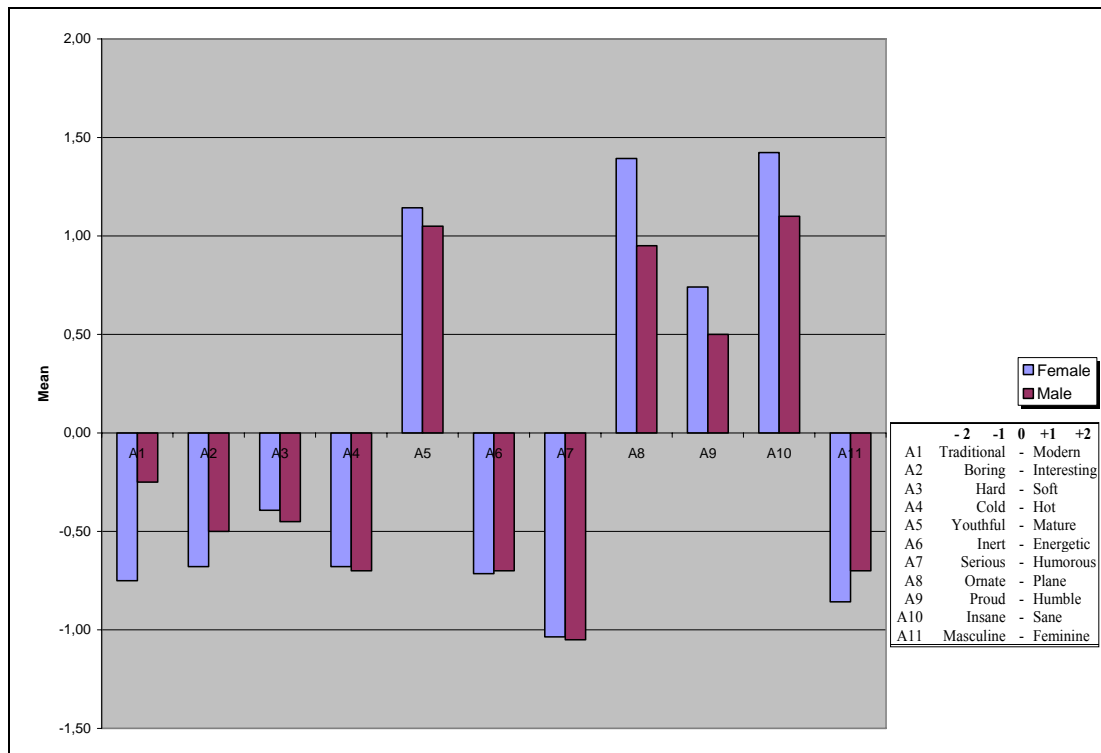
Figure 22 Mean values for adjective ratings of T4

T4 is categorized as a 'simple' mobile phone. It has a plane surface. ANOVA analysis showed that for adjective pair 8 (ornate-plane), we are more than 98 percent confident that ($p_8 < 0.02$); females found T4 as planer than males did. Both genders found T3 to be mature, serious, sane and masculine.

4.3.3.5 Analysis of Mobile Phone 5 (T5)

Although T5 is promoted as an outdoor phone, as it is noted by the manufacturer, its form is based on a prior business model (BenQ-Siemens, 2006a). This is also reflected as it is being categorized as a business mobile phone by the designers. It has a plane surface with black color.

T5 was a special phone in the sense that gender perception differences are observed for majority of the adjective pairs. The mean scores are given in Figure 24. 'p values' are: A1 ($p_1 < 0.020$), A2 ($p_2 < 0.057$), A4 ($p_4 < 0.029$), A5 ($p_5 < 0.047$), A6 ($p_6 < 0.008$) and A10 ($p_{10} < 0.005$). For adjective pairs A1, A2 and A6 both genders are even in the opposite directions. Males found T5 as modern while females found it relatively traditional. Similarly, females found it to be relatively boring and inert whereas males rated as rather interesting and energetic. Since this phone is in the business category, males tend to be attracted by its form and perceive related adjectives accordingly. On the contrary, women, due to the same reason given above, tended to rate it as boring, inert and plane. Both agreed that this phone is rather masculine.

Figure 23 Mobile Phone 5 (T5)

	- 2	-1	0	+1	+2
A1	Traditional		-	Modern	
A2	Boring		-	Interesting	
A3	Hard		-	Soft	
A4	Cold		-	Hot	
A5	Youthful		-	Mature	
A6	Inert		-	Energetic	
A7	Serious		-	Humorous	
A8	Ornate		-	Plane	
A9	Proud		-	Humble	
A10	Insane		-	Sane	
A11	Masculine		-	Feminine	
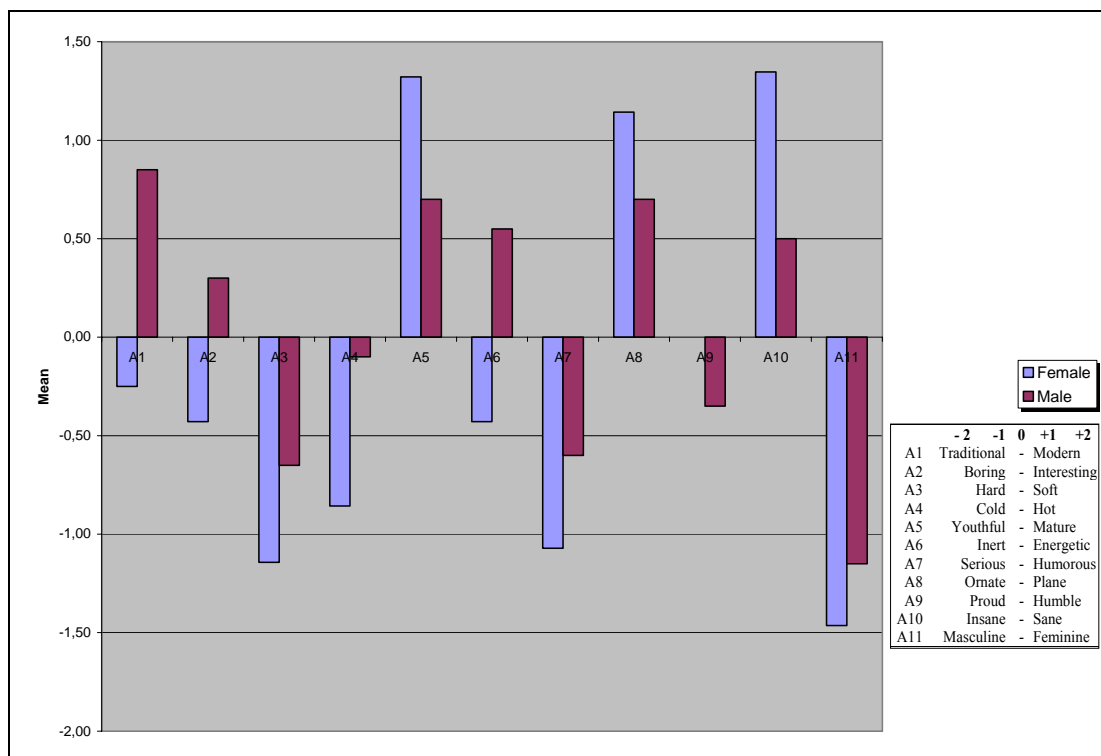
Figure 24 Mean values for adjective ratings of T5

4.3.3.6   Analysis of Mobile Phone 6 (T6)

This phone is a specially designed as a stylish fashion phone with feminine a clamshell style (BenQ-Siemens, 2006b). Designers also categorized this mobile categorized as fashionable. Since the concept of the phone is relatively open and clear to the participants, statistically both genders shared the same perception for every adjective pair. It is also remarkable that for adjective pair hard vs. soft the results for both genders are completely equal, that is, both genders found it as a soft phone. Figure 26 shows the average scores of adjective pairs for the T6. The statistical tests results are given in Appendix F.6.

Figure 25 Mobile Phone 6 (T6)

	- 2	-1	0	+1	+2
A1	Traditional	-	Modern		
A2	Boring	-	Interesting		
A3	Hard	-	Soft		
A4	Cold	-	Hot		
A5	Youthful	-	Mature		
A6	Inert	-	Energetic		
A7	Serious	-	Humorous		
A8	Ornate	-	Plane		
A9	Proud	-	Humble		
A10	Insane	-	Sane		
A11	Masculine	-	Feminine		
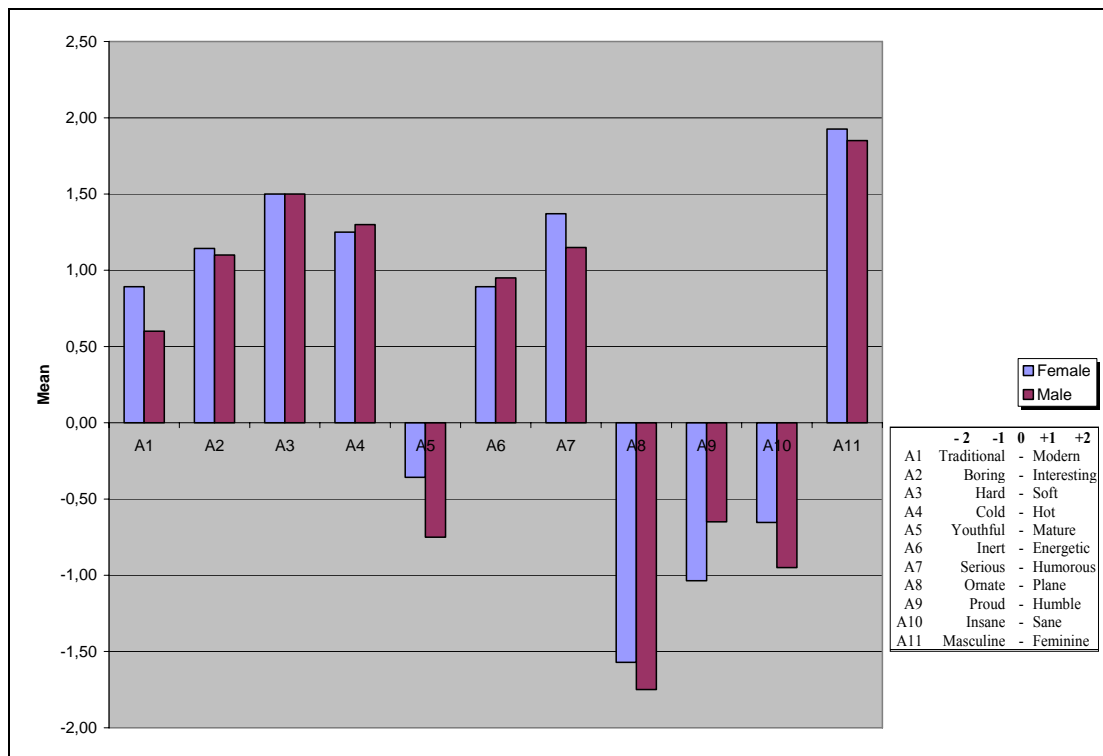
Figure 26 Mean values for adjective ratings of T6

4.3.3.7 Analysis of Mobile Phone 7 (T7)

T7 is categorized as an active mobile phone with dimensions 88 x 52 x 21 mm. Participants found it to be quite modern, proud and masculine. Figure 28 presents the average scores for adjective pairs.

Figure 27 Mobile Phone 7 (T7)
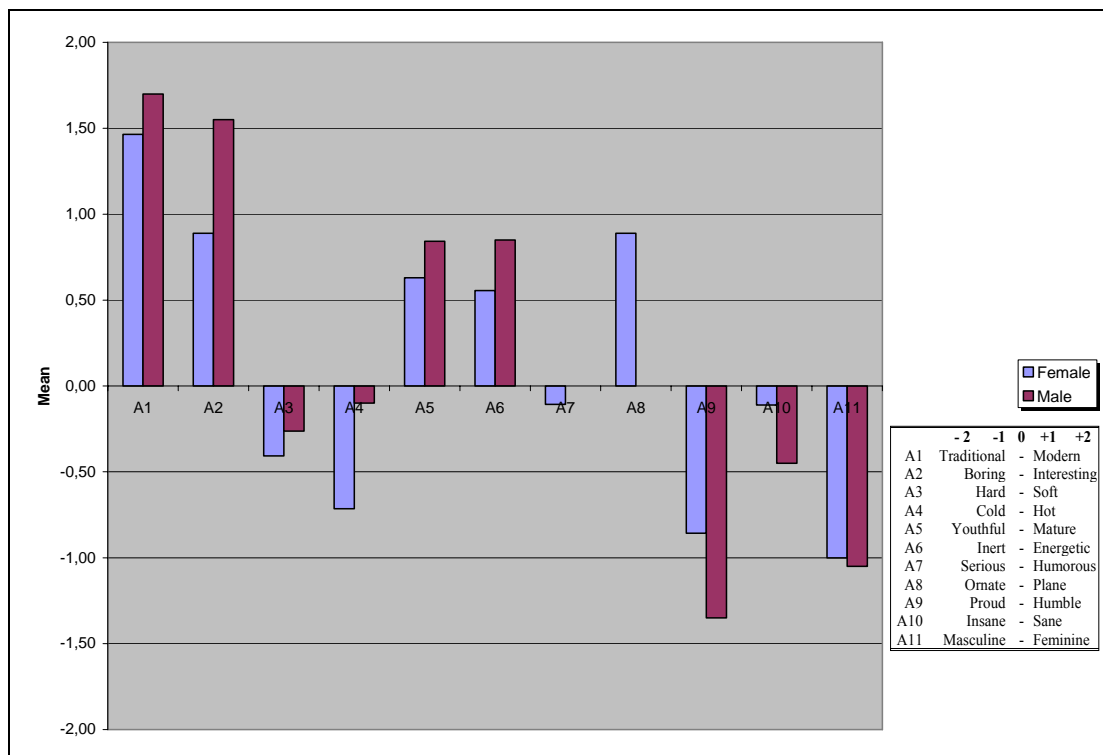
Figure 28 Mean of adjective ratings of T7

Statistically there is a gender effect in adjective pair 2 (boring – interesting) and pair 8 (ornate – plane). 'p values' are as follows; $p_2 < 0.013$ and $p_8 < 0.016$ respectively.

Males found T7 to be more interesting than males did. Although females found it as plane, males stayed neutral about it. The ANOVA and Tukey's tests results are given in Appendix F.7.

4.3.3.8 Analysis of Mobile Phone 8 (T8)

T8 is a simple, white, plane mobile phone. Due to this simple and relatively clear form, the statistical tests did not observe a significant difference to the responses for all adjective pairs. As expected, both genders found it as a plane phone. Although statistical significance does not hold, females tended to characterize it as soft and feminine, while males thought that it is rather hard and masculine. Figure 30 shows the average scores and the tests results are given in Appendix F.8.

Figure 29 Mobile Phone 8 (T8)

		- 2	-1	0	+1	+2	
A1	Traditional						Modern
A2	Boring						Interesting
A3	Hard						Soft
A4	Cold						Hot
A5	Youthful						Mature
A6	Inert						Energetic
A7	Serious						Humorous
A8	Ornate						Plane
A9	Proud						Humble
A10	Insane						Sane
A11	Masculine						Feminine
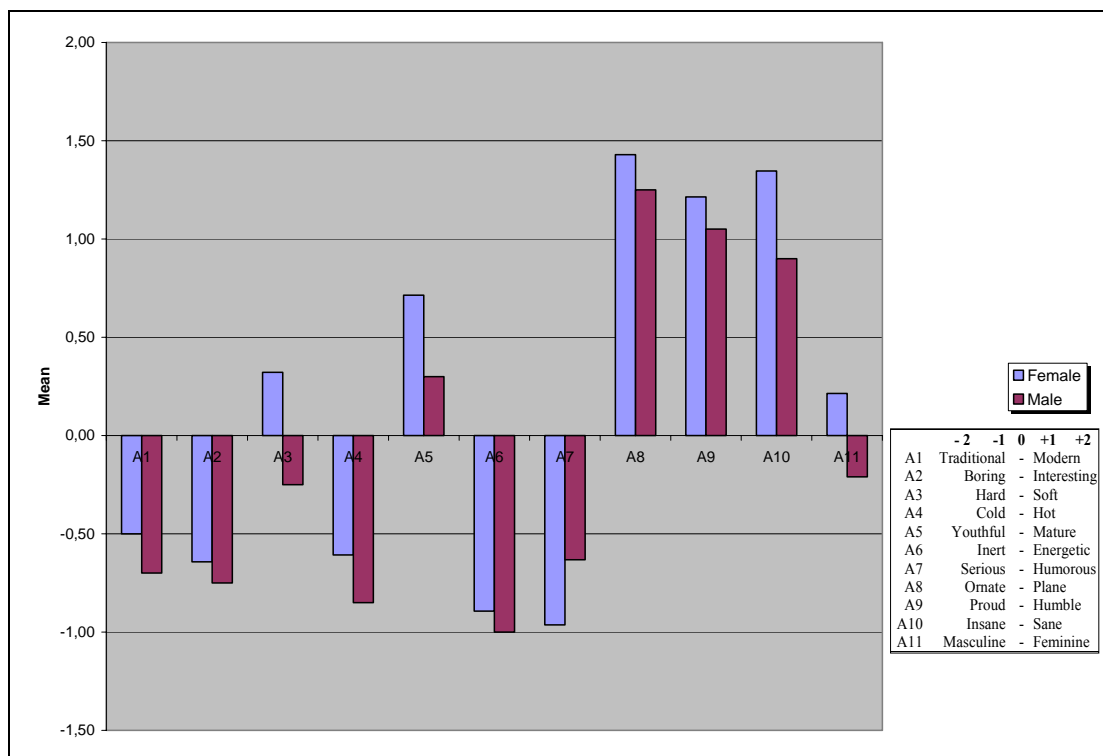
Figure 30 Mean of adjective ratings of T8

4.3.4 Analysis of the correlations between adjective pairs

In order to investigate the relationship between adjective pairs, the correlation between each pair is calculated. In statistics, correlation (also called the correlation coefficient 'r') indicates the strength and direction of a linear relationship between two variables (Stephens, 2004). The correlation coefficient is always between -1 and +1. The closer the correlation is to +/-1, the closer to a perfect linear relationship. A positive correlation indicates that the values on the two variables being analyzed move in the same direction. That is, as scores on one variable go up, scores on the other variable go up as well (on average) and on average, as scores on one variable go down, scores on the other variable go down. On the other hand, a negative correlation indicates that the values on the two variables being analyzed move in opposite directions (Urdan, 2005).

The interpretation of the magnitude of a correlation coefficient depends on the context and purposes. A correlation of 0.9 may be very low if one is verifying a physical law using high-quality instruments, but may be regarded as very high in the social sciences. Thus, although there are no hard and fast rules about how strong a correlation is based on its numerical value, the suggested interpretation for correlation coefficient is presented in Table 11 (Urdan, 2005; Morgan, 2004).

Table 11 Interpretation of the Correlation Coefficient

Correlation	Positive	Negative
Weak	0.10 to 0.20	-0.20 to -0.10
Moderate	0.20 to 0.50	-0.50 to -0.20
Strong	0.51 to 1.00	-1.00 to -0.51

When there are more than two variables (11 adjective pairs in this study), the correlations between every pair are arranged into a matrix, which is known as the correlation matrix. The resulting matrix is presented in Table 12, where the strong correlations (correlation coefficient > 0.50) are highlighted.

Table 12 The Correlation Matrix for Adjective Pairs

	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11
A01	1.00										
A02	0.71	1.00									
A03	0.26	0.39	1.00								
A04	0.38	0.50	0.70	1.00							
A05	-0.10	-0.11	-0.41	-0.32	1.00						
A06	0.67	0.73	0.34	0.54	-0.14	1.00					
A07	0.44	0.49	0.61	0.63	-0.50	0.55	1.00				
A08	-0.37	-0.42	-0.47	-0.52	0.42	-0.44	-0.53	1.00			
A09	-0.57	-0.55	-0.19	-0.32	0.10	-0.61	-0.39	0.48	1.00		
A10	-0.38	-0.41	-0.33	-0.37	0.48	-0.41	-0.52	0.59	0.52	1.00	
A11	0.15	0.25	0.70	0.57	-0.50	0.24	0.56	-0.51	-0.11	-0.38	1.00

The main goal in investigating the correlation matrix in this study is to group adjective pairs into similar groups of pairs. The aim is twofold: First, if one wish to reduce the number of variables without sacrificing too much information, then one variable from each cluster could be retained (Jolliffe, 2002). This enables the researchers to perform such surveys or analysis on less number of adjective pairs by concentrating on different groups with representative adjective pairs. Secondly, and more importantly for the designers, this would enable them to make important inferences to a particular design. For example if a product form is perceived to be hot then one can infer that there is a high probability of having participants perceive it as colorful and feminine as well.

Based on the correlations, adjective pairs that are strongly correlated (correlation coefficient > 0.50) are grouped into groups of similar pairs, which is known as 'clustering'. Clustering or cluster analysis is concerned with group identification. The goal is to partition a set of observations into a distinct number of unknown groups or clusters in such a manner that all observations within a group are similar, while observations in different groups are not similar (Timm, 2002). Algorithms for clustering begin with each individual in a separate cluster and then, in a series of steps, combine individuals and later, cluster, into new and larger clusters until a final

stage is reached where all individuals are members of a single group. At each stage the individuals or clusters that are 'closest', according to their correlations (or inversely their distance) are joined.

There are few algorithms that are used for cluster analysis such as single linkage, complete linkage or average linkage, which in general does not provide significantly different results (Timm, 2002). Commonly used algorithm is the single linkage in which objects are combined in groups using the minimum dissimilarity between clusters. Due to the applicability of the correlation coefficients, 'single linkage algorithm' is used in this study.

The result of whole process of clustering can be summarized by a 'dendrogram' and the diagram for this study is shown in Figure 31.
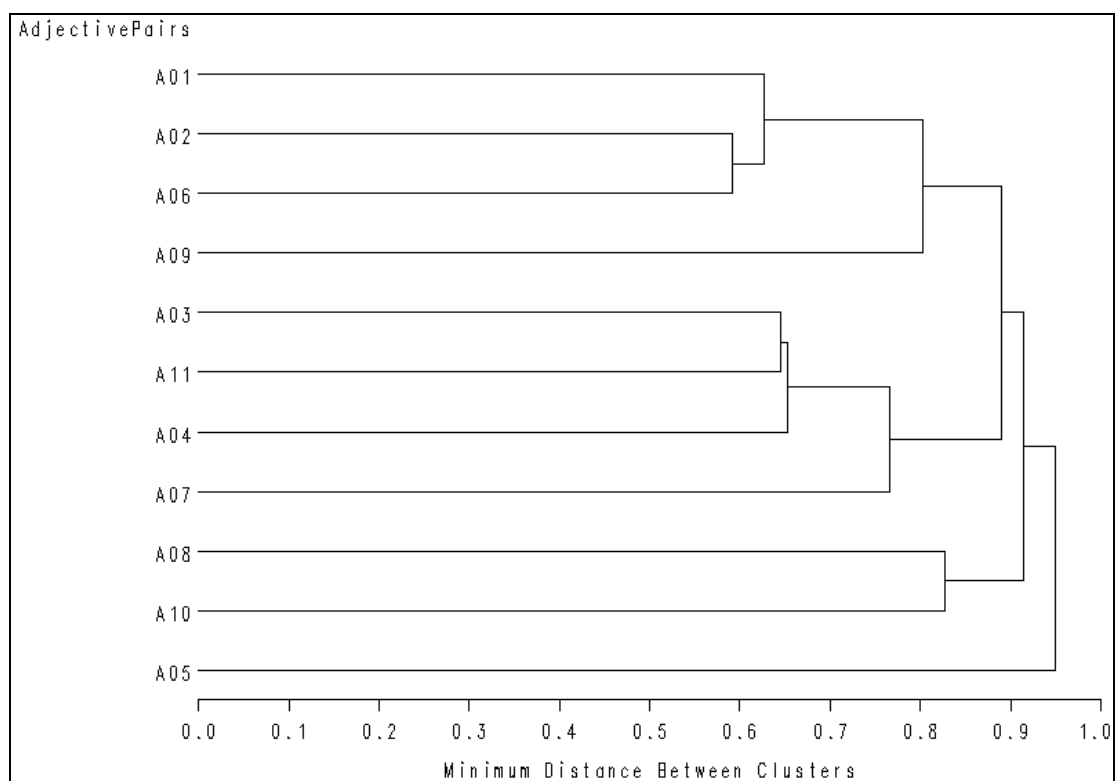
Figure 31 Dendogram for the Cluster Analysis

As shown in Figure 31, firstly, the pairs 2 and 6 (boring - interesting and inert - energetic) that have the strongest correlation are grouped. Secondly, pair 1

(traditional - modern) joins to this group. Thirdly, pairs 3 and 11 (hard-soft and masculine - feminine) formed another group and clustering is continued until all pairs are grouped into one cluster.

Solutions corresponding to particular numbers of clusters are found by 'cutting' the dendrogram at the appropriate level (Everitt, 2002). The cutting level is generally determined with respect to the correlations. Although there is no exact procedure for determining the number of clusters, a usual procedure followed is grouping all strongly correlated pairs with each other and retaining uncorrelated pairs or groups as ungrouped. With respect to this, the cutting level for the dendogram is at *0.83*, where the last adjective pairs that are strongly correlated (AP8 and AP10) are grouped and there are no any pair left ungrouped which is highly correlated with any other pair. The resulting clusters are presented in Figure 32.
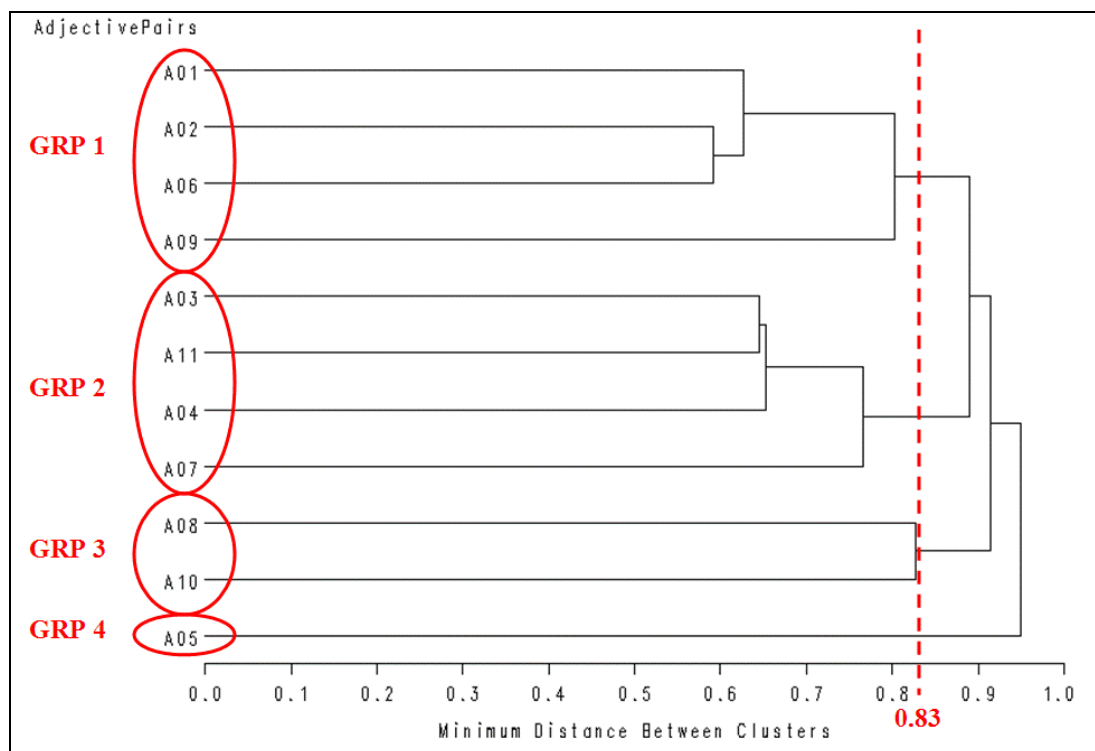
Figure 32 Resulting Groups for the Cluster Analysis

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Table 13 Clusters of Adjective Pairs

Group 1	Group 2	Group 3	Group 4
A1- Traditional - Modern	A3- Hard - Soft	A8- Ornate - Plane	A5- Youthful - Mature
A2- Boring - Interesting	A11- Masculine - Feminine	A10- Insane - Sane	
A6- Inert - Energetic	A4- Cold - Hot		
A9- Proud - Humble (negatively correlated)	A7- Serious - Humorous		

Table 13 lists four clusters of adjective pairs identified in the study. All adjective pairs that are in the same group are strongly correlated with each other.

In order to analyze whether this grouping is different for two genders or not, cluster analysis was also performed for the ratings of the two genders separately. The analysis showed that for two genders the resulting clusters are the same. That is, there is no significant gender effect on the correlations of the adjective pairs. The dendograms and resulting groups for each gender are presented in Appendix I.

With respect to these groupings, numerous inferences can be suggested. For the Group 1, one can suggest that, boring vs. interesting is coupled with traditional vs. modern adjectives. That is, consumers perceiving a phone design as modern tend to perceive it as interesting, energetic and proud as well. Pair 9 (proud vs. humble) is negatively correlated with other group elements. It is noteworthy to see a strong correlation between masculine vs. feminine pair with other pairs in Group 2. The attribute of being feminine is strongly associated with being soft, hot and humorous while masculinity in a product from is related with being hard, cold and serious. These characteristics can be related to the phone design elements such as the color and shape. Business phones with grayscale colors and sharper corners were found masculine while fashion phones with colorful and softer designs were perceived feminine. In Group 3, as noted in section 4.3.1, the relationship between two pairs (ornate vs. plane and insane vs. sane) is evident. Although, according to correlation coefficients, there exists a degree of negative correlation between youthful - mature and serious - humorous adjective pairs, this correlation was not strong and significant

enough to have youthful - mature pair to be grouped in Group 3. Thus, perception of being youthful vs. mature retained alone and formed the Group 4.

4.3.5 Analysis of the participants' own mobile phones

The study also tries to investigate, in terms of the mobile phones owned by the participants, whether each gender preferred products that are in accordance with their genders. Thus, participants also rated their own phones with respect to the same set of adjective pairs. Figure 33 summarizes the results (results of the statistical tests are given in Appendix G). Essentially, it is expected that both genders would rate with the majority of the adjective pairs in opposite direction. However, this was not the case for our tests. Only for adjective pair 10 –insane vs. sane - ($p_{10} < 0.035$) and pair 11 – masculine vs. feminine - ($p_{11} < 0.035$), significant differences are observed.
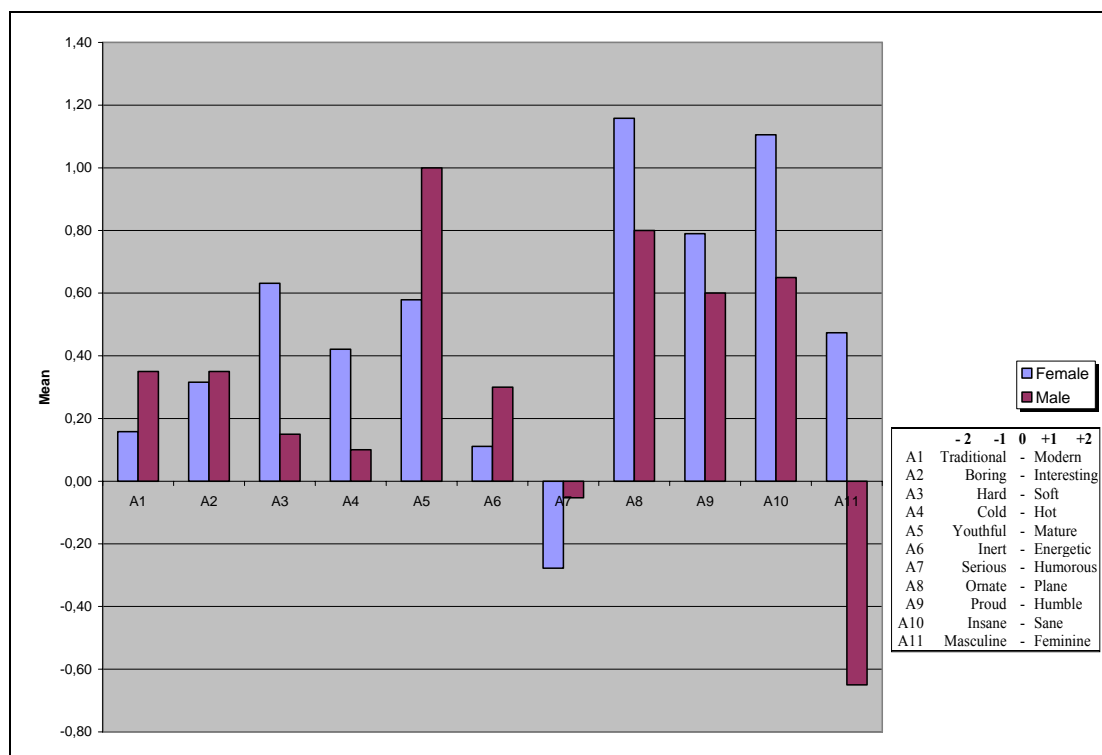
Figure 33 Mean of adjective ratings of their own mobiles

However, before making any inferences with regard to this analysis, the results in previous tests should be taken into consideration. Unless the results related with

perception differences between genders are considered, this analysis cannot indicate reliable findings related to preference.

For example, above tests indicated that there is a significant difference between males and females in perceiving the form of the phone with regard to insane vs. sane adjective pair (section 4.3.1). It is confirmed that, females tend to perceive phones as saner than males do. Therefore, with regard to the values of above test for insane-sane adjectives, it might be incorrect to conclude that females use saner phones than males use.

The above results would only be reliable for the adjective pairs that are not differently perceived by genders. These adjective pairs were hard – soft, serious-humorous, proud - humble and masculine – feminine (see section 4.3.1). Therefore, inferences from above analysis (personal phone assessments) for these adjective pairs would be reliable. In that sense, since the difference between masculine vs. feminine is significant, the finding indicating that each gender tends to use products of their gender type is supported here. This is also inline with the related literature indicating that males prefer products with masculine forms and females prefer feminine (Moss et al., 2001).

CHAPTER 6

CONCLUSIONS

The main purpose of the study was to find out whether there exist significant differences between genders in perceiving product form. A survey was performed in order to validate the suggestions and answer the questions of the study. The survey was conducted on mobile phones since they are widely used and have variety of designs offering various concepts (business, fashion, simple, etc.). Due to its wide usage, mobile phones were relatively easy for the participants to rate their form with respect to a specific set of adjectives. A set of eight mobile phones, which are categorized as business, active, fashion or simple, were established and 48 participants (20 males and 28 females) were asked to characterize the form of each phone regarding to the predefined eleven adjective pairs. Semantic differential method was used in the design of the questionnaire. Each participant, using an ordinal scale (1 to 5), rated the form of each phone with respect to each adjective pair. ANOVA and Tukey's comparison of mean tests were performed on the ratings in order to infer statistically more reliable conclusions. All statistical tests were performed at p value less than 0.05 ($p < 0.05$), that is, the confidence level is more than 95 %. Results were presented in section 4.3.

Identifying perception differences between genders might help designers to gain insight about the degree of responses that will be provided by the consumers so that they can incorporate these factors in design activity.

The study mainly asked a set of questions and validated their answers. The first question asked whether there are any differences between males and females in perceiving product's appearance. Specifically, the question is partitioned into three sub-questions seeking the adjective pairs that are perceived differently and similarly by two genders.

The first sub-question (Q1.1) tried to identify adjective pairs that are perceived *differently* by genders *in general*. As indicated by the analysis results presented in section 4.3.1, for four of the adjective pairs (boring - interesting, youthful - mature, ornate - plane, and insane - sane), the gender effect is significant. According to that, independent from the mobile phone designs, males found the products as more interesting than females. This finding validated the idea that males are more attracted with technological and high-tech equipments than females (Dittmar et al, 1995). Similarly, tests indicated that females tended to rate the forms of the phones as more mature, plane and saner than males.

The second sub-question (Q1.2) identified the adjective pairs that are likely to be perceived *differently* by genders in relation to the *mobile phone design*. The findings indicated that, with respect to the gender and phone together, traditional vs. modern, cold vs. hot and inert vs. energetic adjectives are perceived differently by two genders. A phone that is perceived as traditional by females may be rated as modern by males. Similarly, for a particular phone, females may tend to perceive it as rather cold and inert while males may perceive it as rather hot and energetic.

The findings for the first and second sub-questions indicate the following significant inferences. With respect to the mobile phone designs, males were more conservative than females in perceiving and assessing the product form. In accordance with these findings, it can be deduced that, a mobile phone directed to males should stress on design elements that enable its form to be perceived as more mature and saner and with higher functionalities. These attributes in general include grayscale colors, sharper edges and large displays, which are possessed by phones in the business category. In contrast, in the design of a phone for females, product form might be less conservative in terms of its appearance. In general, colorful designs, soft and rounded edges and clamshell style in phone design are perceived as quite ornate, proud and youthful by males as opposed to being perceived as planer, saner and more mature by females. The phones in fashion category are examples of these types of designs.

The third sub-question (Q1.3) indicated that there are also adjective pairs that are not perceived differently by both genders. Statistical tests showed that the ratings for some of the adjective pairs are not significantly affected by gender or gender-phone together. With respect to the form of the mobile phones, it can be considered that ratings for the following adjective pairs are equivalent: hard – soft, serious – humorous, proud – humble and masculine – feminine.

The three sub-questions confirmed the answer for the first question. The study validated that cognitive consumer response to product form can be influenced by gender. Different genders may provide different cognitive responses to the same product form.

The second question (Q2) of the study examined whether there are any correlations between the adjective pairs that are utilized in the study. The results of the correlation and cluster analysis showed that there are strong correlations between some of the adjective pairs used in the survey. The correlations between 'boring-interesting', 'inert-energetic' and 'traditional-modern' and the correlations between 'hard-soft', 'masculine-feminine' and 'cold-hot' are the strongest. Based on these interactions, one can conclude that the product forms that are perceived as interesting are likely to be perceived as energetic and modern as well. Similarly, for a phone that is found to be feminine, there is a high probability of consumers perceiving it as soft and hot as well. Likewise, hard phones are likely to be perceived as masculine and cold.

Based on the interactions, pairs are grouped into four clusters presented in Table 13. Group 1 consists of traditional-modern, boring-interesting, inert-energetic, and proud-humble adjective pairs. The second group, Group 2, includes hard-soft, masculine-feminine, cold-hot, and serious-humorous pairs. Group 3 includes ornate-plane and insane-sane pairs. Finally Group 4 includes only youthful-mature adjective pair. The adjective pairs that are in the same cluster are strongly correlated with each other. Clustering would enable researchers to make inferences similar to the ones given above. For example, with respect to the groupings, there is high probability

that a phone that is perceived as plane would also be perceived as sane as well. Cluster analysis was also performed for the ratings of the two genders separately. The grouping was not different for two genders, denoting that there is no gender effect in the correlations between adjective pairs. This finding is important, since it can be considered as an indication that both genders interpret the adjective pairs in the same way. That is, both genders share the same meaning of the adjective pairs. The meaning for modern for females, for example, is not much different from the meaning male derive from this adjective.

Grouping adjective pairs would also enable similar surveys to be performed with less number of adjective pairs. Surveys may include representative pairs from each group without sacrificing important information.

The third question (Q3) asked whether each gender prefers products that are in accordance with their genders. In other words, it asked if males use mobile phones that they perceive as masculine and females tend to prefer phones that they perceive as feminine. The semantic differential method was also applied on the personal phones of the participants in order to gain insight into their preferences. Considering the findings of previous tests and the tests performed on this data, it is concluded that, males prefer products with masculine forms and females prefer feminine forms for mobile phones.

The survey results were also analyzed with respect to each mobile phone and each adjective pair separately. The findings indicated significant perception differences between genders for specific phones and adjectives as well, which are presented in Table 9 and Table 10. There were no significant perception differences with respect to all adjectives for phones T6 and T8. This was attributed to their relatively clear concepts, which led participants to rate their form in similar degrees.

Subjective opinions by the participants indicated other noticeable findings as well. Accordingly, males are more interested in phones having high technical functionalities. Many of the male participants responded that, with acceptable prices,

they would prefer to change their phones with a new one having higher technical specifications and functions. In contrast, six female participants stated that, although their phones were rather old, they were not planning to change their phones unless they continue serving their very basic communication needs.

In general, soft and rounded designs are qualified as feminine as indicated by majority of the literature (Dittmar et al., 1995; Moss, 2003). Females are attracted by color in this type of phones. On the other hand, black, straight bold lines, large displays are viewed as rather masculine and technological. Male participants noted these types of phones as more interesting than females did. In general, the assessment for cold vs. hot can be related to the color. As expected, phones with live colors are tended to be perceived as hotter than the phones having grayscale colors.

As a future work, detailed design elements of the phones can be identified and these design elements can be related to the responses by the participants. Essentially, this study can be considered as an input to the studies trying to define the relationship between 'image and impression' and design of a product. That work would be useful in translating the customers' feeling of a product to the detailed design elements.

The same tests can also be conducted on other products such as cars, furniture, notebooks, or products that are specifically gendered such as watches, kitchen appliances, in order to find out whether perception differences between two genders exists for other products as well.

REFERENCES

- Attfield, J, (1989). Form/female Follows Function/male: Feminist Critique of Design, in Walker, John A, Design History and the History of Design, Pluto Press.

- Bakalis, S., Abeln, M. and Mante-Meijer, E. (1998). Adoption and use of mobile telephony in Europe. Cost 248 Report. Telia, Farsta.

- Basow, S.A., (1992). Gender, Stereotypes and Roles, 3rd Ed. Pacific Grove, California.

- Bloch, P.H., (1995). Seeking the Ideal Form: Product Design and Consumer Response. Journal of Marketing, Vol. 59, Pages: 16-29.

- Caterall, M, Maclaran, P., (2002). Gender Perspectives in Consumer Behavior: An overview and future directions. The Marketing Review, Vol. 2, Pages: 405-425.

- Chang, W.C. and Y. T. Van, (2003a). Researching design trends for the redesign of product form. Design Studies, Vol. 24, No.2, Pages: 173-180.

- Chang, W.C. and Y.Y. Shih, (2003b). A differential Study on the Product Form Perceptions of Different Age Group Users. Proceedings of 6th Asian Design International Conference, Pages: 755-762. October 14-17, 2003, Tsukuba, Japan.

- Chuang, M.C., Y.C. Ma, (2001a). Expressing the expected product images in product design of micro-electronic products. International Journal of Industrial Ergonomics, Vol. 27, No.4, Pages: 233-245.

- Chuang, M.C., C.C. Chang, S.H. Hsu, (2001b). Perceptual factors underlying user preferences toward product form of mobile phones. International Journal of Industrial Ergonomics, Vol. 27, No.4, Pages: 247-258.

- Crilly N., Moultrie J., Clarkson P.J., (2004). Seeing things: consumer response to the visual domain in product design. Design Studies, Vol. 25, Pages: 547-577.

- Creusen, Marielle. E.H., Schoormans, Jan P.L., (2005). The Different Roles of Product Appearence in Consumer Choice. Journal of Product Innovation Management, Vol. 22, Pages: 53-81.

- de Mozota, B.B., (2002). Design and competitive edge: A model for design management excellence in European SMEs. Design Management Journal, Vol. 2, No.1, Pages: 88-104.

- De Sausmarez, M., (1964). Basic design: the dynamics of visual form. Herbert, London, UK.

- Desmet, Pieter. M.A., (2003). A multilayered model of product emotions. The Design Journal, Vol. 6, No.2, Pages: 4-13.

- Dittmar, H., Beattie J., Friese, S., (1995). Gender identity and material symbols: Objects and decision considerations in impulse purchases. Journal of Economic Psychology, Vol.16, No.3, Pages: 491-511.

- Dittmar, H., Beattie J., Friese, S., (1996). Objects, Decision Considerations and Self-Image in Men's and Women's Impulse Purchases. Acta Psychologica, Vol. 93, No.1-3, Pages: 187-206.

- Eckman, M and J. Wagner, (1994). Judging the attractiveness of product design: the effect of visual attributes and consumer characteristics. Advances in Consumer Research, Vol. 21, No.1, Pages: 560-564.

- Everitt, B. S., (2002). Cambridge Dictionary of Statistics. Cambridge University Press. West Nyack, NY, USA.

- Garret, S., (1987). Gender. Tavistock Publications Ltd. London, UK.

- Han, S.H., Yun, M. H., Kim, K. and Kwank, J., (2000). Evaluation of product usability: development and validation of usability dimensions and design elements based on empirical models. International Journal of Industrial Ergonomics, Vol.26, Pages: 477 - 488.

- Hayes, R., (1990). Design: Putting Class into 'World Class'. Design Management Journal, Vol.1, No.2, Pages: 8-14.

- Hebdige, D., (1988). Object as Image: The Italian Scooter Cycle. In Hiding in the Light. London and New York: Routledge.

- Holbrook, M.B., (1986). Aims, Concepts, and Methods for the Representation of Individual Differences in Esthetic Responses to Design Features. Journal of Consumer Research, Vol.13, No.3, Pages: 337-348.

- Holbrook M.B., and T. J. Olney. (1995). Romanticism and the Wanderlust: An Effect of Personality on Consumer Preferences. Psychology & Marketing, Vol.12, No.4, Pages: 207-222.

- Hsiao, K.A., Chen, L.L., Wang, C.F., Tsang, H.T., (2003). Fundamental Dimensions of Affective Responses to Product Shapes. Proceedings of 6th Asian Design International Conference, Pages: 532-543. October 14-17, 2003, Tsukuba, Japan.

- Hsu, S.H., M.C. Chuang, C.C. Chang, (2000). A semantic differential study of designers' and users' product form perception. International Journal of Industrial Ergonomics, Vol.25, Pages: 375-391.

- Jolliffe, I.T., (2002). Principal Component Analysis. Springer-Verlag. Secaucus, NJ, USA.

- Kimmel, M.S., (2000). The Gendered Society Reader. Oxford University Press, Oxford, NY, USA.

- Lewalski, Z.M., (1988). Product esthetics: an interpretation for designers, Design & Development Engineering Press, Carson City, Nevada, USA.

- Lindsay, Linda. L., (2005). Gender Roles a Sociological Perspective, 4th Ed. Prentice Hall. USA.

- Ling, R., (2001). Adolescent girls and young adult men: Two sub-cultures of the mobile telephone. Kjeller, Telenor Research and development, R&D Report R 34/2001.

- Luke, C., (1996). Reading Gender and Culture in Media Discources and Text. Prentice-Hall, New York, USA.

- Mark, M., (2001). The Hero and The Outlaw: Building Extraordinary Brands Through the Power of Archetypes. McGraw-Hill Companies. Blacklick, OH, USA.

- McElroy, W. A., (1954). A sex difference in preferences for shapes. British Journal of Psycology. Vol. 45. Pages: 209-216.

- Milner, L., Fodness, D., (1996). Product Gender Perceptions, The case of China. International Marketing Review, Vol.13, No.4, Pages: 40-51.

- Monö, R., (1997). Design for product understanding. Liber, Stockholm, Sweden.

- Morgan, G.A., (2004). SPSS for Introductory Statistics: Use and Interpretation. Lawrence Erlbaum Associates Incorporated, Mahwah, NJ, USA.

- Moss, G., Colman, A.M., (2001). Choices and preferences: Experiments on gender differences. Brand Management, Vol.9, No.2, Pages: 89-99.

- Moss, G., (2003). The Implications of the Male and Female Design Aesthetic for Public Services. The Innovation Journal, Vol.8, No.4, Pages: 1-12.

- Osgood, C. H., G.J. Suci, P. H. Tannenbaum, (1957). The Measurement of Meaning. University of Illinois. Urbana, USA.

- Palan, K.M. (2001). Gender Identity in Consumer Behavior Research: A Literature Review and Research Agenda. Academy of Marketing Science, Vol.2001, No.10, Pages: 1-26.

- Poindexter, P.M., Lasorsa, D.L., (1999). Generation X: Is its meaning understood? Newspaper Research Journal, Vol.20, No.4, Pages: 28-36.

- Stephens, L. J., (2004). Advanced Statistics Demystified. McGraw-Hill Professional Publishing. Blacklick, OH, USA.

- Tierney, H. (Editor), (1999). Women's Studies Encyclopedia. Greenwood Publishing Group, Inc. Westport, CT, USA.

- Timm, N.H., (2002). Applied Multivariate Analysis. Springer-Verlag. Secaucus, NJ, USA.

- Urdan, T. C., (2005). Statistics in Plain English. Lawrence Erlbaum Associates, Inc. Mahwah, NJ, USA.

- Veryzer, R.W., (1995). The Place of Product Design and Aesthetics In Consumer Research. Advances in Consumer Research. Vol.22, No.1, Pages 641-645.

- Wang, H., (1998). Order effects in human belief revision. Ph.D. Dissertation. The Ohio State University. USA.

- Wells, William, Burnett, John and Moriarty, Sandra (1995). Advertising: Principles and Practice, 3rd. Ed. Prentice-Hall, Inc. NJ, USA.

- Willis, S., (1991). Gender as Commodity. Published in Primer for Daily Life. NY, USA.

- Wood, J.T., (2003). Gendered Lives, Communication, Gender, and Culture. Wadsworth Publishing. NY, USA.

- Yun, M.H., Sung H.H., Sang W.H., Jongseo K., (2003). Incorporating user satisfaction into the look-and-feel of mobile phone design. Ergonomics, Vol.46, No.13/14, Pages: 1423-1440.

Picture Online Sources:

- Dvercity (2005). Barbie. Accessed via <http://www.dvercity.com/barbie_for_pres.jpg> on date 10.05.2005.

- Magmaheritage (2005). Ken. Accessed via <http://www.magmaheritage.com/2003barbiedolls.html> on date 10.05.2005.

- Wikipedia (2005). He-man. Accessed via <http://en.wikipedia.org/wiki/Image:Smeraldo.cc_heman02.jpg> on date 10.05.2005.

- Diamond Comic Distributors Inc. (2005). G.I. Joe: Scarlett. Accessed via <http://toychest.diamondcomics.com/toys/jan_03/GI%20Joe%20Scarlet%20 Bust.jpg> on date 10.05.2005.

- National Organization for Women (NOW) Foundation (2005). Maker's Mark Alcohol Advertisement. Accessed via <http://loveyourbody.nowfoundation.org/offensiveads.html> on date 01.10.2005.

- Periwork (2005). Woman and advertising: Mr. Propre. Accessed via <http://www.periwork.com/coates/research%20projects/Juliegaez/Image68.jp g>on date 10.11.2005.

- BenQ-Siemens (2006a). ME75. Accessed via <http://www.benq-siemens.com/cds/frontdoor/0,2241,hq_en_0_130807_rArNrNrNrN,00.html & http://www.mobile-review.com/review/siemens-me75-en.shtml> on date 10.01.2006.

- BenQ-Siemens (2006b). CL75. Accessed via <http://www.benq-siemens.com/cds/frontdoor/0,2241,hq_en_0_130802_rArNrNrNrN,00.html> on date 10.01.2006.

- Pantech (2006). GB300. Accessed via <http://global.pantech.com/curiosity/content_33.jsp> on date 10.01.2006.

- Wikipedia (2006). Generation X. Accessed via <http://en.wikipedia.org/wiki/Generation_X> on date 02.12.2006.

APPENDIX A

MOBILE PHONE CLASSIFICATION ANALYSIS

ORTA DOĞU TEKNİK ÜNİVERSİTESİ

ENDÜSTRİ ÜRÜNLERİ TASARIMI BÖLÜMÜ

YÜKSEK LİSANS TEZ ARAŞTIRMASI

CEP TELEFONUNUN GÖRSEL ALGILANMASINDAKİ FARKLAR

Ad Soyad:..

Meslek:..

Lütfen aşağıdaki boş alanları, gösterilen telefonlardan seçim yaparak doldurunuz. Sıralamayı size konuya en çok uyan telefondan başlayarak yapınız.

	1	2	3	4	5	6	7	8
Business								
Fashion								
Active								
Simple								

APPENDIX B

RESULTS OF THE MOBILE PHONE RATINGS FOR SELECTION

	Business									Fashion								
	1	2	3	4	5	6	7	8	Tot.	1	2	3	4	5	6	7	8	Tot.
T1		1	1	1		1	1		23									0
T2				1					5			1	1		1	1		16
T3									0									0
T4									0									0
T5						1			3		2	1		3				32
T6		1			1	1	1	1	17				1				1	6
T7				1	1				9			1				1		8
T8									0			1	1				1	12
T9	3		2	1		1	1		46									0
T10									0					1				4
T11									0			1			1			9
T12		1	2	2			1		31									0
T13						1		1	4									0
T14				1					4									0
T15									0	2	2	1	1					41
T16									0									0
T17									0									0
T18				1					4			1			1			9
T19	1		1	1			1	1	22		1		1	1			1	17
T20		1			2				15									0
T21									0				1		1	2		12
T22									0	1			2	1	2		1	29
T23						1			3									0
T24	3	2	1	1	1				53						1			4
T25			1				1		7									0
T26									0							1		2
T27	1	1							15			2						12
T28				1	1		1		8									0
T29			1						6									0
T30	1	2	2		1				38							1		2
T31		1				1	1	1	13									0
T32		1							7									0
T33				1					5						1			3
T34		1		1			1		14									0
T35				1					5	2	3	2	1					54
T36									0	1	2	1	2	2				46

	Active									Simple								
	1	2	3	4	5	6	7	8	Tot.	1	2	3	4	5	6	7	8	Tot.
T1									0			1					1	6
T2	1	3			2	1			**40**									0
T3		1		1					12					1				4
T4									0	1				1	1	1		17
T5	2	2							30	1	1			1				18
T6			2						10		1	1			1		1	17
T7					1				4									0
T8	1	3	2						**41**								1	1
T9									0		1		1	1				16
T10				1					5						1			3
T11	1		2		1				24			1						6
T12									0									0
T13									0		1		1					12
T14					1				3	1	1	1	1	3				**38**
T15	1								8	2			1					21
T16									0									0
T17		1		1					12			1	1		2	1		19
T18			1	1				1	12		1							7
T19	2		2	1			1		**35**			1		1		1		12
T20		1	2						19									0
T21		1	1		1				17									0
T22			2			1			12			1		1				9
T23							2		2		2		1	1				**23**
T24						1			2									0
T25									0		1	1						13
T26			1		1				8	2	1			1				**27**
T27						1	1		5	1			1			1		15
T28				1					4									0
T29				1					4		1	1				1		15
T30				1					4	1	1	1					1	22
T31									0							1		2
T32					1				3			1						6
T33				1					4	1	1		1		1			**23**
T34									0	1			1				1	14
T35							1		1									0
T36	2		1	1					27						1			3

APPENDIX C

QUESTIONNAIRE

ORTA DOĞU TEKNİK ÜNİVERSİTESİ

ENDÜSTRİ ÜRÜNLERİ TASARIMI BÖLÜMÜ

YÜKSEK LİSANS TEZ ARAŞTIRMASI

CEP TELEFONUNUN GÖRSEL ALGILANMASINDAKİ FARKLAR

Amaç: Bir ürünün görsel özelliklerini (form, renk, materyal, stil vs.) algılama farklılıklarının olup olmadığının tespitidir.

Ankette istenen kişisel veriler hiç bir şekilde başka kurumlara, şahıslara açıklanmayacaktır.

Adınız Soyadınız: ....

Yaşınız:...

Cinsiyetiniz..

Mesleğiniz:...

Eğitim Durumunuz:...

Anketi gösterilen telefonların her biri için, çok düşünmeden cevaplayınız. Her telefon için farklı anket sayfası yer almaktadır. Son sayfadaki seçenekleri şu an sahip olduğunuz cep telefonu için doldurunuz. Anketi size en uygun olan seçeneği işaretleyerek değerlendiriniz Eğer ürün ve sıfat arasında alaka bulamadıysanız ya da sıfatı anlamadıysanız sağ taraftaki kutucuğu işaretleyiniz.

Tanım Uygun değil

| Örn: | Klasik | 1 | 2 | 3 | 4 | 5✓ | Modern | | |

Tanım Uygun değil

1	Klasik	1 2 3 4 5	Modern		
2	Sıkıcı	1 2 3 4 5	İlginç		
3	Sert	1 2 3 4 5	Yumuşak		
4	Soğuk	1 2 3 4 5	Sıcak		
5	Çocuksu	1 2 3 4 5	Olgun		
6	Monoton	1 2 3 4 5	Enerjik		
7	Ciddi	1 2 3 4 5	Eğlenceli		
8	Süslü	1 2 3 4 5	Sade		
9	İddialı	1 2 3 4 5	Mütevazı		
10	Çılgın	1 2 3 4 5	Makul (Akla yatkın)		
11	Erkeksi	1 2 3 4 5	Kadınsı		

Belirtmek istediğiniz diğer unsurlar:..
....
....
.

Q1. Telefonunuzun markası nedir?

....

Q2. Şu an kullandığınız telefonu siz mi satın aldınız?

....

Q3. Telefonunuzu satın alırken aşağıdaki faktörler ne kadar etkili oldu?

Marka:	Hiç Etkili olmadı	1	2	3	4	5	Çok etkili oldu

Fiyat:	Hiç Etkili olmadı	1	2	3	4	5	Çok etkili oldu

Renk:	Hiç Etkili olmadı	1	2	3	4	5	Çok etkili oldu

Teknik Özellikler:	Hiç Etkili olmadı	1	2	3	4	5	Çok etkili oldu

Q4. Telefonunuzu yakın zamanda değiştirmeyi düşünüyor musunuz? Eğer değiştirmeyi düşünüyorsanız sebeplerini belirtiniz.

Teknik özellikleri yeterli değil

Modası geçti

Çok eskidi, düzgün çalışmıyor

Tarzımı yansıtmıyor

Değişiklik istiyorum.

Diğer...

APPENDIX D

RESULTS (RAW DATA) OF THE QUESTIONNAIRE

Prt. No	Age	Gender	Occupation	Education	T1											T2										
					A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
PRT01	30	M	Academician	Graduate	1	1	1	0	2	1	-1	2	-2	0	-2	1	1	2	1	0	1	2	1	0	0	2
PRT02	32	F	Academician	PhD.	0	-1	-1	-1	2	-2	-1	2	0	2	-2	1	1	2	1	0	2	1	-1	-1	2	2
PRT03	28	M	Student	BS	2	1	-1	0	1	1	-2	1	-1	0	-2	1	1	1	1	-1	0	1	0	0	0	2
PRT04	30	M	Software Engr.	Graduate	1	1	-2	-1	2	1	-2	0	-1	1	-1	1	1	1	1	0	0	1	-1	0	0	1
PRT05	28	M	Res. Asst.	Graduate	2	1	-2	-1	2	0	-2	1	-2	0	-1	0	0	1	0	0	0	0	1	1	1	1
PRT06	25	F	Res. Asst.	Graduate	1	0	-1	0	2	1	-1	-1	-2	1	-1	2	0	0	1	2	0	2	1	1	2	-1
PRT07	26	M	Res. Asst.	Graduate	1	0	-1	0	2	1	-1	1	-1	1	-2	0	0	2	1	NA	0	1	-1	-1	0	2
PRT08	30	F	Official	BS	2	2	0	2	2	2	-2	0	-2	1	-2	2	2	2	2	2	2	1	0	1	2
PRT09	25	M	Res. Asst.	BS	2	1	-1	0	1	1	-1	-1	-1	-1	-1	2	0	1	0	0	0	1	-1	-1	1	0
PRT10	27	M	Official	BS	2	2	-2	-2	1	1	1	0	0	0	0	2	2	2	2	2	2	-2	-2	2	0
PRT11	40	F	Official	BS	-1	-1	-1	-2	2	-2	-2	2	-1	1	-2	2	2	1	2	0	2	2	1	-1	0	0
PRT12	26	F	Official	BS	1	1	-1	0	0	1	-1	1	-1	0	0	1	1	1	1	0	2	2	0	-2	0	0
PRT13	36	F	Official	BS	2	2	-1	1	2	1	-1	2	1	1	0	2	2	2	2	2	2	2	-2	-2	-2	2
PRT14	34	F	Official	BS	2	2	-2	-2	2	2	-2	1	1	1	-2	2	2	2	2	0	2	2	-2	-2	-2	2
PRT15	28	F	Res. Asst.	BS	0	-1	-2	-2	2	-1	-2	1	1	1	-2	1	1	2	1	-1	1	1	1	0	0	2
PRT16	29	F	Res. Asst.	Graduate	2	1	0	0	0	1	-1	0	0	0	-1	2	2	2	2	0	2	1	0	0	0	1
PRT17	28	F	Res. Asst.	Graduate	2	0	-2	-2	1	0	-1	2	0	1	-1	2	0	2	2	0	2	1	0	0	1	1
PRT18	28	F	Res. Asst.	Graduate	2	2	-1	-1	0	2	2	1	-2	1	-2	1	-1	2	1	-1	0	0	1	0	1	2
PRT19	25	F	Res. Asst.	Graduate	2	2	0	1	2	2	0	0	-1	0	-1	1	1	2	2	-1	1	1	-1	0	1	2
PRT20	28	M	Res. Asst.	Graduate	2	1	-2	-1	-1	2	0	-1	-2	-1	-1	1	2	1	0	-1	1	0	-1	-1	-1	1
PRT21	27	M	Res. Asst.	Graduate	2	1	-1	1	1	1	1	1	1	1	-1	2	2	1	1	-1	1	1	-1	0	0	1
PRT22	26	M	Res. Asst.	Graduate	1	1	-1	-1	2	0	0	2	-1	1	-1	1	1	1	1	0	1	1	-1	-1	-1	1
PRT23	29	F	Res. Asst.	Graduate	-2	-2	-2	-2	2	1	-2	0	-1	1	-1	2	0	1	1	0	1	1	-2	-2	-1	1
PRT24	26	M	Res. Asst.	Graduate	1	1	-1	-1	2	0	-2	1	-1	1	-2	1	0	1	1	-1	1	2	2	0	-2	2
PRT25	29	F	Official	BS	2	1	1	1	2	1	-1	0	-1	1	-1	2	2	2	2	0	1	2	1	-1	-1	2
PRT26	29	F	Official	BS	2	2	-2	-2	2	2	2	2	-2	0	0	2	2	2	2	-2	2	2	0	-2	-2	2
PRT27	37	F	Official	BS	1	1	0	0	2	0	-1	1	-1	1	-1	2	2	2	1	2	1	-1	-1	0	1
PRT28	39	F	Official	BS	2	2	-2	-2	1	2	-2	2	0	2	-2	2	1	1	1	0	1	1	-1	-1	0	2
PRT29	32	F	Official	BS	-2	-2	-2	-2	2	-2	-2	2	0	2	-2	1	0	2	2	1	0	1	-1	2	2	2
PRT30	35	F	Official	BS	1	1	0	0	1	0	0	2	1	1	0	1	1	1	1	1	0	1	-2	0	-1	1
PRT31	38	F	Official	High Sch.	0	1	-1	0	1	1	-1	0	1	1	-1	1	2	1	2	0	1	1	-1	-1	-1	1
PRT32	28	F	Official	BS	2	2	-2	-2	2	2	-2	2	-2	2	-1	2	2	2	2	-1	2	2	-2	-2	-1	2
PRT33	26	M	Official	High Sch.	1	2	-1	1	1	2	-1	-1	-2	-1	0	1	1	2	1	0	1	2	-2	-2	-1	2
PRT34	27	M	Official	BS	2	2	2	2	2	2	2	0	-2	0	0	0	0	2	0	-2	-1	0	-2	0	-2	2
PRT35	25	F	Official	High Sch.	2	2	1	2	2	2	2	-1	-1	0	0	1	1	0	2	-2	2	1	-2	0	-1	2
PRT36	26	M	Official	BS	1	1	-1	-1	1	0	-1	1	-1	1	-1	1	0	2	0	-1	-1	1	1	-1	-1	1
PRT37	25	M	Software Engr.	BS	2	2	-2	0	2	1	-1	-2	-2	-1	-1	2	2	2	2	0	1	1	-1	0	1	2
PRT38	32	F	Software Engr.	Graduate	1	2	-1	0	2	1	-1	0	-2	1	-1	1	1	1	1	-1	2	2	-1	-2	1	0
PRT39	37	M	Software Engr.	Graduate	0	0	-1	-1	1	0	-1	0	-1	1	-2	1	1	1	1	1	1	1	-1	-1	-1	2
PRT40	28	M	Software Engr.	Graduate	2	2	-1	0	2	2	0	-1	-2	0	-2	2	2	2	2	-1	2	2	-2	-1	-1	2
PRT41	35	F	Official	BS	0	0	-1	0	2	-1	-1	2	0	0	-2	2	0	2	2	0	1	2	-2	-1	1	1
PRT42	29	M	Res. Asst.	Graduate	1	1	0	-1	1	-1	-1	1	-1	1	-1	0	-1	1	1	-1	0	1	-1	0	1	2
PRT43	26	F	Res. Asst.	BS	-1	1	-2	-2	2	2	-2	1	-2	2	-1	2	2	2	2	2	2	1	1	1	2
PRT44	26	F	Res. Asst.	Graduate	2	2	0	0	2	2	2	-1	-2	1	-2	2	2	2	0	0	2	1	0	-1	1	0
PRT45	31	M	Res. Asst.	Graduate	2	1	0	1	2	2	0	0	-2	-2	-2	2	2	2	2	-1	1	1	0	-1	-1	2
PRT46	32	F	Res. Asst.	Graduate	-2	-2	-2	-1	2	-2	-1	1	1	1	-1	2	1	1	1	-1	2	1	-1	-2	0	2
PRT47	40	F	Elektronik M.	Graduate	1	-2	-2	-2	1	-2	-2	0	-1	1	-2	1	1	2	2	0	1	1	-1	-1	-1	2
PRT48	25	M	Res. Asst.	BS	2	2	0	-1	2	1	-1	-1	-2	-1	-1	2	2	1	2	-1	2	2	-2	-1	-1	2

Prt No	Age	Gender	Occupation	Education	T3											T4										
					A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
PRT01	30	M	Academician	Graduate	2	1	0	0	1	2	1	2	-1	0	0	1	-2	0	-1	0	-1	-1	0	-1	0	-1
PRT02	32	F	Academician	PhD.	2	1	0	-2	2	2	-2	-2	-2	1	0	1	0	1	2	2	1	-2	0	2	2	0
PRT03	28	M	Student	BS	1	2	0	-1	-1	0	1	-1	0	-1	0	-1	-1	0	-1	0	-1	-1	-2	-2	1	0
PRT04	30	M	Software Engr.	Graduate	2	2	1	0	-1	1	1	-1	-1	-1	0	2	0	0	0	1	-1	0	1	2	2	0
PRT05	28	M	Res. Asst.	Graduate	1	1	-1	-1	0	2	1	0	-1	-1	-1	-1	-1	0	-1	1	-1	-1	1	1	1	-1
PRT06	25	F	Res. Asst.	Graduate	1	1	0	0	-1	1	1	0	-1	-1	-1	-1	0	-1	0	1	1	0	1	-1	1	0
PRT07	26	M	Res. Asst.	Graduate	1	1	0	-1	NA	1	0	-1	-1	-1	0	-2	-2	-1	0	1	-2	-2	2	2	2	-2
PRT08	30	F	Official	BS	2	2	-1	0	0	1	0	0	0	0	-2	-1	-1	0	-1	1	0	-1	1	1	1	-2
PRT09	25	M	Res. Asst.	BS	0	1	0	0	-1	1	1	1	1	0	0	1	1	-1	-1	2	2	-1	1	1	1	-1
PRT10	27	M	Official	BS	1	-1	1	1	-1	1	1	-1	0	0	1	2	-1	-1	-1	1	-1	-1	1	-1	1	0
PRT11	40	F	Official	BS	-1	0	-1	-1	1	0	0	0	-1	-1	-2	-2	-2	-1	-1	2	-1	-2	2	1	2	-2
PRT12	26	F	Official	BS	1	0	1	0	0	NA	0	0	0	1	1	0	-1	-1	-2	0	-2	-1	2	NA	NA	-1
PRT13	36	F	Official	BS	1	1	1	2	1	1	0	2	0	1	0	2	0	2	0	2	0	1	2	0	2	0
PRT14	34	F	Official	BS	2	2	1	1	1	1	-1	-1	0	1	-2	2	2	1	1	1	0	-1	-1	1	1	-1
PRT15	28	F	Res. Asst.	BS	2	1	0	-1	0	1	0	-1	-1	-1	-2	-2	-1	-1	-1	1	-2	-2	2	1	2	-2
PRT16	29	F	Res. Asst.	Graduate	1	1	0	0	-1	0	0	0	0	0	0	1	-1	-1	0	1	1	-2	2	1	0	-1
PRT17	28	F	Res. Asst.	Graduate	2	1	1	0	1	1	1	-1	0	0	0	1	1	-1	-1	2	-1	-1	2	2	2	-2
PRT18	28	F	Res. Asst.	Graduate	2	2	-2	2	-1	2	2	-1	-2	-1	-2	-1	-2	-2	-1	2	-2	-2	2	0	2	-2
PRT19	25	F	Res. Asst.	Graduate	1	2	-1	0	-1	1	1	0	-2	-1	0	-1	-1	0	0	1	-2	0	1	2	2	0
PRT20	28	M	Res. Asst.	Graduate	0	1	0	0	-1	0	0	-1	0	0	-1	1	1	1	0	0	0	-1	1	-1	1	-1
PRT21	27	M	Res. Asst.	Graduate	2	2	1	1	-1	1	1	-1	-1	-1	1	-1	-1	-1	-1	1	-1	-1	1	1	1	0
PRT22	26	M	Res. Asst.	Graduate	1	2	1	1	0	0	0	0	-1	0	0	-1	-1	-1	-1	2	-1	-2	1	1	1	-1
PRT23	29	F	Res. Asst.	Graduate	1	1	0	1	0	0	0	0	0	0	0	-2	-2	-1	-1	1	0	-1	1	0	0	-1
PRT24	26	M	Res. Asst.	Graduate	0	-1	0	-1	1	-1	0	0	1	0	1	-1	-1	-1	-1	1	-1	-1	1	0	1	-1
PRT25	29	F	Official	BS	2	2	1	1	0	1	1	0	0	-1	1	1	1	2	2	1	0	0	1	0	1	1
PRT26	29	F	Official	BS	0	0	0	0	2	0	0	0	0	0	0	-2	0	0	-2	0	0	0	2	0	2	0
PRT27	37	F	Official	BS	1	1	0	0	1	0	0	-1	-1	0	0	-2	0	-1	-1	1	-1	-1	2	1	1	-1
PRT28	39	F	Official	BS	2	2	0	1	-1	1	1	-1	0	-1	1	1	0	-1	-1	1	0	-1	1	0	1	-2
PRT29	32	F	Official	BS	1	1	1	-1	2	2	1	1	2	2	-1	-2	-2	0	-2	2	-2	-2	2	0	0	-2
PRT30	35	F	Official	BS	1	1	0	1	1	0	1	-1	-1	-1	0	1	1	0	0	0	0	0	0	0	1	0
PRT31	38	F	Official	High Sch.	1	-2	0	-1	-1	0	1	0	0	-1	-1	-1	-1	0	-1	-1	-1	0	2	2	2	0
PRT32	28	F	Official	BS	1	0	-1	-2	1	0	-1	0	-1	0	0	-2	-2	0	-2	2	-2	-2	2	2	2	-2
PRT33	26	M	Official	High Sch.	1	0	1	0	0	0	0	0	-1	-1	0	1	1	0	1	1	1	-2	1	0	1	-2
PRT34	27	M	Official	BS	2	2	2	2	2	2	2	-2	-2	-2	0	-2	-2	-2	-2	0	-2	-2	2	2	2	-2
PRT35	25	F	Official	High Sch.	2	-2	-1	-2	1	0	-1	0	1	0	-2	-2	-2	-2	-2	2	-1	-1	2	1	2	-2
PRT36	26	M	Official	BS	1	-1	1	1	0	0	1	-1	-1	-1	0	0	0	-1	0	1	0	-1	1	0	1	0
PRT37	25	M	Software Engr.	BS	1	1	-1	0	1	1	-1	1	1	1	-2	2	1	1	1	1	1	0	-1	-1	0	0
PRT38	32	F	Software Engr.	Graduate	0	-1	0	-1	-1	0	1	1	0	0	-1	-1	-1	0	1	1	0	-1	1	-1	2	0
PRT39	37	M	Software Engr.	Graduate	1	1	1	0	0	0	1	-1	-1	-1	-1	0	0	0	-1	1	-1	0	0	0	0	0
PRT40	28	M	Software Engr.	Graduate	2	1	-2	-1	1	2	-1	0	-1	-1	-2	-1	0	-1	-1	2	-1	-1	2	1	2	-1
PRT41	35	F	Official	BS	0	-1	0	0	1	-1	-1	1	2	2	0	-2	-1	-2	-2	1	-2	-2	2	2	NA	-2
PRT42	29	M	Res. Asst.	Graduate	2	2	-1	-1	-1	2	2	-1	0	-1	-2	-2	-1	0	-1	2	-2	-2	2	2	1	0
PRT43	26	F	Res. Asst.	BS	2	2	1	-1	0	2	2	0	-1	0	-1	-2	-2	-2	-2	2	-2	-2	2	1	2	0
PRT44	26	F	Res. Asst.	Graduate	0	0	-1	-1	1	-1	-1	1	1	1	-1	-1	0	1	0	1	0	-1	1	1	1	1
PRT45	31	M	Res. Asst.	Graduate	-1	-2	-2	-1	-1	-1	-2	-1	2	0	2	-2	-2	-2	-2	2	-2	0	2	2	2	-1
PRT46	32	F	Res. Asst.	Graduate	1	-1	-2	-1	1	0	-1	1	-1	2	-1	-2	-1	0	-1	2	-1	-1	1	1	1	-1
PRT47	40	F	Elektronik M.	Graduate	1	1	1	0	1	0	0	-1	-1	1	0	-1	-1	-1	-1	0	-1	-1	1	0	2	0
PRT48	25	M	Res. Asst.	BS	2	2	1	1	-1	0	0	0	-1	-1	0	-1	1	1	-1	1	0	-1	2	1	1	0

Prt No	Age	Sex	Occ	Edu	T5 A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	T6 A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
PRT01	30	M	Academician	Graduate	0	1	0	1	-1	1	1	1	-1	0	-1	-1	-1	1	1	0	-1	1	-2	0	0	2
PRT02	32	F	Academician	PhD.	2	2	0	2	2	2	0	-2	-2	1	0	1	2	2	0	-1	-2	0	-2	0	0	2
PRT03	28	M	Student	BS	1	1	-1	-1	0	-1	-1	1	0	1	-1	1	1	1	1	-1	1	1	-1	0	-1	2
PRT04	30	M	Software Engr.	Graduate	2	1	0	1	2	0	-1	1	1	1	0	-1	1	2	1	1	1	0	-2	-1	0	2
PRT05	28	M	Res. Asst.	Graduate	1	0	-1	-1	1	0	-1	1	0	-1	-1	0	0	2	0	-1	0	2	-2	0	0	2
PRT06	25	F	Res. Asst.	Graduate	0	-1	-1	-1	2	-1	-1	1	-1	1	-1	1	1	1	0	1	1	1	-2	0	-1	2
PRT07	26	M	Res. Asst.	Graduate	1	0	-1	1	1	1	-1	2	0	0	-2	1	1	2	2	0	1	1	-2	-1	0	2
PRT08	30	F	Official	BS	1	0	0	1	1	2	2	1	-2	1	-2	0	2	0	0	-1	1	2	-2	-2	-2	2
PRT09	25	M	Res. Asst.	BS	-1	1	-1	-1	1	1	-1	1	1	0	-1	1	1	2	2	-1	1	2	-2	1	-1	2
PRT10	27	M	Official	BS	2	-1	-1	-1	1	-1	-1	1	-1	1	0	2	2	2	2	-2	2	2	-2	-2	0	0
PRT11	40	F	Official	BS	-2	0	-2	0	2	0	-2	2	2	2	-2	2	2	1	1	-1	2	2	-2	-1	0	2
PRT12	26	F	Official	BS	0	0	-1	0	1	0	-1	2	0	1	0	0	-1	1	0	-1	-1	NA	-2	-2	NA	NA
PRT13	36	F	Official	BS	0	-2	-2	-2	0	-1	-2	2	0	1	-2	2	2	2	2	2	2	2	-2	-2	0	2
PRT14	34	F	Official	BS	-1	-1	-1	-1	1	-1	-1	1	1	1	-1	2	2	2	2	0	2	2	-2	-2	-2	2
PRT15	28	F	Res. Asst.	BS	-1	1	-2	-1	1	0	-1	1	1	1	-2	-1	1	2	2	2	1	0	-2	-1	-1	2
PRT16	29	F	Res. Asst.	Graduate	0	-2	-2	-2	1	-1	-2	1	0	1	-2	2	1	0	1	0	1	1	-1	-1	-1	2
PRT17	28	F	Res. Asst.	Graduate	-2	0	-1	-1	1	-1	-1	2	1	1	-2	1	1	2	2	-1	1	2	-2	0	0	2
PRT18	28	F	Res. Asst.	Graduate	2	1	-1	1	0	1	1	-1	-2	0	0	0	-1	2	1	-1	1	2	-2	-1	-1	2
PRT19	25	F	Res. Asst.	Graduate	1	0	0	1	2	1	0	0	-1	2	-1	0	2	2	1	-1	1	2	-2	-1	-2	2
PRT20	28	M	Res. Asst.	Graduate	2	1	1	0	0	2	1	1	-2	1	-1	0	1	1	1	-1	0	2	-2	-1	-2	2
PRT21	27	M	Res. Asst.	Graduate	2	1	1	-1	1	1	-1	1	1	1	0	2	2	2	2	0	1	1	-2	-1	-1	1
PRT22	26	M	Res. Asst.	Graduate	0	-1	0	-1	-1	-1	1	-1	0	-2	-1	1	1	-2	1	0	1	1	-2	0	0	2
PRT23	29	F	Res. Asst.	Graduate	-2	-1	-1	-1	1	-1	-2	1	0	1	-2	1	0	0	1	0	1	-1	-1	-1	-1	1
PRT24	26	M	Res. Asst.	Graduate	2	1	-1	0	2	1	-2	1	-2	0	-1	1	1	2	2	0	2	0	-2	-1	-1	2
PRT25	29	F	Official	BS	2	1	0	0	1	1	-2	2	0	2	-1	0	1	1	2	-1	0	1	0	1	0	2
PRT26	29	F	Official	BS	0	0	-2	-2	2	0	-2	2	0	2	-2	2	2	2	2	2	2	2	-1	-2	2	2
PRT27	37	F	Official	BS	-1	-1	-1	-1	1	-1	-1	1	0	1	-1	1	1	1	1	0	1	1	-1	0	0	1
PRT28	39	F	Official	BS	-1	-2	-2	-2	1	-2	-2	2	1	NA	-2	2	2	2	2	-2	2	2	-2	-2	-2	2
PRT29	32	F	Official	BS	-2	-2	-2	-2	2	-2	-2	2	0	1	-2	-1	0	2	2	0	0	0	-2	1	0	2
PRT30	35	F	Official	BS	1	1	0	1	1	0	1	0	0	2	0	0	1	1	0	-1	0	0	-2	-2	-1	2
PRT31	38	F	Official	High Sch.	0	0	-1	-1	1	-1	-1	1	1	1	-2	1	1	2	1	-1	1	1	-2	0	-1	2
PRT32	28	F	Official	BS	-2	-2	-2	-2	2	-1	-1	2	-1	2	-2	2	1	2	2	-2	2	2	-2	-2	-2	2
PRT33	26	M	Official	High Sch.	1	-1	-1	0	2	1	-2	0	-1	0	-1	2	2	2	2	0	1	2	-2	-1	-2	2
PRT34	27	M	Official	BS	0	1	0	2	0	2	2	2	-2	0	-2	2	2	2	-2	-2	2	2	-2	-2	-2	2
PRT35	20	F	Official	High Sch.	0	1	-1	-2	1	0	0	1	0	2	-2	0	2	2	2	-1	2	2	2	0	2	2
PRT36	26	M	Official	BS	2	1	-1	0	1	1	-1	0	-1	1	-1	1	1	2	1	-1	0	1	-1	0	-1	2
PRT37	24	M	Software Engr.	BS	2	2	-1	1	2	2	-1	2	0	2	-1	2	2	2	2	-1	0	1	1	0	-1	2
PRT38	32	F	Software Engr.	Graduate	1	0	0	-1	1	0	-1	1	-1	1	-2	1	2	2	1	1	1	2	-1	-1	-1	2
PRT39	37	M	Software Engr.	Graduate	0	0	0	0	1	0	-1	1	-1	1	-2	-1	0	1	1	-1	1	1	-2	-1	-1	2
PRT40	28	M	Software Engr.	Graduate	0	-1	-1	0	-2	0	0	-2	0	-2	-2	-2	2	2	2	0	2	-2	-2	-2	-2	2
PRT41	35	F	Official	BS	-2	-2	-2	-2	2	-2	-2	2	2	NA	-2	1	0	1	1	-1	-1	2	-2	-2	NA	2
PRT42	29	M	Res. Asst.	Graduate	2	2	-2	-1	2	1	-1	0	-1	1	-2	-2	-1	2	2	-2	1	1	-2	1	-1	2
PRT43	26	F	Res. Asst.	BS	2	0	0	-1	2	0	-2	2	1	2	0	2	2	2	2	0	2	1	-2	-2	-1	2
PRT44	26	F	Res. Asst.	Graduate	1	1	-1	-1	2	0	-1	0	-2	2	-2	2	2	2	2	0	2	2	-2	-1	0	2
PRT45	31	M	Res. Asst.	Graduate	-2	-2	-2	0	2	-1	-2	2	2	2	-2	1	2	1	1	-2	1	2	-2	0	-1	2
PRT46	32	F	Res. Asst.	Graduate	-2	-2	-2	-2	2	-2	-2	2	2	2	-2	2	2	2	2	-2	2	2	-2	-2	-2	2
PRT47	40	F	Elektronik M.	Graduate	-2	-2	-2	-2	1	-2	-2	1	0	1	-2	-1	-1	1	0	1	-1	1	-1	-1	0	2
PRT48	25	M	Res. Asst.	BS	0	-1	-1	-1	-1	1	0	-1	0	1	-1	2	2	1	2	-1	2	2	-2	-2	-2	2

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Prt No	Age	Gender	Occupation	Education	T5											T6										
					A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
PRT01	30	M	Academician	Graduate	0	1	0	1	-1	1	1	1	-1	0	-1	-1	-1	1	1	0	-1	1	-2	0	0	2
PRT02	32	F	Academician	PhD.	2	2	0	2	2	2	0	-2	-2	1	0	1	2	2	0	-1	-2	0	-2	0	0	2
PRT03	28	M	Student	BS	1	1	-1	-1	0	-1	-1	1	0	1	-1	1	1	1	1	-1	1	1	-1	0	-1	2
PRT04	30	M	Software Engr.	Graduate	2	1	0	1	2	0	-1	1	1	1	0	-1	1	2	1	1	1	0	-2	-1	0	2
PRT05	28	M	Res. Asst.	Graduate	1	0	-1	-1	1	0	-1	1	0	-1	-1	0	0	2	0	-1	0	2	-2	0	0	2
PRT06	25	F	Res. Asst.	Graduate	0	-1	-1	-1	2	-1	-1	1	-1	1	-1	1	1	1	0	1	1	1	-2	0	-1	2
PRT07	26	M	Res. Asst.	Graduate	1	0	-1	1	1	1	-1	2	0	0	-2	1	1	2	2	0	1	1	-2	-1	0	2
PRT08	30	F	Official	BS	1	0	0	1	1	2	2	1	-2	1	-2	0	2	0	0	-1	1	2	-2	-2	-2	2
PRT09	25	M	Res. Asst.	BS	-1	1	-1	-1	1	1	-1	1	1	0	-1	1	1	2	2	-1	1	2	-2	1	-1	2
PRT10	27	M	Official	BS	2	-1	-1	-1	1	-1	-1	1	-1	1	0	2	2	2	2	-2	2	2	-2	-2	0	0
PRT11	40	F	Official	BS	-2	0	-2	0	2	0	-2	2	2	2	-2	2	2	1	1	-1	2	2	-2	-1	0	2
PRT12	26	F	Official	BS	0	0	-1	0	1	0	-1	2	0	1	0	0	-1	1	0	-1	-1	NA	-2	-2	NA	NA
PRT13	36	F	Official	BS	0	-2	-2	-2	0	-1	-2	2	0	1	-2	2	2	2	2	2	2	2	-2	-2	0	2
PRT14	34	F	Official	BS	-1	-1	-1	-1	1	-1	-1	1	1	1	-1	2	2	2	2	0	2	2	-2	-2	-2	2
PRT15	28	F	Res. Asst.	BS	-1	1	-2	-1	1	0	-1	1	1	1	-2	-1	1	2	2	2	1	0	-2	-1	-1	2
PRT16	29	F	Res. Asst.	Graduate	0	-2	-2	-2	1	-1	-2	1	0	1	-2	2	1	0	1	0	1	1	-1	-1	-1	2
PRT17	28	F	Res. Asst.	Graduate	-2	0	-1	-1	1	-1	-1	2	1	1	-2	1	1	2	2	-1	1	1	-2	0	0	2
PRT18	28	F	Res. Asst.	Graduate	2	1	-1	1	0	1	1	-1	-2	0	0	0	-1	2	1	-1	1	2	-2	-1	-1	2
PRT19	25	F	Res. Asst.	Graduate	1	0	0	1	2	1	0	0	-1	2	-1	0	2	2	1	-1	1	2	-2	-1	-2	2
PRT20	28	M	Res. Asst.	Graduate	2	1	1	0	1	1	1	1	-2	1	-1	0	1	1	1	-1	0	2	-2	-1	-2	2
PRT21	27	M	Res. Asst.	Graduate	2	1	1	-1	1	1	-1	1	1	1	0	2	2	2	2	0	1	1	-2	-1	-1	1
PRT22	26	M	Res. Asst.	Graduate	0	-1	0	-1	-1	-1	1	-1	0	-2	-1	1	1	-2	1	0	1	1	-2	0	0	2
PRT23	29	F	Res. Asst.	Graduate	-2	-1	-1	-1	1	-1	-2	1	0	1	-2	1	0	0	1	-1	0	1	-1	-1	-1	1
PRT24	26	M	Res. Asst.	Graduate	2	1	-1	0	2	1	-2	1	-2	0	-1	1	1	2	2	0	2	0	-2	-1	-1	2
PRT25	29	F	Official	BS	2	1	0	0	1	1	-2	2	0	2	-1	0	1	1	2	-1	0	1	0	1	0	2
PRT26	29	F	Official	BS	0	0	-2	-2	2	0	-2	2	0	2	-2	2	2	2	2	2	2	2	-1	-2	2	2
PRT27	37	F	Official	BS	-1	-1	-1	-1	1	-1	-1	1	0	1	-1	1	1	1	1	0	1	1	-1	0	0	1
PRT28	39	F	Official	BS	-1	-2	-2	-2	1	-2	-2	2	1	NA	-2	2	2	2	2	-2	2	2	-2	-2	-2	2
PRT29	32	F	Official	BS	-2	-2	-2	-2	2	-2	-2	2	0	1	-2	-1	0	2	2	0	0	0	-2	1	0	2
PRT30	35	F	Official	BS	1	1	0	1	1	0	1	0	0	2	0	0	1	1	0	-1	0	0	-2	-2	-1	2
PRT31	38	F	Official	High Sch.	0	0	-1	-1	1	-1	-1	1	1	1	-2	1	1	2	1	-1	1	1	-2	0	-1	2
PRT32	28	F	Official	BS	-2	-2	-2	-2	2	-1	-1	2	-1	2	-2	2	1	2	2	-2	2	2	-2	-2	-2	2
PRT33	26	M	Official	High Sch.	1	-1	-1	0	2	1	-2	0	-1	0	-1	2	2	2	2	0	1	2	-2	-1	-2	2
PRT34	27	M	Official	BS	0	1	0	2	0	2	2	2	-2	0	-2	2	2	2	-2	-2	2	2	-2	-2	-2	2
PRT35	25	F	Official	High Sch.	0	1	-1	-2	1	0	0	1	0	2	-2	0	2	2	2	-1	2	2	2	0	2	2
PRT36	26	M	Official	BS	2	1	-1	0	1	1	-1	0	-1	1	-1	1	1	2	1	-1	0	1	-1	0	-1	2
PRT37	25	M	Software Engr.	BS	2	2	-1	1	2	2	-1	2	0	2	-1	2	2	2	2	-1	0	1	1	0	-1	2
PRT38	32	F	Software Engr.	Graduate	1	0	0	-1	1	0	-1	1	-1	1	-2	1	2	2	1	1	1	2	-1	-1	-1	2
PRT39	37	M	Software Engr.	Graduate	0	0	0	0	1	0	-1	1	-1	1	-2	-1	0	1	1	-1	1	1	-2	-1	-1	2
PRT40	28	M	Software Engr.	Graduate	0	-1	-1	0	-2	0	0	-2	0	-2	-2	-2	2	2	2	0	2	-2	-2	-2	-2	2
PRT41	35	F	Official	BS	-2	-2	-2	-2	2	-2	-2	2	2	NA	-2	1	0	1	1	-1	-1	2	-2	-2	NA	2
PRT42	29	M	Res. Asst.	Graduate	2	2	-2	-1	2	1	-1	0	-1	1	-2	-2	-1	2	2	-2	1	1	-2	1	-1	2
PRT43	26	F	Res. Asst.	BS	2	0	0	-1	2	0	-2	2	1	2	0	2	2	2	2	0	2	2	-2	-1	-1	2
PRT44	26	F	Res. Asst.	Graduate	1	1	-1	-1	2	0	-1	0	-2	2	-2	2	2	2	2	0	2	2	-2	-1	0	2
PRT45	31	M	Res. Asst.	Graduate	-2	-2	-2	0	2	-1	-2	2	2	2	-2	1	2	1	1	-2	1	2	-2	0	-1	2
PRT46	32	F	Res. Asst.	Graduate	-2	-2	-2	-2	2	-2	-2	2	2	2	-2	2	2	2	2	-2	2	2	-2	-2	-2	2
PRT47	40	F	Elektronik M.	Graduate	-2	-2	-2	-2	1	-2	-2	1	0	1	-2	-1	-1	1	0	1	-1	1	-1	-1	0	2
PRT48	25	M	Res. Asst.	BS	0	-1	-1	-1	-1	1	0	-1	0	1	-1	2	2	1	2	-1	2	2	-2	-2	-2	2

Prt No	Age	Gender	Occupation	Education	T7											T8										
					A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
PRT01	30	M	Academician	Graduate	2	1	0	0	1	1	1	1	-2	-1	-1	-2	-2	0	-1	0	-1	0	1	2	2	0
PRT02	32	F	Academician	PhD.	2	2	2	2	-1	0	2	-1	-2	0	0	2	2	2	-2	2	2	-2	2	-2	2	2
PRT03	28	M	Student	BS	1	0	-1	-1	1	1	-1	0	-1	-1	-2	0	1	1	1	-1	-1	1	-1	0	-1	1
PRT04	30	M	Software Engr.	Graduate	1	2	1	2	1	2	2	-1	-2	-1	0	-2	-1	1	-2	1	-2	0	2	2	1	1
PRT05	28	M	Res. Asst.	Graduate	2	2	NA	-1	0	2	2	0	-2	-2	-1	-1	-2	1	-1	-1	-1	NA	1	1	1	NA
PRT06	25	F	Res. Asst.	Graduate	0	-1	0	-1	1	0	-1	1	-1	-1	-1	-1	-1	0	-1	1	-1	-1	2	0	2	1
PRT07	26	M	Res. Asst.	Graduate	2	2	0	-1	NA	0	0	0	-1	-1	0	0	0	0	-1	-1	-1	-1	1	1	1	2
PRT08	30	F	Official	BS	2	2	1	1	1	2	2	0	-2	0	-2	0	0	1	0	1	-1	0	2	2	2	-2
PRT09	25	M	Res. Asst.	BS	2	1	-1	-1	0	2	0	-1	-2	-1	-1	-1	0	0	-1	0	0	0	2	1	2	0
PRT10	27	M	Official	BS	2	2	-2	-2	0	-2	-2	0	0	0	0	2	-2	-2	-2	0	-2	-2	0	0	0	0
PRT11	40	F	Official	BS	2	-1	-1	0	0	1	1	2	-2	0	0	-1	0	1	0	1	-1	0	-2	2	1	0
PRT12	26	F	Official	BS	1	1	1	1	0	1	1	0	0	-1	0	0	0	1	0	1	0	0	2	1	2	0
PRT13	36	F	Official	BS	2	-2	-2	-2	-2	0	0	2	0	-2	0	1	0	0	1	1	0	0	2	1	0	2
PRT14	34	F	Official	BS	2	2	-2	-2	2	0	-2	1	-2	0	-2	-1	0	-1	-1	1	0	-2	2	1	2	-2
PRT15	28	F	Res. Asst.	BS	2	2	-1	-1	1	1	0	2	-1	0	-1	2	1	1	1	0	1	1	1	0	1	2
PRT16	29	F	Res. Asst.	Graduate	1	-1	-1	-1	0	0	-2	1	0	1	-1	-1	-2	-1	-1	0	-1	-2	2	2	2	0
PRT17	28	F	Res. Asst.	Graduate	2	2	NA	-1	0	1	1	1	-1	-1	0	1	0	-1	0	0	-1	-1	2	2	2	-1
PRT18	28	F	Res. Asst.	Graduate	2	2	1	2	0	2	2	2	-2	-1	1	2	-1	-1	-2	1	-1	-1	1	2	1	-1
PRT19	25	F	Res. Asst.	Graduate	2	2	0	0	2	1	0	0	-2	0	-1	-1	-1	0	-2	1	-2	-1	2	2	1	2
PRT20	28	M	Res. Asst.	Graduate	2	2	1	1	0	1	2	-1	-2	-1	-1	1	1	0	0	0	0	0	1	1	1	0
PRT21	27	M	Res. Asst.	Graduate	2	2	-1	-1	1	-1	-1	1	-2	1	-2	0	-1	1	-1	0	-1	-1	1	1	1	-1
PRT22	26	M	Res. Asst.	Graduate	2	1	0	0	0	0	0	1	-1	1	0	0	-2	-1	-1	1	-2	0	2	1	1	-1
PRT23	29	F	Res. Asst.	Graduate	1	NA	1	0	0	-1	-1	0	-1	0	-1	-2	-1	1	0	0	-1	-1	0	0	0	0
PRT24	26	M	Res. Asst.	Graduate	1	1	-1	0	1	1	-1	-1	-1	0	-1	-1	-1	-1	-2	1	1	-1	2	1	1	-1
PRT25	29	F	Official	BS	2	2	0	-1	1	1	-2	1	-1	1	-1	-1	-2	0	-1	0	-1	0	2	1	0	0
PRT26	29	F	Official	BS	2	2	-2	-2	2	0	-2	0	-2	0	-2	-2	0	2	-2	0	-2	-2	2	2	2	0
PRT27	37	F	Official	BS	1	-1	-1	-1	1	NA	0	2	0	1	-2	-1	0	0	0	1	-1	-1	2	2	2	0
PRT28	39	F	Official	BS	0	-2	-2	-2	NA	0	-2	NA	0	NA	-2	-2	-2	0	0	2	-2	-2	2	2	NA	-2
PRT29	32	F	Official	BS	0	1	-2	-2	0	-2	-2	2	0	0	-2	-2	-2	-2	-2	2	-2	-2	2	0	2	-2
PRT30	35	F	Official	BS	0	1	0	0	0	0	0	-2	0	0	0	0	0	0	0	0	0	0	0	0	0	-1
PRT31	38	F	Official	High Sch.	0	-1	-2	-2	1	-1	0	1	1	0	-1	-1	-2	1	-1	-2	-2	NA	2	1	2	0
PRT32	28	F	Official	BS	1	1	-2	-2	2	-1	-2	2	-2	-1	-2	-2	-2	-1	-2	2	-2	-2	2	2	0	2
PRT33	26	M	Official	High Sch.	0	1	0	0	1	1	0	0	1	1	-1	-2	-1	-1	-1	0	-2	-2	2	2	1	-2
PRT34	27	M	Official	BS	2	2	2	2	0	2	2	-2	-2	-2	0	-2	-2	-2	-2	-2	-2	-2	2	2	2	-2
PRT35	25	F	Official	High Sch.	2	2	0	0	2	0	0	2	0	2	-2	2	0	2	-2	2	-1	-2	-2	2	2	0
PRT36	26	M	Official	BS	2	2	1	-1	1	0	1	1	-1	-1	-1	-1	0	-1	-2	0	-1	0	1	2	0	-1
PRT37	25	M	Software Engr.	BS	2	2	-2	2	2	2	0	-1	-2	1	-2	1	1	2	2	1	0	0	1	0	1	1
PRT38	32	F	Software Engr.	Graduate	2	2	0	0	0	2	1	1	-2	-1	0	-2	-1	1	0	0	-1	0	2	2	1	1
PRT39	37	M	Software Engr.	Graduate	1	1	1	1	1	1	-1	1	-1	1	-2	0	-1	0	-1	1	-1	0	1	0	0	0
PRT40	28	M	Software Engr.	Graduate	2	2	-2	-2	2	1	-2	-2	-2	0	-2	-2	-1	-1	0	2	-1	-1	2	1	2	0
PRT41	35	F	Official	BS	2	2	2	-2	2	1	-2	2	1	1	0	-2	-2	0	0	1	-1	-2	2	2	NA	1
PRT42	29	M	Res. Asst.	Graduate	2	2	1	1	1	1	-1	0	-1	0	-1	-2	1	1	1	1	0	-1	0	0	-1	1
PRT43	26	F	Res. Asst.	BS	2	2	1	0	0	2	2	0	-2	-2	0	0	-1	2	1	1	-2	-2	2	2	2	0
PRT44	26	F	Res. Asst.	Graduate	2	2	0	0	0	2	2	0	-2	0	-2	-2	0	2	0	1	-2	-1	2	2	2	2
PRT45	31	M	Res. Asst.	Graduate	2	2	-1	0	2	2	-2	2	-2	-2	-2	-2	-2	-2	-2	2	-2	-2	2	2	2	-1
PRT46	32	F	Res. Asst.	Graduate	2	2	-2	-2	2	2	2	2	2	1	-2	2	1	0	0	1	1	1	0	-1	0	2
PRT47	40	F	Elektronik M.	Graduate	2	-1	0	-2	0	1	-1	0	-1	0	-2	-2	-2	-1	-1	-1	-1	-1	2	2	2	0
PRT48	25	M	Res. Asst.	BS	2	1	-1	-1	1	0	1	0	-1	-1	-1	0	-1	-1	-1	1	-1	0	2	2	1	-1

APPENDIX E

ANOVA AND TUKEY'S STUDENTIZED RANGE TEST FOR EACH ADJECTIVE PAIR

APPENDIX E-1

Analysis of Adjective Pair 1 (Traditional - Modern)

```
                         The SAS System
                Adjective Pair 1 (Traditional - Modern)
                         The GLM Procedure
                       Class Level Information

            Class        Levels    Values
            GENDER          2       F M
            AGE_GRP         3       AG01 AG02 AG03
            OCC             5       OCC01 OCC02 OCC03 OCC04 OCC05
            EDU             3       EDU01 EDU02 EDU03
            PHN             8       T1 T2 T3 T4 T5 T6 T7 T8

                   Number of observations    384
```

Dependent Variable: A01

```
                                Sum of
         Source              DF    Squares      Mean Square   F Value   Pr > F
         Model               39  302.7816381     7.7636317     6.39    <.0001
         Error              344  418.1766952     1.2156299
         Corrected Total    383  720.9583333

              R-Square     Coeff Var    Root MSE    A01 Mean
              0.419971     173.5170     1.102556    0.635417

         Source              DF    Type I SS    Mean Square   F Value   Pr > F
         GENDER               1    3.2190476     3.2190476     2.65    0.1046
         AGE_GRP              2    8.3373127     4.1686563     3.43    0.0335
         OCC                  4    5.7023482     1.4255871     1.17    0.3226
         EDU                  2    5.4515991     2.7257996     2.24    0.1078
         PHN                  7  241.0000000    34.4285714    28.32    <.0001
         GENDER*AGE_GRP       2    1.9767013     0.9883506     0.81    0.4444
         GENDER*PHN           7   23.2107143     3.3158163     2.73    0.0091
         AGE_GRP*PHN         14   13.8839149     0.9917082     0.82    0.6519


                 Tukey's Studentized Range (HSD) Test for A01

            Alpha                                    0.05
            Error Degrees of Freedom                  344
            Error Mean Square                     1.21563
            Critical Value of Studentized Range   2.78160
            Minimum Significant Difference         0.2245
            Harmonic Mean of Cell Sizes          186.6667


         Means with the same letter are not significantly different.

         Tukey Grouping         Mean      N    GENDER

                        A      0.7438    160    M
                        A
                        A      0.5580    224    F


         Tukey Grouping         Mean      N    PHN
                        A      1.5625     48    T7
                        A
                  B     A      1.4167     48    T2
                  B     A
                  B     A      1.1250     48    T1
                  B     A
                  B     A      1.1250     48    T3
                  B
                  B     C      0.7708     48    T6
                        C
                        C      0.2083     48    T5

                        D     -0.5417     48    T4
                        D
                        D     -0.5833     48    T8
```

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APPENDIX E-2

Analysis of Adjective Pair 2 (Boring - Interesting)

```
                              The SAS System

                      Adjective Pair 2 (Boring-Interesting)
                              The GLM Procedure
                            Class Level Information

                 Class       Levels    Values
                 GENDER         2      F M
                 AGE_GRP        3      AG01 AG02 AG03
                 OCC            5      OCC01 OCC02 OCC03 OCC04 OCC05
                 EDU            3      EDU01 EDU02 EDU03
                 PHN            8      T1 T2 T3 T4 T5 T6 T7 T8

                      Number of observations    384
```

Dependent Variable: A02

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	39	289.5078804	7.4232790	6.53	<.0001
Error	344	391.3436821	1.1376270		
Corrected Total	383	680.8515625			

R-Square	Coeff Var	Root MSE	A02 Mean
0.425214	239.5163	1.066596	0.445313

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	5.5453125	5.5453125	4.87	0.0279
AGE_GRP	2	10.8671406	5.4335703	4.78	0.0090
OCC	4	9.2802129	2.3200532	2.04	0.0885
EDU	2	12.9353123	6.4676562	5.69	0.0037
PHN	7	209.4973958	29.9281994	26.31	<.0001
GENDER*AGE_GRP	2	3.2612504	1.6306252	1.43	0.2399
GENDER*PHN	7	10.9445685	1.5635098	1.37	0.2151
AGE_GRP*PHN	14	27.1766874	1.9411920	1.71	0.0527

```
                   Tukey's Studentized Range (HSD) Test for A02

              Alpha                                   0.05
              Error Degrees of Freedom                 344
              Error Mean Square                    1.137627
              Critical Value of Studentized Range  2.78160
              Minimum Significant Difference        0.2172
              Harmonic Mean of Cell Sizes         186.6667


          Means with the same letter are not significantly different.

          Tukey Grouping        Mean      N    GENDER
                       A        0.5875   160    M

                       B        0.3438   224    F


          Tukey Grouping        Mean      N    PHN

                       A        1.1667    48    T7
                       A
                       A        1.1250    48    T6
                       A
                       A        1.0833    48    T2
                       A
                       A        0.8750    48    T1
                       A
                       A        0.7292    48    T3

                       B       -0.1250    48    T5
                       B
                       B       -0.6042    48    T4
                       B
                       B       -0.6875    48    T8
```

APPENDIX E-3

Analysis of Adjective Pair 3 (Hard - Soft)

```
                        The SAS System
                   Adjective Pair 3 (Hard-Soft)

                       The GLM Procedure
                    Class Level Information
         Class      Levels    Values
         GENDER        2      F M
         AGE_GRP       3      AG01 AG02 AG03
         OCC           5      OCC01 OCC02 OCC03 OCC04 OCC05
         EDU           3      EDU01 EDU02 EDU03
         PHN           8      T1 T2 T3 T4 T5 T6 T7 T8

                   Number of observations   384
```

Dependent Variable: A03

```
                             Sum of
Source                 DF    Squares     Mean Square   F Value   Pr > F
Model                  39  348.0405095    8.9241156      9.46    <.0001
Error                 344  324.4594905    0.9431962
Corrected Total       383  672.5000000

           R-Square    Coeff Var    Root MSE    A03 Mean
           0.517532    1553.893     0.971183    0.062500

Source                 DF    Type I SS    Mean Square   F Value   Pr > F
GENDER                  1    0.0964286     0.0964286      0.10    0.7494
AGE_GRP                 2    0.5334296     0.2667148      0.28    0.7539
OCC                     4   11.8227971     2.9556993      3.13    0.0149
EDU                     2    0.4146404     0.2073202      0.22    0.8028
PHN                     7  320.8750000    45.8392857     48.60    <.0001
GENDER*AGE_GRP          2    1.2079360     0.6039680      0.64    0.5277
GENDER*PHN              7    8.0857143     1.1551020      1.22    0.2883
AGE_GRP*PHN            14    5.0045635     0.3574688      0.38    0.9802

                Tukey's Studentized Range (HSD) Test for A03

          Alpha                                       0.05
          Error Degrees of Freedom                     344
          Error Mean Square                       0.943196
          Critical Value of Studentized Range     2.78160
          Minimum Significant Difference           0.1977
          Harmonic Mean of Cell Sizes           186.6667

       Means with the same letter are not significantly different.

       Tukey Grouping        Mean      N    GENDER

                  A        0.08125    160    M
                  A
                  A        0.04911    224    F


       Tukey Grouping         Mean      N    PHN

                  A         1.5417     48    T2
                  A
                  A         1.5000     48    T6

                  B         0.0833     48    T8
                  B
                  B         0.0208     48    T3
                  B
              C   B        -0.3333     48    T7
              C   B
              C   B    D   -0.4167     48    T4
              C        D
              C        D   -0.9375     48    T5
                       D
                       D   -0.9583     48    T1
```

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APPENDIX E-4

Analysis of Adjective Pair 4 (Cold - Hot)

```
                              The SAS System
                          Adjective Pair 4 (Cold-Hot)

                              The GLM Procedure

                          Class Level Information
                  Class      Levels    Values
                  GENDER        2      F M
                  AGE_GRP       3      AG01 AG02 AG03
                  OCC           5      OCC01 OCC02 OCC03 OCC04 OCC05
                  EDU           3      EDU01 EDU02 EDU03
                  PHN           8      T1 T2 T3 T4 T5 T6 T7 T8

                          Number of observations    384
Dependent Variable: A04
                                      Sum of
        Source                 DF      Squares    Mean Square   F Value   Pr > F
        Model                  39   285.2079049     7.3130232      6.88   <.0001
        Error                 344   365.7504285     1.0632280
        Corrected Total       383   650.9583333

                   R-Square     Coeff Var     Root MSE      A04 Mean
                   0.438135    -1979.769      1.031129     -0.052083

        Source                 DF    Type I SS    Mean Square   F Value   Pr > F
        GENDER                  1    1.9047619      1.9047619      1.79   0.1816
        AGE_GRP                 2    0.3200533      0.1600267      0.15   0.8603
        OCC                     4    6.9450879      1.7362720      1.63   0.1654
        EDU                     2    1.9610573      0.9805287      0.92   0.3986
        PHN                     7  242.6250000     34.6607143     32.60   <.0001
        GENDER*AGE_GRP          2    0.8582094      0.4291047      0.40   0.6682
        GENDER*PHN              7   15.0000000      2.1428571      2.02   0.0525
        AGE_GRP*PHN            14   15.5937351      1.1138382      1.05   0.4052

                  Tukey's Studentized Range (HSD) Test for A04

                  Alpha                                       0.05
                  Error Degrees of Freedom                     344
                  Error Mean Square                       1.063228
                  Critical Value of Studentized Range     2.78160
                  Minimum Significant Difference            0.2099
                  Harmonic Mean of Cell Sizes             186.6667

            Means with the same letter are not significantly different.

            Tukey Grouping        Mean      N    GENDER

                          A      0.0313    160    M
                          A
                          A     -0.1116    224    F

            Tukey Grouping        Mean      N    PHN

                          A      1.3125     48    T2
                          A
                          A      1.2708     48    T6

                          B     -0.1042     48    T3
                          B
                          B     -0.4583     48    T7
                          B
                          B     -0.5000     48    T1
                          B
                          B     -0.5417     48    T5
                          B
                          B     -0.6875     48    T4
                          B
                          B     -0.7083     48    T8
```

APPENDIX E-5

Analysis of Adjective Pair 5 (Youthful- Mature)

```
                            The SAS System
                  Adjective Pair 5 (Youthful- Mature)
                         The GLM Procedure
                       Class Level Information
             Class         Levels    Values
             GENDER           2      F M
             AGE_GRP          3      AG01 AG02 AG03
             OCC              5      OCC01 OCC02 OCC03 OCC04 OCC05
             EDU              3      EDU01 EDU02 EDU03
             PHN              8      T1 T2 T3 T4 T5 T6 T7 T8


                     Number of observations    384

Dependent Variable: A05

                                     Sum of
        Source              DF       Squares    Mean Square   F Value   Pr > F
        Model               39    201.5880050     5.1689232      6.14   <.0001
        Error              344    289.3703283     0.8411928
        Corrected Total    383    490.9583333

                R-Square     Coeff Var     Root MSE      A05 Mean
                0.410601     166.1281      0.917166      0.552083

        Source              DF      Type I SS    Mean Square   F Value   Pr > F
        GENDER               1     9.8583333      9.8583333     11.72   0.0007
        AGE_GRP              2     5.7918813      2.8959406      3.44    0.0331
        OCC                  4     4.3272282      1.0818070      1.29    0.2751
        EDU                  2     2.6025091      1.3012546      1.55    0.2144
        PHN                  7   165.7916667     23.6845238     28.16   <.0001
        GENDER*AGE_GRP       2     0.1825286      0.0912643      0.11    0.8972
        GENDER*PHN           7     6.7797619      0.9685374      1.15    0.3304
        AGE_GRP*PHN         14     6.2540960      0.4467211      0.53    0.9145

                 Tukey's Studentized Range (HSD) Test for A05

             Alpha                                    0.05
             Error Degrees of Freedom                  344
             Error Mean Square                    0.841193
             Critical Value of Studentized Range   2.78160
             Minimum Significant Difference         0.1867
             Harmonic Mean of Cell Sizes          186.6667

         Means with the same letter are not significantly different.

         Tukey Grouping        Mean     N    GENDER

                        A     0.68750   224    F

                        B     0.36250   160    M

          Tukey Grouping         Mean     N    PHN

                        A      1.5417    48    T1
                        A
                     B  A      1.1042    48    T4
                     B  A
                     B  A      1.0625    48    T5
                     B
                     B  C      0.7292    48    T7
                     B  C
                     B  C      0.5417    48    T8
                        C
                     D  C      0.1667    48    T3
                     D
                     D  E     -0.2083    48    T2
                        E
                        E     -0.5208    48    T6
```

APPENDIX E-6

Analysis of Adjective Pair 6 (Inert - Energetic)

```
                          The SAS System
                 Adjective Pair 6 (Inert - Energetic)
                        The GLM Procedure
                     Class Level Information
              Class       Levels    Values
              GENDER         2      F M
              AGE_GRP        3      AG01 AG02 AG03
              OCC            5      OCC01 OCC02 OCC03 OCC04 OCC05
              EDU            3      EDU01 EDU02 EDU03
              PHN            8      T1 T2 T3 T4 T5 T6 T7 T8
Dependent Variable: A06
```

```
                               Sum of
    Source                DF   Squares      Mean Square   F Value   Pr > F
    Model                 39   255.4890857    6.5510022     6.43    <.0001
    Error                344   350.6671643    1.0193813
    Corrected Total      383   606.1562500

              R-Square     Coeff Var     Root MSE     A06 Mean
              0.421490     340.0907      1.009644     0.296875

    Source                DF    Type I SS    Mean Square   F Value   Pr > F
    GENDER                 1    1.1812500     1.1812500     1.16     0.2825
    AGE_GRP                2    9.1439914     4.5719957     4.49     0.0119
    OCC                    4    6.7431695     1.6857924     1.65     0.1604
    EDU                    2    6.3976279     3.1988140     3.14     0.0446
    PHN                    7  196.8229167    28.1175595    27.58    <.0001
    GENDER*AGE_GRP         2    1.2220813     0.6110406     0.60     0.5497
    GENDER*PHN             7   19.5949405     2.7992772     2.75     0.0087
    AGE_GRP*PHN           14   14.3831085     1.0273649     1.01     0.4447
```

```
              Tukey's Studentized Range (HSD) Test for A06

         Alpha                                   0.05
         Error Degrees of Freedom                 344
         Error Mean Square                   1.019381
         Critical Value of Studentized Range 2.78160
         Minimum Significant Difference       0.2056
         Harmonic Mean of Cell Sizes       186.6667

      Means with the same letter are not significantly different.

      Tukey Grouping        Mean      N    GENDER

                      A    0.3625    160    M
                      A
                      A    0.2500    224    F

      Tukey Grouping        Mean      N    PHN

                      A    1.1042     48    T2
                      A
                      A    0.9167     48    T6
                      A
                      A    0.7083     48    T1
                      A
                      A    0.6875     48    T7
                      A
                      A    0.6250     48    T3

                      B   -0.0208     48    T5

                      C   -0.7083     48    T4
                      C
                      C   -0.9375     48    T8
```

APPENDIX E-7

Analysis of Adjective Pair 7 (Serious - Humorous)

```
                              The SAS System
                      Adjective Pair 7 (Serious-Humorous)
                            The GLM Procedure
                         Class Level Information

                 Class       Levels    Values
                 GENDER           2    F M
                 AGE_GRP          3    AG01 AG02 AG03
                 OCC              5    OCC01 OCC02 OCC03 OCC04 OCC05
                 EDU              3    EDU01 EDU02 EDU03
                 PHN              8    T1 T2 T3 T4 T5 T6 T7 T8

                      Number of observations    384
```

Dependent Variable: A07

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	39	334.9687555	8.5889424	8.05	<.0001
Error	344	366.8411403	1.0663987		
Corrected Total	383	701.8098958			

R-Square	Coeff Var	Root MSE	A07 Mean
0.477293	-1132.982	1.032666	-0.091146

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	1.2000744	1.2000744	1.13	0.2895
AGE_GRP	2	0.5431488	0.2715744	0.25	0.7753
OCC	4	0.3578761	0.0894690	0.08	0.9873
EDU	2	0.4046214	0.2023107	0.19	0.8273
PHN	7	309.3723958	44.1960565	41.44	<.0001
GENDER*AGE_GRP	2	0.2320798	0.1160399	0.11	0.8969
GENDER*PHN	7	5.2302827	0.7471832	0.70	0.6715
AGE_GRP*PHN	14	17.6282764	1.2591626	1.18	0.2881

```
                  Tukey's Studentized Range (HSD) Test for A07

              Alpha                                    0.05
              Error Degrees of Freedom                  344
              Error Mean Square                    1.066399
              Critical Value of Studentized Range   2.78160
              Minimum Significant Difference         0.2102
              Harmonic Mean of Cell Sizes         186.6667

          Means with the same letter are not significantly different.
```

Tukey Grouping	Mean	N	GENDER
A	-0.0250	160	M
A			
A	-0.1384	224	F

Tukey Grouping	Mean	N	PHN
A	1.2917	48	T2
A			
A	1.2708	48	T6
B	0.2917	48	T3
B			
B	-0.0625	48	T7
C	-0.7708	48	T1
C			
C	-0.8333	48	T8
C			
C	-0.8750	48	T5
C			
C	-1.0417	48	T4

APPENDIX E-8

Analysis of Adjective Pair 8 (Ornate - Plane)

```
                              The SAS System
                       Adjective Pair 8 (Ornate - Plane)
                             The GLM Procedure
                          Class Level Information

                 Class        Levels    Values
                 GENDER          2       F M
                 AGE_GRP         3       AG01 AG02 AG03
                 OCC             5       OCC01 OCC02 OCC03 OCC04 OCC05
                 EDU             3       EDU01 EDU02 EDU03
                 PHN             8       T1 T2 T3 T4 T5 T6 T7 T8

                          Number of observations    384
```

Dependent Variable: A08

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	39	406.7803056	10.4302642	10.45	<.0001
Error	344	343.5087569	0.9985720		
Corrected Total	383	750.2890625			

R-Square	Coeff Var	Root MSE	A08 Mean
0.542165	365.4531	0.999286	0.273438

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	16.0881696	16.0881696	16.11	<.0001
AGE_GRP	2	0.0941332	0.0470666	0.05	0.9540
OCC	4	4.5763090	1.1440772	1.15	0.3348
EDU	2	0.7774502	0.3887251	0.39	0.6778
PHN	7	357.8098958	51.1156994	51.19	<.0001
GENDER*AGE_GRP	2	7.3659054	3.6829527	3.69	0.0260
GENDER*PHN	7	6.5409970	0.9344281	0.94	0.4788
AGE_GRP*PHN	14	13.5274452	0.9662461	0.97	0.4863

```
                  Tukey's Studentized Range (HSD) Test for A08

             Alpha                                     0.05
             Error Degrees of Freedom                   344
             Error Mean Square                      0.998572
             Critical Value of Studentized Range    2.78160
             Minimum Significant Difference          0.2034
             Harmonic Mean of Cell Sizes           186.6667

         Means with the same letter are not significantly different.

         Tukey Grouping        Mean      N    GENDER

                          A    0.4464    224   F

                          B    0.0313    160   M

         Tukey Grouping         Mean     N    PHN

                      A         1.3542    48    T8
                      A
                  B   A         1.2083    48    T4
                  B   A
                  B   A    C    0.9583    48    T5
                  B        C
                  B        C    0.6458    48    T1
                           C
                           C    0.5208    48    T7

                      D        -0.2292    48    T3
                      D
                      D        -0.6250    48    T2

                      E        -1.6458    48    T6
```

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APPENDIX E-9

Analysis of Adjective Pair 9 (Proud - Humble)

```
                              The SAS System
                       Adjective Pair 9 (Proud - Humble)
                            The GLM Procedure
                          Class Level Information

                  Class       Levels    Values
                  GENDER         2      F M
                  AGE_GRP        3      AG01 AG02 AG03
                  OCC            5      OCC01 OCC02 OCC03 OCC04 OCC05
                  EDU            3      EDU01 EDU02 EDU03
                  PHN            8      T1 T2 T3 T4 T5 T6 T7 T8

                       Number of observations    384
```

Dependent Variable: A09

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	39	269.7445189	6.9165261	7.11	<.0001
Error	344	334.7450644	0.9730961		
Corrected Total	383	604.4895833			

R-Square	Coeff Var	Root MSE	A09 Mean
0.446235	-344.3629	0.986456	-0.286458

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.8002976	2.8002976	2.88	0.0907
AGE_GRP	2	3.5755518	1.7877759	1.84	0.1608
OCC	4	12.3300095	3.0825024	3.17	0.0141
EDU	2	7.7233050	3.8616525	3.97	0.0198
PHN	7	215.1145833	30.7306548	31.58	<.0001
GENDER*AGE_GRP	2	3.9264661	1.9632331	2.02	0.1346
GENDER*PHN	7	9.0318452	1.2902636	1.33	0.2369
AGE_GRP*PHN	14	15.2424603	1.0887472	1.12	0.3395

```
                 Tukey's Studentized Range (HSD) Test for A09

           Alpha                                         0.05
           Error Degrees of Freedom                       344
           Error Mean Square                         0.973096
           Critical Value of Studentized Range       2.78160
           Minimum Significant Difference             0.2008
           Harmonic Mean of Cell Sizes               186.6667

       Means with the same letter are not significantly different.

       Tukey Grouping         Mean      N    GENDER

                      A      -0.2143    224    F
                      A
                      A      -0.3875    160    M

       Tukey Grouping          Mean      N    PHN

                      A       1.1458    48    T8
                      A
                      A       0.6458    48    T4

                      B      -0.1458    48    T5
                      B
                  C   B      -0.3750    48    T3
                  C   B
                  C   B   D  -0.6875    48    T2
                  C       D
                  C       D  -0.8750    48    T6
                  C       D
                  C       D  -0.9375    48    T1
                          D
                          D  -1.0625    48    T7
```

APPENDIX E-10

Analysis of Adjective Pair 10 (Insane - Sane)

```
                         The SAS System
                  Adjective Pair 10 (Insane - Sane)
                       The GLM Procedure
                     Class Level Information
          Class        Levels    Values
          GENDER          2       F M
          AGE_GRP         3       AG01 AG02 AG03
          OCC             5       OCC01 OCC02 OCC03 OCC04 OCC05
          EDU             3       EDU01 EDU02 EDU03
          PHN             8       T1 T2 T3 T4 T5 T6 T7 T8

                   Number of observations    384
Dependent Variable: A10
```

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	39	241.0548710	6.1808941	7.54	<.0001
Error	344	281.9425248	0.8196004		
Corrected Total	383	522.9973958			

R-Square	Coeff Var	Root MSE	A10 Mean
0.460910	273.7339	0.905318	0.330729

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	24.6000744	24.6000744	30.01	<.0001
AGE_GRP	2	2.2257668	1.1128834	1.36	0.2586
OCC	4	2.1400436	0.5350109	0.65	0.6253
EDU	2	0.0872848	0.0436424	0.05	0.9482
PHN	7	194.8515625	27.8359375	33.96	<.0001
GENDER*AGE_GRP	2	0.2269041	0.1134520	0.14	0.8708
GENDER*PHN	7	5.0243304	0.7177615	0.88	0.5258
AGE_GRP*PHN	14	11.8989045	0.8499217	1.04	0.4156

```
                Tukey's Studentized Range (HSD) Test for A10

          Alpha                                   0.05
          Error Degrees of Freedom                 344
          Error Mean Square                     0.8196
          Critical Value of Studentized Range  2.78160
          Minimum Significant Difference        0.1843
          Harmonic Mean of Cell Sizes         186.6667

        Means with the same letter are not significantly different.
```

Tukey Grouping		Mean	N	GENDER
A		0.54464	224	F
B		0.03125	160	M

Tukey Grouping		Mean	N	PHN
	A	1.2708	48	T4
	A			
	A	1.1458	48	T8
	A			
B	A	0.9792	48	T5
B				
B		0.5625	48	T1
	C	-0.0833	48	T2
	C			
	C	-0.1875	48	T3
	C			
D	C	-0.2500	48	T7
D				
D		-0.7917	48	T6

APPENDIX E-11

Analysis of Adjective Pair 11 (Masculine - Feminine)

```
                        The SAS System
              Adjective Pair 11 (Masculine - Feminine)
                       The GLM Procedure
                     Class Level Information
         Class          Levels    Values
         GENDER            2     F M
         AGE_GRP           3     AG01 AG02 AG03
         OCC               5     OCC01 OCC02 OCC03 OCC04 OCC05
         EDU               3     EDU01 EDU02 EDU03
         PHN               8     T1 T2 T3 T4 T5 T6 T7 T8

                 Number of observations    384
```

Dependent Variable: A11

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	39	510.0082393	13.0771343	17.04	<.0001
Error	344	263.9500941	0.7672968		
Corrected Total	383	773.9583333			

R-Square	Coeff Var	Root MSE	A11 Mean
0.658961	-494.6568	0.875955	-0.177083

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.4297619	0.4297619	0.56	0.4547
AGE_GRP	2	1.2173530	0.6086765	0.79	0.4532
OCC	4	4.9830697	1.2457674	1.62	0.1678
EDU	2	0.5557028	0.2778514	0.36	0.6965
PHN	7	490.4166667	70.0595238	91.31	<.0001
GENDER*AGE_GRP	2	1.6465650	0.8232825	1.07	0.3431
GENDER*PHN	7	5.0690476	0.7241497	0.94	0.4727
AGE_GRP*PHN	14	5.6900726	0.4064338	0.53	0.9153

```
                Tukey's Studentized Range (HSD) Test for A11

         Alpha                                      0.05
         Error Degrees of Freedom                    344
         Error Mean Square                      0.767297
         Critical Value of Studentized Range    2.78160
         Minimum Significant Difference           0.1783
         Harmonic Mean of Cell Sizes            186.6667


        Means with the same letter are not significantly different.


        Tukey Grouping          Mean      N    GENDER

                      A      -0.13750    160    M
                      A
                      A      -0.20536    224    F

        Tukey Grouping          Mean      N     PHN

                      A       1.8958     48     T6
                      A
                      A       1.3750     48     T2

                      B       0.0417     48     T8
                      B
                 C    B      -0.4167     48     T3
                 C
                 C    D      -0.7917     48     T4
                      D
                      D      -1.0208     48     T7
                      D
                      D      -1.1667     48     T1
                      D
                      D      -1.3333     48     T5
```

APPENDIX F

ANOVA AND TUKEY'S STUDENTIZED RANGE TEST FOR EACH MOBILE PHONE OVER EVERY ADJECTIVE PAIR

APPENDIX F-1

Analysis of Mobile Phone 1

MOBILE PHONE 1 - ANOVA and TUKEY's Studentized Range Test

The GLM Procedure

Class Level Information

Class	Levels	Values
GENDER	2	F (Female) M (Male)
AGE	18	20 24 25 26 27 28 29 30 31 32 34 35 36 37 38 39 40 41
OCC	5	OCC01 OCC02 OCC03 OCC04 OCC05

```
                                                OCC01 - Academician
                                                OCC02 - Research Assistants
                                                OCC03 - Software Engineer
                                                OCC04 - Student
                                                OCC05 - Official
```

| EDU | 3 | EDU01 (Bachelor) EDU02 (Graduate - MSc) EDU03 (PhD) |

Number of observations   48

MOBILE PHONE 1 - Adjective Pair 1 (Traditional - Modern)

The GLM Procedure

Dependent Variable: A01

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	39.75017886	1.65625745	1.62	0.1255
Error	23	23.49982114	1.02173135		
Corrected Total	47	63.25000000			

R-Square	Coeff Var	Root MSE	A01 Mean
0.628461	89.84954	1.010807	1.125000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	4.82142857	4.82142857	4.72	0.0404
AGE	17	29.02114147	1.70712597	1.67	0.1247
OCC	4	3.15375354	0.78843838	0.77	0.5548
EDU	2	2.75385529	1.37692765	1.35	0.2796

Tukey's Studentized Range (HSD) Test for A01

```
Alpha                                      0.05
Error Degrees of Freedom                     23
Error Mean Square                      1.021731
Critical Value of Studentized Range    2.92553
Minimum Significant Difference           0.6122
Harmonic Mean of Cell Sizes           23.33333
```

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.5000	20	M
B	0.8571	28	F

99

```
                         MOBILE PHONE 1 - Adjective Pair 2 (Boring - Interesting)

                                     The GLM Procedure

Dependent Variable: A02

                                            Sum of
          Source                   DF       Squares      Mean Square    F Value    Pr > F
          Model                    24    42.09050339      1.75377097       1.49    0.1733
          Error                    23    27.15949661      1.18084768
          Corrected Total          47    69.25000000

                      R-Square     Coeff Var      Root MSE      A02 Mean
                      0.607805     124.1906       1.086668      0.875000

          Source                   DF      Type I SS     Mean Square    F Value    Pr > F

          GENDER                    1     3.62142857      3.62142857       3.07    0.0932
          AGE                      17    29.72195348      1.74835020       1.48    0.1880
          OCC                       4     8.33384321      2.08346080       1.76    0.1705
          EDU                       2     0.41327812      0.20663906       0.17    0.8406

                         Tukey's Studentized Range (HSD) Test for A02

                         Alpha                                    0.05
                         Error Degrees of Freedom                   23
                         Error Mean Square                    1.180848
                         Critical Value of Studentized Range  2.92553
                         Minimum Significant Difference         0.6581
                         Harmonic Mean of Cell Sizes          23.33333

                 Means with the same letter are not significantly different.

                    Tukey Grouping         Mean      N    SEX

                           A             1.2000      20    M
                           A
                           A             0.6429      28    F


                         MOBILE PHONE 1 - Adjective Pair 3 (Hard - Soft)

                                     The GLM Procedure

Dependent Variable: A03

                                            Sum of
          Source                   DF       Squares      Mean Square    F Value    Pr > F
          Model                    24    22.31638915      0.92984955       0.91    0.5945
          Error                    23    23.60027752      1.02609902
          Corrected Total          47    45.91666667

                      R-Square     Coeff Var      Root MSE      A03 Mean
                      0.486019    -105.7007       1.012965     -0.958333

          Source                   DF      Type I SS     Mean Square    F Value    Pr > F

          GENDER                    1     0.40238095      0.40238095       0.39    0.5373
          AGE                      17    18.11634621      1.06566742       1.04    0.4580
          OCC                       4     3.27428569      0.81857142       0.80    0.5389
          EDU                       2     0.52337630      0.26168815       0.26    0.7771

                         Tukey's Studentized Range (HSD) Test for A03

                         Alpha                                    0.05
                         Error Degrees of Freedom                   23
                         Error Mean Square                    1.026099
                         Critical Value of Studentized Range  2.92553
                         Minimum Significant Difference         0.6135
                         Harmonic Mean of Cell Sizes          23.33333

                 Means with the same letter are not significantly different.

                    Tukey Grouping         Mean      N    SEX

                           A            -0.8500      20    M
                           A
                           A            -1.0357      28    F
```

```
                          MOBILE PHONE 1 - Adjective Pair 4 (Cold - Hot)

Dependent Variable: A04
                                             Sum of
                   Source                DF      Squares    Mean Square   F Value   Pr > F
                   Model                 24  38.43270365     1.60136265      1.34   0.2452
                   Error                 23  27.56729635     1.19857810
                   Corrected Total       47  66.00000000

                          R-Square     Coeff Var      Root MSE     A04 Mean
                          0.582314     -218.9592      1.094796     -0.500000

                   Source                DF    Type I SS    Mean Square   F Value   Pr > F
                   GENDER                 1   1.37142857     1.37142857      1.14   0.2959
                   AGE                   17  29.13988893     1.71411111      1.43   0.2093
                   OCC                    4   2.35690083     0.58922521      0.49   0.7419
                   EDU                    2   5.56448532     2.78224266      2.32   0.1207

                            Tukey's Studentized Range (HSD) Test for A04

                       Alpha                                           0.05
                       Error Degrees of Freedom                          23
                       Error Mean Square                           1.198578
                       Critical Value of Studentized Range         2.92553
                       Minimum Significant Difference               0.6631
                       Harmonic Mean of Cell Sizes                23.33333

                   Means with the same letter are not significantly different.

                       Tukey Grouping         Mean      N    SEX

                                A           -0.3000     20    M
                                A
                                A           -0.6429     28    F
```

```
                      MOBILE PHONE 1 - Adjective Pair 5 (Youthful - Mature)

Dependent Variable: A05
                                             Sum of
                   Source                DF      Squares    Mean Square   F Value   Pr > F
                   Model                 24   6.50977801     0.27124075      0.36   0.9923
                   Error                 23  17.40688866     0.75682125
                   Corrected Total       47  23.91666667

                          R-Square     Coeff Var      Root MSE     A05 Mean
                          0.272186      56.42950      0.869955     1.541667

                   Source                DF    Type I SS    Mean Square   F Value   Pr > F

                   GENDER                 1   0.28809524     0.28809524      0.38   0.5433
                   AGE                   17   5.42338466     0.31902263      0.42   0.9639
                   OCC                    4   0.23800258     0.05950065      0.08   0.9881
                   EDU                    2   0.56029553     0.28014776      0.37   0.6947

                            Tukey's Studentized Range (HSD) Test for A05

                       Alpha                                           0.05
                       Error Degrees of Freedom                          23
                       Error Mean Square                           0.756821
                       Critical Value of Studentized Range         2.92553
                       Minimum Significant Difference               0.5269
                       Harmonic Mean of Cell Sizes                23.33333

                   Means with the same letter are not significantly different.

                       Tukey Grouping         Mean      N    SEX

                                A            1.6071     28    F
                                A
                                A            1.4500     20    M
```

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```
                  MOBILE PHONE 1 -  Adjective Pair 6 (Inert - Energetic)

Dependent Variable: A06

                                                 Sum of
                  Source                  DF      Squares      Mean Square    F Value    Pr > F
                  Model                   24   57.07180535      2.37799189       2.90    0.0064
                  Error                   23   18.84486132      0.81934180
                  Corrected Total         47   75.91666667

                          R-Square     Coeff Var      Root MSE      A06 Mean
                          0.751769      127.7894      0.905175      0.708333

                  Source                  DF      Type I SS      Mean Square    F Value    Pr > F

                  GENDER                   1     1.25952381      1.25952381       1.54    0.2275
                  AGE                      17   46.82360652      2.75432980       3.36    0.0038
                  OCC                       4    7.37319368      1.84329842       2.25    0.0950
                  EDU                       2    1.61548134      0.80774067       0.99    0.3883

                        Tukey's Studentized Range (HSD) Test for A06

                        Alpha                                       0.05
                        Error Degrees of Freedom                      23
                        Error Mean Square                       0.819342
                        Critical Value of Studentized Range     2.92553
                        Minimum Significant Difference            0.5482
                        Harmonic Mean of Cell Sizes            23.33333

                   Means with the same letter are not significantly different.

                        Tukey Grouping         Mean      N    SEX

                               A             0.9000     20    M
                               A
                               A             0.5714     28    F
```

```
                  MOBILE PHONE 1 - Adjective Pair 7 (Serious – Humorous)

Dependent Variable: A07
                                                 Sum of
                  Source                  DF      Squares      Mean Square    F Value    Pr > F
                  Model                   24   38.47462662      1.60310944       1.15    0.3684
                  Error                   23   32.00454005      1.39150174
                  Corrected Total         47   70.47916667

                          R-Square     Coeff Var      Root MSE      A07 Mean
                          0.545901     -153.0317      1.179619     -0.770833

                  Source                  DF      Type I SS      Mean Square    F Value    Pr > F
                  GENDER                   1     0.50059524      0.50059524       0.36    0.5545
                  AGE                      17   31.85468795      1.87380517       1.35    0.2495
                  OCC                       4    2.78775516      0.69693879       0.50    0.7354
                  EDU                       2    3.33158826      1.66579413       1.20    0.3202

                        Tukey's Studentized Range (HSD) Test for A07

                        Alpha                                       0.05
                        Error Degrees of Freedom                      23
                        Error Mean Square                       1.391502
                        Critical Value of Studentized Range     2.92553
                        Minimum Significant Difference            0.7144
                        Harmonic Mean of Cell Sizes            23.33333

                   Means with the same letter are not significantly different.

                        Tukey Grouping         Mean      N    SEX

                               A            -0.6500     20    M
                               A
                               A            -0.8571     28    F
```

```
                      MOBILE PHONE 1 - Adjective Pair 8 (Ornate – Plane)

Dependent Variable: A08
                                                Sum of
                   Source                 DF    Squares      Mean Square   F Value   Pr > F
                   Model                  24   39.78761208    1.65781717     2.22    0.0302
                   Error                  23   17.19155458    0.74745889
                   Corrected Total        47   56.97916667

                          R-Square     Coeff Var     Root MSE     A08 Mean
                          0.698284     133.8669      0.864557     0.645833

                   Source                 DF    Type I SS    Mean Square   F Value   Pr > F
                   GENDER                  1    6.81488095    6.81488095     9.12    0.0061
                   AGE                    17   22.87520735    1.34560043     1.80    0.0941
                   OCC                     4    6.83267309    1.70816827     2.29    0.0910
                   EDU                     2    3.26485069    1.63242534     2.18    0.1354

                        Tukey's Studentized Range (HSD) Test for A08

                        Alpha                                       0.05
                        Error Degrees of Freedom                      23
                        Error Mean Square                        0.747459
                        Critical Value of Studentized Range      2.92553
                        Minimum Significant Difference            0.5236
                        Harmonic Mean of Cell Sizes              23.33333

                   Means with the same letter are not significantly different.

                        Tukey Grouping         Mean      N   SEX

                             A              0.9643    28    F

                             B              0.2000    20    M


                      MOBILE PHONE 1 - Adjective Pair 9 (Proud - Humble)

Dependent Variable: A09
                                                Sum of
                   Source                 DF    Squares      Mean Square   F Value   Pr > F
                   Model                  24   29.35461949    1.22310915     1.45    0.1902
                   Error                  23   19.45788051    0.84599480
                   Corrected Total        47   48.81250000

                          R-Square     Coeff Var     Root MSE     A09 Mean
                          0.601375     -98.10984     0.919780     -0.937500

                   Source                 DF    Type I SS    Mean Square   F Value   Pr > F
                   GENDER                  1    4.50535714    4.50535714     5.33    0.0304
                   AGE                    17   19.94041529    1.17296561     1.39    0.2295
                   OCC                     4    4.44283584    1.11070896     1.31    0.2948
                   EDU                     2    0.46601122    0.23300561     0.28    0.7617

                        Tukey's Studentized Range (HSD) Test for A09

                        Alpha                                       0.05
                        Error Degrees of Freedom                      23
                        Error Mean Square                        0.845995
                        Critical Value of Studentized Range      2.92553
                        Minimum Significant Difference            0.5571
                        Harmonic Mean of Cell Sizes              23.33333

                   Means with the same letter are not significantly different.

                        Tukey Grouping         Mean      N   SEX

                             A             -0.6786    28    F

                             B             -1.3000    20    M
```

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```
                    MOBILE PHONE 1 - Adjective Pair 10 (Insane - Sane)
```

Dependent Variable: A10

```
                                       Sum of
Source                      DF         Squares     Mean Square    F Value    Pr > F
Model                       24      28.19804990      1.17491875       2.33    0.0234
Error                       23      11.61445010      0.50497609
Corrected Total             47      39.81250000

              R-Square      Coeff Var      Root MSE       A10 Mean
              0.708271      126.3319       0.710617       0.562500

Source                      DF        Type I SS     Mean Square    F Value    Pr > F
GENDER                       1       9.00535714      9.00535714      17.83    0.0003
AGE                         17      16.45076852      0.96769227       1.92    0.0731
OCC                          4       0.87426622      0.21856655       0.43    0.7835
EDU                          2       1.86765803      0.93382901       1.85    0.1800
```

```
                    Tukey's Studentized Range (HSD) Test for A10

                    Alpha                                   0.05
                    Error Degrees of Freedom                  23
                    Error Mean Square                   0.504976
                    Critical Value of Studentized Range  2.92553
                    Minimum Significant Difference        0.4304
                    Harmonic Mean of Cell Sizes         23.33333
```

```
          Means with the same letter are not significantly different.

          Tukey Grouping          Mean      N    SEX

                    A            0.9286     28    F

                    B            0.0500     20    M
```

```
                    MOBILE PHONE 1 - Adjective Pair 11 (Masculine-Feminine)
```

Dependent Variable: A11

```
                                       Sum of
Source                      DF         Squares     Mean Square    F Value    Pr > F
Model                       24      14.47401189      0.60308383       0.98    0.5231
Error                       23      14.19265478      0.61707195
Corrected Total             47      28.66666667

              R-Square      Coeff Var      Root MSE       A11 Mean
              0.504907     -67.33194       0.785539      -1.166667

Source                      DF        Type I SS     Mean Square    F Value    Pr > F
GENDER                       1       0.15238095      0.15238095       0.25    0.6240
AGE                         17      10.51570675      0.61857099       1.00    0.4888
OCC                          4       3.17767241      0.79441810       1.29    0.3040
EDU                          2       0.62825179      0.31412589       0.51    0.6077
```

```
                    Tukey's Studentized Range (HSD) Test for A11

                    Alpha                                   0.05
                    Error Degrees of Freedom                  23
                    Error Mean Square                   0.617072
                    Critical Value of Studentized Range  2.92553
                    Minimum Significant Difference        0.4758
                    Harmonic Mean of Cell Sizes         23.33333
```

```
          Means with the same letter are not significantly different.

          Tukey Grouping          Mean      N    SEX

                    A           -1.1000     20    M
                    A
                    A           -1.2143     28    F
```

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APPENDIX F-12

Analysis of Mobile Phone 2

```
MOBILE PHONE 2 - ANOVA and TUKEY's Studentized Range Test
```

The GLM Procedure

Class Level Information

Class	Levels	Values
GENDER	2	F (Female) M (Male)
AGE	18	20 24 25 26 27 28 29 30 31 32 34 35 36 37 38 39 40 41
OCC	5	OCC01 OCC02 OCC03 OCC04 OCC05
		OCC01 – Academician
		OCC02 – Research Assistants
		OCC03 – Software Engineer
		OCC04 – Student
		OCC05 – Official
EDU	3	EDU01 (Bachelor) EDU02 (Graduate –MSc) EDU03 (PhD)

Number of observations   48

```
MOBILE PHONE 2 - Adjective Pair 1 (Traditional – Modern)
```

Dependent Variable: A01

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	8.45620941	0.35234206	0.72	0.7824
Error	23	11.21045726	0.48741119		
Corrected Total	47	19.66666667			

R-Square	Coeff Var	Root MSE	A01 Mean
0.429977	49.28106	0.698148	1.416667

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.43809524	2.43809524	5.00	0.0353
AGE	17	5.31769039	0.31280532	0.64	0.8241
OCC	4	0.21187724	0.05296931	0.11	0.9783
EDU	2	0.48854654	0.24427327	0.50	0.6123

Tukey's Studentized Range (HSD) Test for A01

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.487411
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.4228
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.6071	28	F
B	1.1500	20	M

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```
                 MOBILE PHONE 2 - Adjective Pair 2 (Boring – Interesting)
```

Dependent Variable: A02

```
                                              Sum of
      Source                         DF      Squares     Mean Square   F Value   Pr > F
      Model                          24    13.29989600    0.55416233      0.52    0.9391
      Error                          23    24.36677066    1.05942481
      Corrected Total                47    37.66666667

                   R-Square      Coeff Var      Root MSE      A02 Mean

                   0.353095      95.01080       1.029284      1.083333

      Source                         DF     Type I SS     Mean Square   F Value   Pr > F
      GENDER                          1    0.60952381     0.60952381      0.58    0.4558
      AGE                            17    9.30719361     0.54748198      0.52    0.9167
      OCC                             4    1.77574015     0.44393504      0.42    0.7932
      EDU                             2    1.60743843     0.80371922      0.76    0.4797

                       Tukey's Studentized Range (HSD) Test for A02

                   Alpha                                        0.05
                   Error Degrees of Freedom                       23
                   Error Mean Square                        1.059425
                   Critical Value of Studentized Range      2.92553
                   Minimum Significant Difference             0.6234
                   Harmonic Mean of Cell Sizes              23.33333

             Means with the same letter are not significantly different.

                   Tukey Grouping         Mean      N    SEX

                            A           1.1786      28    F
                            A
                            A           0.9500      20    M
```

```
                 MOBILE PHONE 2 - Adjective Pair 3 (Hard – Soft)
```

Dependent Variable: A03

```
                                              Sum of
      Source                         DF      Squares     Mean Square   F Value   Pr > F
      Model                          24     9.57567793    0.39898658      1.45    0.1895
      Error                          23     6.34098874    0.27569516
      Corrected Total                47    15.91666667

                   R-Square      Coeff Var      Root MSE      A03 Mean
                   0.601613      34.05839       0.525067      1.541667

      Source                         DF     Type I SS     Mean Square   F Value   Pr > F

      GENDER                          1    0.28809524     0.28809524      1.04    0.3173
      AGE                            17    6.71236152     0.39484480      1.43    0.2084
      OCC                             4    2.20626758     0.55156689      2.00    0.1281
      EDU                             2    0.36895359     0.18447679      0.67    0.5218

                       Tukey's Studentized Range (HSD) Test for A03

                   Alpha                                        0.05
                   Error Degrees of Freedom                       23
                   Error Mean Square                        0.275695
                   Critical Value of Studentized Range      2.92553
                   Minimum Significant Difference             0.318
                   Harmonic Mean of Cell Sizes              23.33333

             Means with the same letter are not significantly different.

                   Tukey Grouping         Mean      N    SEX

                            A           1.6071      28    F
                            A
                            A           1.4500      20    M
```

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Dependent Variable: A04

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	9.82005604	0.40916900	0.75	0.7523
Error	23	12.49244396	0.54314974		
Corrected Total	47	22.31250000			

R-Square	Coeff Var	Root MSE	A04 Mean
0.440115	56.15139	0.736987	1.312500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	3.34821429	3.34821429	6.16	0.0208
AGE	17	5.35481556	0.31498915	0.58	0.8737
OCC	4	0.91128138	0.22782035	0.42	0.7929
EDU	2	0.20574482	0.10287241	0.19	0.8287

Tukey's Studentized Range (HSD) Test for A04

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.54315
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.4464
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.5357	28	F
B	1.0000	20	M

Dependent Variable: A05

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	22.25068040	0.92711168	0.79	0.7171
Error	23	27.06181960	1.17660085		
Corrected Total	47	49.31250000			

R-Square	Coeff Var	Root MSE	A05 Mean
0.451218	-578.5132	1.084712	-0.187500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	3.34821429	3.34821429	2.85	0.1051
AGE	17	17.48549968	1.02855880	0.87	0.6063
OCC	4	1.18990546	0.29747636	0.25	0.9050
EDU	2	0.22706098	0.11353049	0.10	0.9084

Tukey's Studentized Range (HSD) Test for A05

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.176601
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.6569
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping		Mean	N	SEX
A		0.0357	28	F
A				
A		-0.5000	20	M

```
                        MOBILE PHONE 2 - Adjective Pair 6 (Inert - Energetic)

Dependent Variable: A06
                                            Sum of
                 Source              DF     Squares     Mean Square    F Value    Pr > F
                 Model               24   14.65421227    0.61059218      0.64     0.8549
                 Error               23   21.82495440    0.94891106
                 Corrected Total     47   36.47916667

                        R-Square    Coeff Var     Root MSE     A06 Mean
                        0.401715    88.22225      0.974121     1.104167

                 Source              DF     Type I SS    Mean Square    F Value    Pr > F

                 GENDER               1    7.07202381    7.07202381      7.45     0.0119
                 AGE                 17    4.80899020    0.28288178      0.30     0.9934
                 OCC                  4    1.79280191    0.44820048      0.47     0.7555
                 EDU                  2    0.98039635    0.49019818      0.52     0.6033

                        Tukey's Studentized Range (HSD) Test for A06

                 Alpha                                        0.05
                 Error Degrees of Freedom                       23
                 Error Mean Square                        0.948911
                 Critical Value of Studentized Range      2.92553
                 Minimum Significant Difference               0.59
                 Harmonic Mean of Cell Sizes              23.33333

                 Means with the same letter are not significantly different.

                 Tukey Grouping        Mean      N    SEX

                           A         1.4286     28    F

                           B         0.6500     20    M

                        MOBILE PHONE 2 - Adjective Pair 7 (Serious - Humorous)

Dependent Variable: A07
                                            Sum of
                 Source              DF     Squares     Mean Square    F Value    Pr > F
                 Model               24    9.39126669    0.39130278      1.06     0.4495
                 Error               23    8.52539997    0.37066956
                 Corrected Total     47   17.91666667

                        R-Square    Coeff Var     Root MSE     A07 Mean
                        0.524164    47.13495      0.608826     1.291667

                 Source              DF     Type I SS    Mean Square    F Value    Pr > F
                 GENDER               1    0.68809524    0.68809524      1.86     0.1862
                 AGE                 17    4.67604402    0.27506141      0.74     0.7332
                 OCC                  4    3.47435286    0.86858821      2.34     0.0850
                 EDU                  2    0.55277457    0.27638729      0.75     0.4856

                        Tukey's Studentized Range (HSD) Test for A07

                 Alpha                                        0.05
                 Error Degrees of Freedom                       23
                 Error Mean Square                         0.37067
                 Critical Value of Studentized Range      2.92553
                 Minimum Significant Difference             0.3687
                 Harmonic Mean of Cell Sizes              23.33333

                        NOTE: Cell sizes are not equal.

                 Means with the same letter are not significantly different.

                 Tukey Grouping        Mean      N    SEX

                           A         1.3929     28    F
                           A
                           A         1.1500     20    M
```

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                        MOBILE PHONE 2 - Adjective Pair 8 (Ornate - Plane)
Dependent Variable: A08

                                             Sum of
              Source                  DF      Squares     Mean Square   F Value   Pr > F
              Model                   24   34.03889716    1.41828738      1.20    0.3332
              Error                   23   27.21110284    1.18309143
              Corrected Total         47   61.25000000

                     R-Square     Coeff Var     Root MSE     A08 Mean
                     0.555737     -174.0320     1.087700     -0.625000

              Source                  DF     Type I SS     Mean Square   F Value   Pr > F
              GENDER                   1    0.19285714     0.19285714      0.16    0.6901
              AGE                     17   27.59480019     1.62322354      1.37    0.2366
              OCC                      4    3.59513664     0.89878416      0.76    0.5621
              EDU                      2    2.65610319     1.32805159      1.12    0.3426


                          Tukey's Studentized Range (HSD) Test for A08

                    Alpha                                          0.05
                    Error Degrees of Freedom                         23
                    Error Mean Square                          1.183091
                    Critical Value of Studentized Range        2.92553
                    Minimum Significant Difference               0.6588
                    Harmonic Mean of Cell Sizes               23.33333


              Means with the same letter are not significantly different.

                    Tukey Grouping         Mean       N    SEX

                               A         -0.5714      28    F
                               A
                               A         -0.7000      20    M
```

```
                        MOBILE PHONE 2 - Adjective Pair 9 (Proud - Humble)

Dependent Variable: A09
                                             Sum of
              Source                  DF      Squares     Mean Square   F Value   Pr > F
              Model                   24   14.18294202    0.59095592      0.48    0.9584
              Error                   23   28.12955798    1.22302426
              Corrected Total         47   42.31250000

                     R-Square     Coeff Var     Root MSE     A09 Mean
                     0.335195     -160.8588     1.105904     -0.687500

              Source                  DF     Type I SS     Mean Square   F Value   Pr > F
              GENDER                   1    0.26250000     0.26250000      0.21    0.6475
              AGE                     17    8.69042834     0.51120167      0.42    0.9653
              OCC                      4    4.68739955     1.17184989      0.96    0.4490
              EDU                      2    0.54261412     0.27130706      0.22    0.8027


                          Tukey's Studentized Range (HSD) Test for A09

                    Alpha                                          0.05
                    Error Degrees of Freedom                         23
                    Error Mean Square                          1.223024
                    Critical Value of Studentized Range        2.92553
                    Minimum Significant Difference               0.6698
                    Harmonic Mean of Cell Sizes               23.33333


              Means with the same letter are not significantly different.

                    Tukey Grouping         Mean       N    SEX

                               A         -0.6000      20    M
                               A
                               A         -0.7500      28    F
```

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                    MOBILE PHONE 2 - Adjective Pair 10 (Insane - Sane)

Dependent Variable: A10
                                              Sum of
               Source                  DF     Squares     Mean Square   F Value   Pr > F
               Model                   24   32.67798349    1.36158265     0.95    0.5508
               Error                   23   32.98868318    1.43429057
               Corrected Total         47   65.66666667

                      R-Square     Coeff Var     Root MSE      A10 Mean
                      0.497634     -1437.142     1.197619     -0.083333

               Source                  DF    Type I SS     Mean Square   F Value   Pr > F
               GENDER                   1    1.60952381     1.60952381     1.12    0.3004
               AGE                     17   27.63570559     1.62562974     1.13    0.3833
               OCC                      4    3.40478464     0.85119616     0.59    0.6709
               EDU                      2    0.02796945     0.01398473     0.01    0.9903

                          Tukey's Studentized Range (HSD) Test for A10

                    Alpha                                        0.05
                    Error Degrees of Freedom                       23
                    Error Mean Square                         1.434291
                    Critical Value of Studentized Range      2.92553
                    Minimum Significant Difference             0.7253
                    Harmonic Mean of Cell Sizes              23.33333

               Means with the same letter are not significantly different.

                    Tukey Grouping        Mean      N    SEX

                             A          0.0714     28    F
                             A
                             A         -0.3000     20    M
```

                    MOBILE PHONE 2 - Adjective Pair 11 (Masculine-Feminine)

```
Dependent Variable: A11
                                              Sum of
               Source                  DF     Squares     Mean Square   F Value   Pr > F
               Model                   24   12.09686701    0.50403613     0.68    0.8266
               Error                   23   17.15313299    0.74578839
               Corrected Total         47   29.25000000

                      R-Square     Coeff Var     Root MSE      A11 Mean
                      0.413568     62.80658      0.863590     1.375000

               Source                  DF    Type I SS     Mean Square   F Value   Pr > F
               GENDER                   1    0.19285714     0.19285714     0.26    0.6159
               AGE                     17    9.45528537     0.55619326     0.75    0.7297
               OCC                      4    1.82313338     0.45578334     0.61    0.6588
               EDU                      2    0.62559112     0.31279556     0.42    0.6624

                          Tukey's Studentized Range (HSD) Test for A11

                    Alpha                                        0.05
                    Error Degrees of Freedom                       23
                    Error Mean Square                         0.745788
                    Critical Value of Studentized Range      2.92553
                    Minimum Significant Difference             0.523
                    Harmonic Mean of Cell Sizes              23.33333

               Means with the same letter are not significantly different.

                    Tukey Grouping        Mean      N    SEX

                             A          1.4500     20    M
                             A
                             A          1.3214     28    F
```

APPENDIX F-3

Analysis of Mobile Phone 3

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MOBILE PHONE 3 - ANOVA and TUKEY's Studentized Range Test
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The GLM Procedure

Class Level Information

Class	Levels	Values
GENDER	2	F (Female) M (Male)
AGE	18	20 24 25 26 27 28 29 30 31 32 34 35 36 37 38 39 40 41
OCC	5	OCC01 OCC02 OCC03 OCC04 OCC05
		OCC01 – Academician
		OCC02 – Research Assistants
		OCC03 – Software Engineer
		OCC04 – Student
		OCC05 – Official
EDU	3	EDU01 (Bachelor) EDU02 (Graduate -MSc) EDU03 (PhD)

Number of observations   48

```
MOBILE PHONE 3 - Adjective Pair 1 (Traditional – Modern)
```

Dependent Variable: A01

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	18.80116093	0.78338171	1.45	0.1895
Error	23	12.44883907	0.54125387		
Corrected Total	47	31.25000000			

R-Square	Coeff Var	Root MSE	A01 Mean
0.601637	65.39552	0.735700	1.125000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.02142857	0.02142857	0.04	0.8440
AGE	17	16.68081463	0.98122439	1.81	0.0915
OCC	4	0.96764546	0.24191136	0.45	0.7735
EDU	2	1.13127228	0.56563614	1.05	0.3678

Tukey's Studentized Range (HSD) Test for A01

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.541254
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.4456
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.1429	28	F
A			
A	1.1000	20	M

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                           MOBILE PHONE 3 - Adjective Pair 2 (Boring - Interesting)

Dependent Variable: A02
                                                  Sum of
                   Source                  DF     Squares      Mean Square    F Value    Pr > F
                   Model                   24   42.06285183    1.75261883      1.59      0.1365
                   Error                   23   25.41631484    1.10505717
                   Corrected Total         47   67.47916667

                           R-Square     Coeff Var      Root MSE     A02 Mean
                           0.623346     144.1669       1.051217     0.729167

                   Source                  DF     Type I SS     Mean Square    F Value    Pr > F
                   GENDER                   1    0.50059524     0.50059524      0.45     0.5076
                   AGE                     17   37.76313294     2.22136076      2.01     0.0596
                   OCC                      4    3.23104821     0.80776205      0.73     0.5801
                   EDU                      2    0.56807544     0.28403772      0.26     0.7755


                             Tukey's Studentized Range (HSD) Test for A02

                           Alpha                                   0.05
                           Error Degrees of Freedom                  23
                           Error Mean Square                   1.105057
                           Critical Value of Studentized Range 2.92553
                           Minimum Significant Difference        0.6367
                           Harmonic Mean of Cell Sizes         23.33333


                    Means with the same letter are not significantly different.

                        Tukey Grouping        Mean     N    SEX

                               A             0.8500    20    M
                               A
                               A             0.6429    28    F
```

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                           MOBILE PHONE 3 - Adjective Pair 3 (Hard - Soft)

Dependent Variable: A03
                                                  Sum of
                   Source                  DF     Squares      Mean Square    F Value    Pr > F
                   Model                   24   25.91864662    1.07994361      1.30      0.2642
                   Error                   23   19.06052004    0.82871826
                   Corrected Total         47   44.97916667

                           R-Square     Coeff Var      Root MSE     A03 Mean
                           0.576237     4369.630       0.910340     0.020833

                   Source                  DF     Type I SS     Mean Square    F Value    Pr > F
                   GENDER                   1    0.57202381     0.57202381      0.69     0.4146
                   AGE                     17   20.94434343     1.23202020      1.49     0.1856
                   OCC                      4    1.91033598     0.47758399      0.58     0.6827
                   EDU                      2    2.49194341     1.24597170      1.50     0.2434

                             Tukey's Studentized Range (HSD) Test for A03

                           Alpha                                   0.05
                           Error Degrees of Freedom                  23
                           Error Mean Square                   0.828718
                           Critical Value of Studentized Range 2.92553
                           Minimum Significant Difference        0.5513
                           Harmonic Mean of Cell Sizes         23.33333


                    Means with the same letter are not significantly different.

                        Tukey Grouping        Mean     N    SEX

                               A             0.1500    20    M
                               A
                               A            -0.0714    28    F
```

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                        MOBILE PHONE 3 - Adjective Pair 4 (Cold - Hot)

Dependent Variable: A04
                                            Sum of
                Source                 DF    Squares      Mean Square   F Value   Pr > F
                Model                  24  28.72874746    1.19703114      1.39    0.2145
                Error                  23  19.75041921    0.85871388
                Corrected Total        47  48.47916667

                        R-Square    Coeff Var    Root MSE    A04 Mean
                        0.592600   -889.6014    0.926668    -0.104167

                Source                 DF    Type I SS    Mean Square   F Value   Pr > F
                GENDER                  1   0.37202381    0.37202381      0.43    0.5169
                AGE                    17  27.17007424    1.59823966      1.86    0.0824
                OCC                     4   0.94392144    0.23598036      0.27    0.8912
                EDU                     2   0.24272797    0.12136398      0.14    0.8689

                        Tukey's Studentized Range (HSD) Test for A04

                    Alpha                                        0.05
                    Error Degrees of Freedom                       23
                    Error Mean Square                        0.858714
                    Critical Value of Studentized Range      2.92553
                    Minimum Significant Difference             0.5612
                    Harmonic Mean of Cell Sizes              23.33333

                Means with the same letter are not significantly different.

                    Tukey Grouping        Mean     N    SEX

                            A          0.0000    20    M
                            A
                            A         -0.1786    28    F

                        MOBILE PHONE 3 - Adjective Pair 5 (Youthful - Mature)

Dependent Variable: A05
                                            Sum of
                Source                 DF    Squares      Mean Square   F Value   Pr > F
                Model                  24  28.21547490    1.17564479      1.47    0.1816
                Error                  23  18.45119177    0.80222573
                Corrected Total        47  46.66666667

                        R-Square    Coeff Var    Root MSE    A05 Mean
                        0.604617    537.4023    0.895671    0.166667

                Source                 DF    Type I SS    Mean Square   F Value   Pr > F
                GENDER                  1   3.43809524    3.43809524      4.29    0.0498
                AGE                    17  16.33393075    0.96081946      1.20    0.3379
                OCC                     4   7.83695021    1.95923755      2.44    0.0756
                EDU                     2   0.60649870    0.30324935      0.38    0.6894

                        Tukey's Studentized Range (HSD) Test for A05

                    Alpha                                        0.05
                    Error Degrees of Freedom                       23
                    Error Mean Square                        0.802226
                    Critical Value of Studentized Range      2.92553
                    Minimum Significant Difference             0.5425
                    Harmonic Mean of Cell Sizes              23.33333

                Means with the same letter are not significantly different.

                    Tukey Grouping        Mean     N    SEX

                            A          0.3929    28    F

                            B         -0.1500    20    M
```

Dependent Variable: A06

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	17.86398617	0.74433276	0.88	0.6183
Error	23	19.38601383	0.84287017		
Corrected Total	47	37.25000000			

R-Square	Coeff Var	Root MSE	A06 Mean
0.479570	146.8927	0.918080	0.625000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.19285714	0.19285714	0.23	0.6369
AGE	17	13.77385012	0.81022648	0.96	0.5253
OCC	4	3.21914400	0.80478600	0.95	0.4508
EDU	2	0.67813490	0.33906745	0.40	0.6734

Tukey's Studentized Range (HSD) Test for A06

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.84287
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.556
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.7000	20	M
A			
A	0.5714	28	F

Dependent Variable: A07

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	20.67007205	0.86125300	0.78	0.7205
Error	23	25.24659461	1.09767803		
Corrected Total	47	45.91666667			

R-Square	Coeff Var	Root MSE	A07 Mean
0.450165	359.2119	1.047701	0.291667

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.85952381	0.85952381	0.78	0.3854
AGE	17	17.40219970	1.02365881	0.93	0.5515
OCC	4	2.10094289	0.52523572	0.48	0.7512
EDU	2	0.30740566	0.15370283	0.14	0.8701

Tukey's Studentized Range (HSD) Test for A07

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.097678
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.6345
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.4500	20	M
A			
A	0.1786	28	F

Dependent Variable: A08

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	18.58542772	0.77439282	0.90	0.6057
Error	23	19.89373895	0.86494517		
Corrected Total	47	38.47916667			

R-Square	Coeff Var	Root MSE	A08 Mean
0.483000	-405.8288	0.930024	-0.229167

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	1.00059524	1.00059524	1.16	0.2933
AGE	17	17.19878052	1.01169297	1.17	0.3572
OCC	4	0.34292898	0.08573225	0.10	0.9817
EDU	2	0.04312298	0.02156149	0.02	0.9754

Tukey's Studentized Range (HSD) Test for A08

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.864945
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5633
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.1071	28	F
A			
A	-0.4000	20	M

Dependent Variable: A09

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	24.09458277	1.00394095	1.00	0.5039
Error	23	23.15541723	1.00675727		
Corrected Total	47	47.25000000			

R-Square	Coeff Var	Root MSE	A09 Mean
0.509938	-267.5661	1.003373	-0.375000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.02142857	0.02142857	0.02	0.8853
AGE	17	18.02531321	1.06031254	1.05	0.4459
OCC	4	4.79696033	1.19924008	1.19	0.3412
EDU	2	1.25088067	0.62544033	0.62	0.5461

Tukey's Studentized Range (HSD) Test for A09

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.006757
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.6077
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.3571	28	F
A			
A	-0.4000	20	M

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```
                   MOBILE PHONE 3 - Adjective Pair 10 (Insane - Sane)

Dependent Variable: A10
                                            Sum of
                 Source                DF      Squares    Mean Square    F Value    Pr > F
                 Model                 24   26.79078535     1.11628272      1.77    0.0882
                 Error                 23   14.52171465     0.63137890
                 Corrected Total       47   41.31250000

                        R-Square    Coeff Var    Root MSE     A10 Mean
                        0.648491    -423.7832    0.794594    -0.187500

                 Source                DF     Type I SS    Mean Square    F Value    Pr > F
                 GENDER                 1    5.83392857     5.83392857      9.24    0.0058
                 AGE                   17   18.48176875     1.08716287      1.72    0.1116
                 OCC                    4    1.87545409     0.46886352      0.74    0.5728
                 EDU                    2    0.59963394     0.29981697      0.47    0.6279

                           Tukey's Studentized Range (HSD) Test for A10

                        Alpha                                        0.05
                        Error Degrees of Freedom                       23
                        Error Mean Square                        0.631379
                        Critical Value of Studentized Range      2.92553
                        Minimum Significant Difference             0.4812
                        Harmonic Mean of Cell Sizes             23.33333

                   Means with the same letter are not significantly different.

                 Tukey Grouping         Mean      N    SEX

                          A            0.1071     28    F

                          B           -0.6000     20    M

                   MOBILE PHONE 3 - Adjective Pair 11 (Masculine-Feminine)
Dependent Variable: A11
                                            Sum of
                 Source                DF      Squares    Mean Square    F Value    Pr > F
                 Model                 24   31.90388633     1.32932860      1.94    0.0584
                 Error                 23   15.76278034     0.68533828
                 Corrected Total       47   47.66666667

                        R-Square    Coeff Var    Root MSE     A11 Mean
                        0.669312    -198.6844    0.827852    -0.416667

                 Source                DF     Type I SS    Mean Square    F Value    Pr > F
                 GENDER                 1    1.60952381     1.60952381      2.35    0.1390
                 AGE                   17   25.96538484     1.52737558      2.23    0.0372
                 OCC                    4    3.73271845     0.93317961      1.36    0.2779
                 EDU                    2    0.59625923     0.29812961      0.44    0.6525

                           Tukey's Studentized Range (HSD) Test for A11

                        Alpha                                        0.05
                        Error Degrees of Freedom                       23
                        Error Mean Square                        0.685338
                        Critical Value of Studentized Range      2.92553
                        Minimum Significant Difference             0.5014
                        Harmonic Mean of Cell Sizes             23.33333

                   Means with the same letter are not significantly different.

                 Tukey Grouping         Mean      N    SEX

                          A           -0.2000     20    M
                          A
                          A           -0.5714     28    F
```

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APPENDIX F-4

Analysis of Mobile Phone 4

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The SAS System                          11:49 Sunday, January 22, 2006    1
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┌─────────────────────────────────────────────────────────────────────────┐
│         MOBILE PHONE 4 - ANOVA and TUKEY's Studentized Range Test         │
└─────────────────────────────────────────────────────────────────────────┘
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                              The GLM Procedure

                           Class Level Information

              Class       Levels    Values

              GENDER          2     F (Female) M (Male)

              AGE            18     20 24 25 26 27 28 29 30 31 32 34 35 36 37 38 39 40 41

              OCC             5     OCC01 OCC02 OCC03 OCC04 OCC05
                                                OCC01 - Academician
                                                OCC02 - Research Assistants
                                                OCC03 - Software Engineer
                                                OCC04 - Student
                                                OCC05 - Official
              EDU             3     EDU01 (Bachelor) EDU02 (Graduate -MSc) EDU03 (PhD)

                            Number of observations    48
```

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┌─────────────────────────────────────────────────────────────────────────┐
│            MOBILE PHONE 4 - Adjective Pair 1 (Traditional - Modern)       │
└─────────────────────────────────────────────────────────────────────────┘
```

Dependent Variable: A01

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	49.27035842	2.05293160	1.06	0.4478
Error	23	44.64630824	1.94114384		
Corrected Total	47	93.91666667			

R-Square	Coeff Var	Root MSE	A01 Mean
0.524618	-257.2153	1.393249	-0.541667

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.91666667	2.91666667	1.50	0.2327
AGE	17	36.96548924	2.17444054	1.12	0.3931
OCC	4	6.83851397	1.70962849	0.88	0.4908
EDU	2	2.54968854	1.27484427	0.66	0.5280

```
                    Tukey's Studentized Range (HSD) Test for A01

              Alpha                                       0.05
              Error Degrees of Freedom                      23
              Error Mean Square                        1.941144
              Critical Value of Studentized Range       2.92553
              Minimum Significant Difference             0.8438
              Harmonic Mean of Cell Sizes              23.33333

          Means with the same letter are not significantly different.
```

Tukey Grouping	Mean	N	SEX
A	-0.2500	20	M
A			
A	-0.7500	28	F

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```
                    MOBILE PHONE 4 - Adjective Pair 2 (Boring - Interesting)

Dependent Variable: A02
                                              Sum of
                Source                DF      Squares       Mean Square    F Value   Pr > F
                Model                 24    29.43097933      1.22629081      1.08    0.4256
                Error                 23    26.04818733      1.13252988
                Corrected Total       47    55.47916667

                        R-Square      Coeff Var      Root MSE      A02 Mean
                        0.530487     -176.1441       1.064204     -0.604167

                Source                DF     Type I SS      Mean Square    F Value   Pr > F
                GENDER                 1     0.37202381      0.37202381      0.33    0.5721
                AGE                   17    24.75579288      1.45622311      1.29    0.2829
                OCC                    4     2.41375825      0.60343956      0.53    0.7129
                EDU                    2     1.88940439      0.94470220      0.83    0.4470


                         Tukey's Studentized Range (HSD) Test for A02

                         Alpha                                     0.05
                         Error Degrees of Freedom                    23
                         Error Mean Square                      1.13253
                         Critical Value of Studentized Range    2.92553
                         Minimum Significant Difference          0.6445
                         Harmonic Mean of Cell Sizes           23.33333


                Means with the same letter are not significantly different.

                         Tukey Grouping       Mean     N    SEX

                               A            -0.5000    20    M
                               A
                               A            -0.6786    28    F

                    MOBILE PHONE 4 - Adjective Pair 3 (Hard - Soft)

Dependent Variable: A03
                                              Sum of
                Source                DF      Squares       Mean Square    F Value   Pr > F
                Model                 24    26.61391646      1.10891319      1.21    0.3241
                Error                 23    21.05275021      0.91533697
                Corrected Total       47    47.66666667

                        R-Square      Coeff Var      Root MSE      A03 Mean
                        0.558334     -229.6158       0.956732     -0.416667

                Source                DF     Type I SS      Mean Square    F Value   Pr > F

                GENDER                 1     0.03809524      0.03809524      0.04    0.8401
                AGE                   17    24.56726408      1.44513318      1.58    0.1522
                OCC                    4     1.60434885      0.40108721      0.44    0.7797
                EDU                    2     0.40420830      0.20210415      0.22    0.8036


                         Tukey's Studentized Range (HSD) Test for A03

                         Alpha                                     0.05
                         Error Degrees of Freedom                    23
                         Error Mean Square                     0.915337
                         Critical Value of Studentized Range    2.92553
                         Minimum Significant Difference          0.5794
                         Harmonic Mean of Cell Sizes           23.33333


                Means with the same letter are not significantly different.

                         Tukey Grouping       Mean     N    SEX

                               A            -0.3929    28    F
                               A
                               A            -0.4500    20    M
```

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```
                     MOBILE PHONE 4 - Adjective Pair 4 (Cold - Hot)
Dependent Variable: A04
                                           Sum of
                  Source                DF      Squares    Mean Square   F Value   Pr > F
                  Model                 24   24.18049662     1.00752069     0.96   0.5399
                  Error                 23   24.13200338     1.04921754
                  Corrected Total       47   48.31250000

                        R-Square     Coeff Var     Root MSE     A04 Mean
                        0.500502     -148.9910     1.024313     -0.687500

                  Source                DF     Type I SS    Mean Square   F Value   Pr > F
                  GENDER                 1    0.00535714     0.00535714     0.01   0.9437
                  AGE                   17   15.40356998     0.90609235     0.86   0.6164
                  OCC                    4    3.64210289     0.91052572     0.87   0.4981
                  EDU                    2    5.12946661     2.56473330     2.44   0.1090


                          Tukey's Studentized Range (HSD) Test for A04

                          Alpha                                   0.05
                          Error Degrees of Freedom                  23
                          Error Mean Square                   1.049218
                          Critical Value of Studentized Range  2.92553
                          Minimum Significant Difference        0.6204
                          Harmonic Mean of Cell Sizes         23.33333


                  Means with the same letter are not significantly different.

                          Tukey Grouping        Mean     N   SEX

                                     A         -0.6786    28   F
                                     A
                                     A         -0.7000    20   M
```
```
                  MOBILE PHONE 4 - Adjective Pair 5 (Youthful - Mature)


Dependent Variable: A05
                                           Sum of
                  Source                DF      Squares    Mean Square   F Value   Pr > F
                  Model                 24   15.45840130     0.64410005     1.34   0.2406
                  Error                 23   11.02076537     0.47916371
                  Corrected Total       47   26.47916667

                        R-Square     Coeff Var     Root MSE     A05 Mean
                        0.583795     62.69131      0.692217     1.104167

                  Source                DF     Type I SS    Mean Square   F Value   Pr > F

                  GENDER                 1    0.10059524     0.10059524     0.21   0.6511
                  AGE                   17   12.70094252     0.74711427     1.56   0.1588
                  OCC                    4    2.43399124     0.60849781     1.27   0.3104
                  EDU                    2    0.22287231     0.11143615     0.23   0.7943


                          Tukey's Studentized Range (HSD) Test for A05

                          Alpha                                   0.05
                          Error Degrees of Freedom                  23
                          Error Mean Square                   0.479164
                          Critical Value of Studentized Range  2.92553
                          Minimum Significant Difference        0.4192
                          Harmonic Mean of Cell Sizes         23.33333


                  Means with the same letter are not significantly different.

                          Tukey Grouping        Mean     N   SEX

                                     A          1.1429    28   F
                                     A
                                     A          1.0500    20   M
```

```
                    MOBILE PHONE 4 - Adjective Pair 6 (Inert - Energetic)

Dependent Variable: A06
                                              Sum of
                 Source                 DF     Squares    Mean Square   F Value   Pr > F
                 Model                  24   21.12411259    0.88017136    0.70    0.8013
                 Error                  23   28.79255407    1.25185018
                 Corrected Total        47   49.91666667

                        R-Square    Coeff Var    Root MSE    A06 Mean
                        0.423188    -157.9569    1.118861    -0.708333

                 Source                 DF   Type I SS    Mean Square   F Value   Pr > F

                 GENDER                  1   0.00238095    0.00238095    0.00    0.9656
                 AGE                    17  16.50370918    0.97080642    0.78    0.7013
                 OCC                     4   1.25310213    0.31327553    0.25    0.9065
                 EDU                     2   3.36492033    1.68246016    1.34    0.2805

                       Tukey's Studentized Range (HSD) Test for A06

                 Alpha                                        0.05
                 Error Degrees of Freedom                       23
                 Error Mean Square                        1.25185
                 Critical Value of Studentized Range      2.92553
                 Minimum Significant Difference            0.6776
                 Harmonic Mean of Cell Sizes             23.33333

             Means with the same letter are not significantly different.

                 Tukey Grouping        Mean      N   SEX

                         A          -0.7000     20   M
                         A
                         A          -0.7143     28   F
```

```
                    MOBILE PHONE 4 - Adjective Pair 7 (Serious - Humorous)

Dependent Variable: A07
                                              Sum of
                 Source                 DF     Squares    Mean Square   F Value   Pr > F
                 Model                  24   18.18310671    0.75762945    1.79    0.0836
                 Error                  23    9.73355996    0.42319826
                 Corrected Total        47   27.91666667

                        R-Square    Coeff Var    Root MSE    A07 Mean
                        0.651335    -62.45154    0.650537    -1.041667

                 Source                 DF   Type I SS    Mean Square   F Value   Pr > F
                 GENDER                  1   0.00238095    0.00238095    0.01    0.9409
                 AGE                    17  14.21001247    0.83588309    1.98    0.0643
                 OCC                     4   2.24532403    0.56133101    1.33    0.2900
                 EDU                     2   1.72538925    0.86269463    2.04    0.1531

                       Tukey's Studentized Range (HSD) Test for A07

                 Alpha                                        0.05
                 Error Degrees of Freedom                       23
                 Error Mean Square                       0.423198
                 Critical Value of Studentized Range      2.92553
                 Minimum Significant Difference             0.394
                 Harmonic Mean of Cell Sizes             23.33333

             Means with the same letter are not significantly different.

                 Tukey Grouping        Mean      N   SEX

                         A          -1.0357     28   F
                         A
                         A          -1.0500     20   M
```

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Dependent Variable: A08

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	31.36372828	1.30682201	3.51	0.0018
Error	23	8.55293839	0.37186689		
Corrected Total	47	39.91666667			

R-Square	Coeff Var	Root MSE	A08 Mean
0.785730	50.46694	0.609809	1.208333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.28809524	2.28809524	6.15	0.0209
AGE	17	15.68328113	0.92254595	2.48	0.0218
OCC	4	12.35970710	3.08992677	8.31	0.0003
EDU	2	1.03264481	0.51632241	1.39	0.2696

Tukey's Studentized Range (HSD) Test for A08

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.371867
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.3693
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.3929	28	F
B	0.9500	20	M

Dependent Variable: A09

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	17.19240748	0.71635031	0.49	0.9565
Error	23	33.78675918	1.46898953		
Corrected Total	47	50.97916667			

R-Square	Coeff Var	Root MSE	A09 Mean
0.337244	187.6674	1.212019	0.645833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.72916667	0.72916667	0.50	0.4882
AGE	17	9.01908242	0.53053426	0.36	0.9824
OCC	4	7.02529991	1.75632498	1.20	0.3394
EDU	2	0.41885849	0.20942924	0.14	0.8679

Tukey's Studentized Range (HSD) Test for A09

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.46899
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.734
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.7500	28	F
A			
A	0.5000	20	M

```
                          MOBILE PHONE 4 - Adjective Pair 10 (Insane - Sane)

Dependent Variable: A10
                                                    Sum of
                    Source                    DF     Squares     Mean Square    F Value    Pr > F
                    Model                     24   11.90782260    0.49615928      1.19     0.3379
                    Error                     23    9.57134406    0.41614539
                    Corrected Total           47   21.47916667

                              R-Square     Coeff Var     Root MSE     A10 Mean
                              0.554389      50.76144     0.645093     1.270833

                    Source                    DF    Type I SS     Mean Square    F Value    Pr > F
                    GENDER                     1    1.00059524    1.00059524      2.40     0.1346
                    AGE                       17    8.58733107    0.50513712      1.21     0.3272
                    OCC                        4    2.09930357    0.52482589      1.26     0.3137
                    EDU                        2    0.22059273    0.11029636      0.27     0.7695

                                 Tukey's Studentized Range (HSD) Test for A10

                          Alpha                                        0.05
                          Error Degrees of Freedom                       23
                          Error Mean Square                        0.416145
                          Critical Value of Studentized Range      2.92553
                          Minimum Significant Difference             0.3907
                          Harmonic Mean of Cell Sizes              23.33333

                      Means with the same letter are not significantly different.

                          Tukey Grouping        Mean     N    SEX

                                  A            1.3929    28     F
                                  A
                                  A            1.1000    20     M
```

```
                         MOBILE PHONE 4 - Adjective Pair 11 (Masculine-Feminine)

Dependent Variable: A11
                                                    Sum of
                    Source                    DF     Squares     Mean Square    F Value    Pr > F
                    Model                     24   21.47391174    0.89474632      1.25     0.2966
                    Error                     23   16.44275492    0.71490239
                    Corrected Total           47   37.91666667

                              R-Square     Coeff Var     Root MSE     A11 Mean

                              0.566345     -106.8024     0.845519    -0.791667

                    Source                    DF    Type I SS     Mean Square    F Value    Pr > F

                    GENDER                     1    0.28809524    0.28809524      0.40     0.5318
                    AGE                       17   13.09421292    0.77024782      1.08     0.4263
                    OCC                        4    6.79445694    1.69861423      2.38     0.0817
                    EDU                        2    1.29714664    0.64857332      0.91     0.4176

                                 Tukey's Studentized Range (HSD) Test for A11

                          Alpha                                        0.05
                          Error Degrees of Freedom                       23
                          Error Mean Square                        0.714902
                          Critical Value of Studentized Range      2.92553
                          Minimum Significant Difference             0.5121
                          Harmonic Mean of Cell Sizes              23.33333

                      Means with the same letter are not significantly different.

                          Tukey Grouping        Mean     N    SEX

                                  A           -0.7000    20     M
                                  A
                                  A           -0.8571    28     F
```

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APPENDIX F-5

Analysis of Mobile Phone 5

```
The SAS System                        11:49 Sunday, January 22, 2006   1
```
```
┌─────────────────────────────────────────────────────────────────────────┐
│          MOBILE PHONE 5 - ANOVA and TUKEY's Studentized Range Test        │
└─────────────────────────────────────────────────────────────────────────┘
```

```
                           The GLM Procedure

                        Class Level Information

           Class        Levels   Values

           GENDER            2   F (Female) M (Male)

           AGE              18   20 24 25 26 27 28 29 30 31 32 34 35 36 37 38 39 40 41

           OCC               5   OCC01 OCC02 OCC03 OCC04 OCC05
                                            OCC01 - Academician
                                            OCC02 - Research Assistants
                                            OCC03 - Software Engineer
                                            OCC04 - Student
                                            OCC05 - Official
           EDU               3   EDU01 (Bachelor) EDU02 (Graduate -MSc) EDU03 (PhD)

                        Number of observations    48
```

```
┌─────────────────────────────────────────────────────────────────────────┐
│          MOBILE PHONE 5 - Adjective Pair 1 (Traditional - Modern)         │
└─────────────────────────────────────────────────────────────────────────┘
```

Dependent Variable: A01

```
                                   Sum of
        Source                DF       Squares     Mean Square   F Value   Pr > F
        Model                 24    44.42961422     1.85123393      0.83   0.6767
        Error                 23    51.48705245     2.23856750
        Corrected Total       47    95.91666667

                  R-Square    Coeff Var     Root MSE     A01 Mean
                  0.463211    718.1685      1.496184     0.208333

        Source                DF      Type I SS     Mean Square   F Value   Pr > F

        GENDER                 1    14.11666667    14.11666667      6.31   0.0195
        AGE                   17    26.05096427     1.53240966      0.68   0.7866
        OCC                    4     3.78227954     0.94556988      0.42   0.7908
        EDU                    2     0.47970374     0.23985187      0.11   0.8988
```

```
                Tukey's Studentized Range (HSD) Test for A01

           Alpha                                   0.05
           Error Degrees of Freedom                  23
           Error Mean Square                   2.238567
           Critical Value of Studentized Range  2.92553
           Minimum Significant Difference        0.9062
           Harmonic Mean of Cell Sizes        23.33333
```

```
        Means with the same letter are not significantly different.
```

Tukey Grouping	Mean	N	SEX
A	0.8500	20	M
B	-0.2500	28	F

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Dependent Variable: A02

```
                                       Sum of
Source                      DF         Squares     Mean Square    F Value    Pr > F
Model                       24      35.91835686      1.49659820      0.97    0.5261
Error                       23      35.33164314      1.53615840
Corrected Total             47      71.25000000


              R-Square       Coeff Var      Root MSE      A02 Mean
              0.504117      -991.5349       1.239419     -0.125000


Source                      DF       Type I SS      Mean Square    F Value    Pr > F

GENDER                       1      6.19285714      6.19285714      4.03    0.0565
AGE                         17     21.05719361      1.23865845      0.81    0.6716
OCC                          4      7.11654472      1.77913618      1.16    0.3549
EDU                          2      1.55176139      0.77588070      0.51    0.6100
```

Tukey's Studentized Range (HSD) Test for A02

```
Alpha                                        0.05
Error Degrees of Freedom                       23
Error Mean Square                        1.536158
Critical Value of Studentized Range      2.92553
Minimum Significant Difference            0.7506
Harmonic Mean of Cell Sizes             23.33333
```

Means with the same letter are not significantly different.

```
Tukey Grouping          Mean      N    SEX

             A        0.3000     20    M
             A
             A       -0.4286     28    F
```

```
                          MOBILE PHONE 5 - Adjective Pair 3 (Hard - Soft)

Dependent Variable: A03

                                              Sum of
       Source                   DF          Squares     Mean Square    F Value    Pr > F
       Model                    24       16.03382040     0.66807585       0.92    0.5847
       Error                    23       16.77867960     0.72950781
       Corrected Total          47       32.81250000

                 R-Square     Coeff Var     Root MSE      A03 Mean
                 0.488650     -91.10531     0.854112     -0.937500

       Source                   DF        Type I SS     Mean Square    F Value    Pr > F
       GENDER                    1       2.83392857      2.83392857       3.88    0.0609
       AGE                      17      10.22187228      0.60128660       0.82    0.6543
       OCC                       4       2.69832267      0.67458067       0.92    0.4667
       EDU                       2       0.27969688      0.13984844       0.19    0.8269

                     Tukey's Studentized Range (HSD) Test for A03

                 Alpha                                     0.05
                 Error Degrees of Freedom                    23
                 Error Mean Square                      0.729508
                 Critical Value of Studentized Range    2.92553
                 Minimum Significant Difference           0.5173
                 Harmonic Mean of Cell Sizes            23.33333

            Means with the same letter are not significantly different.


             Tukey Grouping         Mean      N    SEX

                          A       -0.6500     20    M
                          A
                          A       -1.1429     28    F

                          MOBILE PHONE 5 - Adjective Pair 4 (Cold - Hot)

Dependent Variable: A04

                                              Sum of
       Source                   DF          Squares     Mean Square    F Value    Pr > F
       Model                    24       31.68873531     1.32036397       1.08    0.4316
       Error                    23       28.22793135     1.22730136
       Corrected Total          47       59.91666667

                 R-Square     Coeff Var     Root MSE      A04 Mean
                 0.528880     -204.5236     1.107836     -0.541667

       Source                   DF        Type I SS     Mean Square    F Value    Pr > F

       GENDER                    1       6.68809524      6.68809524       5.45    0.0287
       AGE                      17      16.61087959      0.97711056       0.80    0.6814
       OCC                       4       6.97923132      1.74480783       1.42    0.2585
       EDU                       2       1.41052916      0.70526458       0.57    0.5708

                     Tukey's Studentized Range (HSD) Test for A04

                 Alpha                                     0.05
                 Error Degrees of Freedom                    23
                 Error Mean Square                      1.227301
                 Critical Value of Studentized Range    2.92553
                 Minimum Significant Difference            0.671
                 Harmonic Mean of Cell Sizes            23.33333

            Means with the same letter are not significantly different.


             Tukey Grouping         Mean      N    SEX

                          A       -0.1000     20    M

                          B       -0.8571     28    F
```

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MOBILE PHONE 5 - Adjective Pair 5 (Youthful - Mature)

Dependent Variable: A05

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	19.29625279	0.80401053	0.79	0.7187
Error	23	23.51624721	1.02244553		
Corrected Total	47	42.81250000			

R-Square	Coeff Var	Root MSE	A05 Mean
0.450715	95.16805	1.011160	1.062500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	4.50535714	4.50535714	4.41	0.0470
AGE	17	11.54349081	0.67902887	0.66	0.8048
OCC	4	1.68001295	0.42000324	0.41	0.7990
EDU	2	1.56739190	0.78369595	0.77	0.4761

Tukey's Studentized Range (HSD) Test for A05

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.022446
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.6124
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.3214	28	F
B	0.7000	20	M

MOBILE PHONE 5 - Adjective Pair 6 (Inert - Energetic)

Dependent Variable: A06

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	34.12724584	1.42196858	1.06	0.4456
Error	23	30.85192082	1.34138786		
Corrected Total	47	64.97916667			

R-Square	Coeff Var	Root MSE	A06 Mean
0.525203	-5559.278	1.158183	-0.020833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	11.17202381	11.17202381	8.33	0.0083
AGE	17	16.68615220	0.98153836	0.73	0.7430
OCC	4	6.01775407	1.50443852	1.12	0.3707
EDU	2	0.25131577	0.12565788	0.09	0.9109

Tukey's Studentized Range (HSD) Test for A06

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.341388
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.7014
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.5500	20	M
B	-0.4286	28	F

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Dependent Variable: A07

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	29.52916868	1.23038203	1.02	0.4814
Error	23	27.72083132	1.20525354		
Corrected Total	47	57.25000000			

R-Square	Coeff Var	Root MSE	A07 Mean
0.515793	-125.4675	1.097840	-0.875000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.59285714	2.59285714	2.15	0.1560
AGE	17	22.24164347	1.30833197	1.09	0.4199
OCC	4	2.41455748	0.60363937	0.50	0.7354
EDU	2	2.28011059	1.14005530	0.95	0.4029

Tukey's Studentized Range (HSD) Test for A07

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.205254
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.6649
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.6000	20	M
A			
A	-1.0714	28	F

Dependent Variable: A08

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	22.02978181	0.91790758	0.71	0.7982
Error	23	29.88688485	1.29942978		
Corrected Total	47	51.91666667			

R-Square	Coeff Var	Root MSE	A08 Mean
0.424330	118.9487	1.139925	0.958333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.28809524	2.28809524	1.76	0.1975
AGE	17	10.86826895	0.63930994	0.49	0.9312
OCC	4	7.81972328	1.95493082	1.50	0.2338
EDU	2	1.05369434	0.52684717	0.41	0.6714

Tukey's Studentized Range (HSD) Test for A08

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.29943
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.6904
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.1429	28	F
A			
A	0.7000	20	M

Dependent Variable: A09

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	32.03931967	1.33497165	1.03	0.4771
Error	23	29.93984700	1.30173248		
Corrected Total	47	61.97916667			

R-Square	Coeff Var	Root MSE	A09 Mean
0.516937	-782.3554	1.140935	-0.145833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	1.42916667	1.42916667	1.10	0.3056
AGE	17	18.67033090	1.09825476	0.84	0.6355
OCC	4	5.36699765	1.34174941	1.03	0.4126
EDU	2	6.57282445	3.28641223	2.52	0.1020

Tukey's Studentized Range (HSD) Test for A09

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.301732
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.691
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.0000	28	F
A			
A	-0.3500	20	M

Dependent Variable: A10

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	18.08636535	0.75359856	0.92	0.5830
Error	23	18.89280131	0.82142614		
Corrected Total	47	36.97916667			

R-Square	Coeff Var	Root MSE	A10 Mean
0.489096	92.56092	0.906326	0.979167

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	7.87202381	7.87202381	9.58	0.0051
AGE	17	8.07552491	0.47503088	0.58	0.8749
OCC	4	1.86109919	0.46527480	0.57	0.6895
EDU	2	0.27771744	0.13885872	0.17	0.8455

Tukey's Studentized Range (HSD) Test for A10

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.821426
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5489
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.3214	28	F
B	0.5000	20	M

Dependent Variable: A11

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	9.76656596	0.40694025	0.55	0.9211
Error	23	16.90010070	0.73478699		
Corrected Total	47	26.66666667			

R-Square	Coeff Var	Root MSE	A11 Mean
0.366246	-64.28979	0.857197	-1.333333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	1.15238095	1.15238095	1.57	0.2230
AGE	17	6.67846558	0.39285092	0.53	0.9054
OCC	4	1.86062204	0.46515551	0.63	0.6440
EDU	2	0.07509739	0.03754869	0.05	0.9503

Tukey's Studentized Range (HSD) Test for A11

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.734787
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5192
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-1.1500	20	M
A			
A	-1.4643	28	F

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APPENDIX F-6

Analysis of Mobile Phone 6

```
MOBILE PHONE 6 - ANOVA and TUKEY's Studentized Range Test
```

The GLM Procedure

Class Level Information

Class	Levels	Values
GENDER	2	F (Female) M (Male)
AGE	18	20 24 25 26 27 28 29 30 31 32 34 35 36 37 38 39 40 41
OCC	5	OCC01 OCC02 OCC03 OCC04 OCC05

```
                                    OCC01 - Academician
                                    OCC02 - Research Assistants
                                    OCC03 - Software Engineer
                                    OCC04 - Student
                                    OCC05 - Official
```

EDU	3	EDU01 (Bachelor) EDU02 (Graduate -MSc) EDU03 (PhD)

Number of observations   48

```
MOBILE PHONE 6 - Adjective Pair 1 (Traditional - Modern)
```

Dependent Variable: A01

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	37.66041146	1.56918381	1.35	0.2398
Error	23	26.81875521	1.16603284		
Corrected Total	47	64.47916667			

R-Square	Coeff Var	Root MSE	A01 Mean
0.584071	140.0861	1.079830	0.770833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	1.00059524	1.00059524	0.86	0.3639
AGE	17	31.66538629	1.86266978	1.60	0.1462
OCC	4	3.40997218	0.85249305	0.73	0.5800
EDU	2	1.58445775	0.79222888	0.68	0.5168

Tukey's Studentized Range (HSD) Test for A01

```
Alpha                                   0.05
Error Degrees of Freedom                  23
Error Mean Square                   1.166033
Critical Value of Studentized Range 2.92553
Minimum Significant Difference         0.654
Harmonic Mean of Cell Sizes         23.33333
```

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.8929	28	F
A			
A	0.6000	20	M

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```
                   MOBILE PHONE 6 - Adjective Pair 2 (Boring - Interesting)
```

Dependent Variable: A02

```
                                         Sum of
          Source                   DF    Squares     Mean Square   F Value   Pr > F
          Model                    24   22.82956385   0.95123183     0.98    0.5246
          Error                    23   22.42043615   0.97480157
          Corrected Total          47   45.25000000

                      R-Square     Coeff Var     Root MSE     A02 Mean
                      0.504521     87.76181      0.987320     1.125000

          Source                   DF    Type I SS    Mean Square   F Value   Pr > F

          GENDER                    1    0.02142857    0.02142857     0.02    0.8834
          AGE                      17   18.60615974    1.09447998     1.12    0.3912
          OCC                       4    2.29217640    0.57304410     0.59    0.6747
          EDU                       2    1.90979915    0.95489957     0.98    0.3906

                         Tukey's Studentized Range (HSD) Test for A02

                   Alpha                                        0.05
                   Error Degrees of Freedom                       23
                   Error Mean Square                        0.974802
                   Critical Value of Studentized Range      2.92553
                   Minimum Significant Difference              0.598
                   Harmonic Mean of Cell Sizes             23.33333

             Means with the same letter are not significantly different.

                   Tukey Grouping         Mean      N    SEX

                           A            1.1429     28    F
                           A
                           A            1.1000     20    M
```

```
                   MOBILE PHONE 6 - Adjective Pair 3 (Hard - Soft)
```

Dependent Variable: A03

```
                                         Sum of
          Source                   DF    Squares     Mean Square   F Value   Pr > F
          Model                    24    9.95204044   0.41466835     0.48    0.9616
          Error                    23   20.04795956   0.87165042
          Corrected Total          47   30.00000000

                      R-Square     Coeff Var     Root MSE     A03 Mean
                      0.331735     62.24148      0.933622     1.500000

          Source                   DF    Type I SS    Mean Square   F Value   Pr > F

          GENDER                    1    0.00000000    0.00000000     0.00    1.0000
          AGE                      17    7.62728380    0.44866375     0.51    0.9180
          OCC                       4    1.67835087    0.41958772     0.48    0.7491
          EDU                       2    0.64640577    0.32320288     0.37    0.6942

                         Tukey's Studentized Range (HSD) Test for A03

                   Alpha                                        0.05
                   Error Degrees of Freedom                       23
                   Error Mean Square                         0.87165
                   Critical Value of Studentized Range      2.92553
                   Minimum Significant Difference             0.5654
                   Harmonic Mean of Cell Sizes             23.33333

             Means with the same letter are not significantly different.

                   Tukey Grouping         Mean      N    SEX

                           A            1.5000     28    F
                           A
                           A            1.5000     20    M
```

```
                         MOBILE PHONE 6 - Adjective Pair 4 (Cold - Hot)

Dependent Variable: A04

                                        Sum of
        Source                  DF      Squares      Mean Square    F Value    Pr > F
        Model                   24   13.46556421      0.56106518       0.59    0.8995
        Error                   23   22.01360245      0.95711315
        Corrected Total         47   35.47916667

                       R-Square     Coeff Var     Root MSE      A04 Mean
                       0.379534     76.98268      0.978322      1.270833


        Source                  DF      Type I SS    Mean Square    F Value    Pr > F

        GENDER                   1    0.02916667     0.02916667       0.03    0.8629
        AGE                     17    9.40041616     0.55296566       0.58    0.8753
        OCC                      4    1.35654133     0.33913533       0.35    0.8383
        EDU                      2    2.67944005     1.33972003       1.40    0.2669

                       Tukey's Studentized Range (HSD) Test for A04

                       Alpha                                     0.05
                       Error Degrees of Freedom                    23
                       Error Mean Square                     0.957113
                       Critical Value of Studentized Range   2.92553
                       Minimum Significant Difference          0.5925
                       Harmonic Mean of Cell Sizes          23.33333

            Means with the same letter are not significantly different.

               Tukey Grouping        Mean     N    SEX

                             A      1.3000    20    M
                             A
                             A      1.2500    28    F
```
```
                       MOBILE PHONE 6 - Adjective Pair 5 (Youthful - Mature)

Dependent Variable: A05

                                        Sum of
        Source                  DF      Squares      Mean Square    F Value    Pr > F
        Model                   24   25.30980137      1.05457506       0.91    0.5911
        Error                   23   26.66936530      1.15953762
        Corrected Total         47   51.97916667

                       R-Square     Coeff Var     Root MSE      A05 Mean
                       0.486922    -206.7491      1.076818     -0.520833

        Source                  DF      Type I SS    Mean Square    F Value    Pr > F

        GENDER                   1    1.80059524     1.80059524       1.55    0.2253
        AGE                     17   17.24409112     1.01435830       0.87    0.6057
        OCC                      4    4.36435381     1.09108845       0.94    0.4580
        EDU                      2    1.90076120     0.95038060       0.82    0.4531

                       Tukey's Studentized Range (HSD) Test for A05

                       Alpha                                     0.05
                       Error Degrees of Freedom                    23
                       Error Mean Square                     1.159538
                       Critical Value of Studentized Range   2.92553
                       Minimum Significant Difference          0.6522
                       Harmonic Mean of Cell Sizes          23.33333

            Means with the same letter are not significantly different.

               Tukey Grouping        Mean     N    SEX

                             A     -0.3571    28    F
                             A
                             A     -0.7500    20    M
```

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```
                          MOBILE PHONE 6 - Adjective Pair 6 (Inert - Energetic)

Dependent Variable: A06

                                              Sum of
        Source                    DF          Squares      Mean Square    F Value   Pr > F
        Model                     24       30.30722753       1.26280115      1.67    0.1108
        Error                     23       17.35943913       0.75475822
        Corrected Total           47       47.66666667

                      R-Square     Coeff Var      Root MSE      A06 Mean
                      0.635816     94.77472       0.868768      0.916667

        Source                    DF        Type I SS      Mean Square    F Value   Pr > F

        GENDER                     1       0.03809524       0.03809524      0.05    0.8242
        AGE                       17      19.63181950       1.15481291      1.53    0.1691
        OCC                        4       9.81950959       2.45487740      3.25    0.0297
        EDU                        2       0.81780320       0.40890160      0.54    0.5890

                       Tukey's Studentized Range (HSD) Test for A06

                       Alpha                                    0.05
                       Error Degrees of Freedom                   23
                       Error Mean Square                    0.754758
                       Critical Value of Studentized Range  2.92553
                       Minimum Significant Difference         0.5262
                       Harmonic Mean of Cell Sizes          23.33333

                  Means with the same letter are not significantly different.

                       Tukey Grouping          Mean     N    SEX

                                 A             0.9500    20    M
                                 A
                                 A             0.8929    28    F
```

```
                          MOBILE PHONE 6 - Adjective Pair 7 (Serious – Humorous)

Dependent Variable: A07

                                              Sum of
        Source                    DF          Squares      Mean Square    F Value   Pr > F
        Model                     24       12.78736242       0.53280677      0.59    0.8951
        Error                     23       20.69180425       0.89964366
        Corrected Total           47       33.47916667

                      R-Square     Coeff Var      Root MSE      A07 Mean
                      0.381950     74.63571       0.948495      1.270833

        Source                    DF        Type I SS      Mean Square    F Value   Pr > F

        GENDER                     1       0.50059524       0.50059524      0.56    0.4633
        AGE                       17       6.67700829       0.39276519      0.44    0.9580
        OCC                        4       4.55788921       1.13947230      1.27    0.3117
        EDU                        2       1.05186968       0.52593484      0.58    0.5654

                       Tukey's Studentized Range (HSD) Test for A07

                       Alpha                                    0.05
                       Error Degrees of Freedom                   23
                       Error Mean Square                    0.899644
                       Critical Value of Studentized Range  2.92553
                       Minimum Significant Difference         0.5744
                       Harmonic Mean of Cell Sizes          23.33333

                  Means with the same letter are not significantly different.

                       Tukey Grouping          Mean     N    SEX

                                 A             1.3571    28    F
                                 A
                                 A             1.1500    20    M
```

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```
                       MOBILE PHONE 6 - Adjective Pair 8 (Ornate - Plane)

Dependent Variable: A08

                                      Sum of
         Source                 DF    Squares      Mean Square    F Value    Pr > F
         Model                  24   27.77406832    1.15725285      8.30     <.0001
         Error                  23    3.20509835    0.13935210
         Corrected Total        47   30.97916667

                   R-Square     Coeff Var     Root MSE     A08 Mean
                   0.896540     -22.68145     0.373299     -1.645833

         Source                 DF    Type I SS    Mean Square    F Value    Pr > F

         GENDER                  1    0.37202381    0.37202381      2.67     0.1159
         AGE                    17   25.66423786    1.50966105     10.83     <.0001
         OCC                     4    1.64545492    0.41136373      2.95     0.0418
         EDU                     2    0.09235173    0.04617587      0.33     0.7213

                      Tukey's Studentized Range (HSD) Test for A08

                   Alpha                                    0.05
                   Error Degrees of Freedom                   23
                   Error Mean Square                    0.139352
                   Critical Value of Studentized Range  2.92553
                   Minimum Significant Difference         0.2261
                   Harmonic Mean of Cell Sizes          23.33333

               Means with the same letter are not significantly different.

                   Tukey Grouping        Mean      N    SEX

                             A         -1.5714     28    F
                             A
                             A         -1.7500     20    M
```
```
                       MOBILE PHONE 6 - Adjective Pair 9 (Proud - Humble)

Dependent Variable: A09

                                      Sum of
         Source                 DF    Squares      Mean Square    F Value    Pr > F
         Model                  24   21.32138785    0.88839116      0.93     0.5684
         Error                  23   21.92861215    0.95341792
         Corrected Total        47   43.25000000

                   R-Square     Coeff Var     Root MSE     A09 Mean
                   0.492980     -111.5921     0.976431     -0.875000

         Source                 DF    Type I SS    Mean Square    F Value    Pr > F

         GENDER                  1    1.73571429    1.73571429      1.82     0.1904
         AGE                    17   15.10233890    0.88837288      0.93     0.5522
         OCC                     4    3.89223161    0.97305790      1.02     0.4175
         EDU                     2    0.59110305    0.29555152      0.31     0.7365

                      Tukey's Studentized Range (HSD) Test for A09

                   Alpha                                    0.05
                   Error Degrees of Freedom                   23
                   Error Mean Square                    0.953418
                   Critical Value of Studentized Range  2.92553
                   Minimum Significant Difference         0.5914
                   Harmonic Mean of Cell Sizes          23.33333

               Means with the same letter are not significantly different.

                   Tukey Grouping        Mean      N    SEX

                             A         -0.6500     20    M
                             A
                             A         -1.0357     28    F
```

```
                         MOBILE PHONE 6 - Adjective Pair 10 (Insane - Sane)

Dependent Variable: A10

                                          Sum of
          Source                DF       Squares     Mean Square    F Value    Pr > F
          Model                 24    21.30846234      0.88785260       0.99    0.5099
          Error                 23    20.60820433      0.89600888
          Corrected Total       47    41.91666667

                        R-Square     Coeff Var     Root MSE      A10 Mean
                        0.508353    -119.5677      0.946577     -0.791667

          Source                DF      Type I SS     Mean Square    F Value    Pr > F

          GENDER                 1     0.85952381      0.85952381       0.96    0.3376
          AGE                   17    17.04054724      1.00238513       1.12    0.3942
          OCC                    4     1.55784651      0.38946163       0.43    0.7822
          EDU                    2     1.85054478      0.92527239       1.03    0.3720

                        Tukey's Studentized Range (HSD) Test for A10

                        Alpha                                    0.05
                        Error Degrees of Freedom                   23
                        Error Mean Square                    0.896009
                        Critical Value of Studentized Range   2.92553
                        Minimum Significant Difference         0.5733
                        Harmonic Mean of Cell Sizes         23.33333

                  Means with the same letter are not significantly different.

                     Tukey Grouping        Mean      N    SEX

                            A           -0.6786     28    F
                            A
                            A           -0.9500     20    M
```

```
                        MOBILE PHONE 6 - Adjective Pair 11 (Masculine-Feminine)

Dependent Variable: A11

                                          Sum of
          Source                DF       Squares     Mean Square    F Value    Pr > F
          Model                 24     3.32333815      0.13847242       1.01    0.4924
          Error                 23     3.15582852      0.13720994
          Corrected Total       47     6.47916667

                        R-Square     Coeff Var     Root MSE      A11 Mean
                        0.512927     19.53856      0.370419      1.895833

          Source                DF      Type I SS     Mean Square    F Value    Pr > F

          GENDER                 1     0.07202381      0.07202381       0.52    0.4761
          AGE                   17     3.17876283      0.18698605       1.36    0.2412
          OCC                    4     0.06706075      0.01676519       0.12    0.9731
          EDU                    2     0.00549075      0.00274538       0.02    0.9802

                        Tukey's Studentized Range (HSD) Test for A11

                        Alpha                                    0.05
                        Error Degrees of Freedom                   23
                        Error Mean Square                     0.13721
                        Critical Value of Studentized Range   2.92553
                        Minimum Significant Difference         0.2243
                        Harmonic Mean of Cell Sizes         23.33333

                  Means with the same letter are not significantly different.

                     Tukey Grouping        Mean      N    SEX

                            A            1.9286     28    F
                            A
                            A            1.8500     20    M
```

APPENDIX F-7

Analysis of Mobile Phone 7

```
MOBILE PHONE 7 - ANOVA and TUKEY's Studentized Range Test
```

The GLM Procedure

Class Level Information

Class	Levels	Values
GENDER	2	F (Female) M (Male)
AGE	18	20 24 25 26 27 28 29 30 31 32 34 35 36 37 38 39 40 41
OCC	5	OCC01 OCC02 OCC03 OCC04 OCC05
		OCC01 – Academician
		OCC02 – Research Assistants
		OCC03 – Software Engineer
		OCC04 – Student
		OCC05 – Official
EDU	3	EDU01 (Bachelor) EDU02 (Graduate -MSc) EDU03 (PhD)

Number of observations   48

```
MOBILE PHONE 7 – Adjective Pair 1 (Traditional – Modern)
```

Dependent Variable: A01

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	13.31129593	0.55463733	1.21	0.3217
Error	23	10.50120407	0.45657409		
Corrected Total	47	23.81250000			

R-Square	Coeff Var	Root MSE	A01 Mean
0.559005	43.24497	0.675703	1.562500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.64821429	0.64821429	1.42	0.2456
AGE	17	7.84455368	0.46144433	1.01	0.4817
OCC	4	2.02786799	0.50696700	1.11	0.3756
EDU	2	2.79065998	1.39532999	3.06	0.0665

Tukey's Studentized Range (HSD) Test for A01

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.456574
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.4092
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.7000	20	M
A			
A	1.4643	28	F

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Dependent Variable: A02

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	52.51108408	2.18796184	3.11	0.0041
Error	23	16.15558258	0.70241663		
Corrected Total	47	68.66666667			

R-Square	Coeff Var	Root MSE	A02 Mean
0.764725	71.83740	0.838103	1.166667

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	5.03809524	5.03809524	7.17	**0.0134**
AGE	17	42.42348617	2.49549919	3.55	0.0027
OCC	4	4.17119593	1.04279898	1.48	0.2395
EDU	2	0.87830675	0.43915337	0.63	0.5440

Tukey's Studentized Range (HSD) Test for A02

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.702417
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5076
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.5500	20	M
B	0.8929	28	F

Dependent Variable: A03

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	29.69160318	1.23715013	0.69	0.8095
Error	23	40.97506349	1.78152450		
Corrected Total	47	70.66666667			

R-Square	Coeff Var	Root MSE	A03 Mean
0.420164	-400.4213	1.334738	-0.333333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.23809524	0.23809524	0.13	0.7180
AGE	17	24.81671597	1.45980682	0.82	0.6589
OCC	4	4.23995870	1.05998968	0.59	0.6698
EDU	2	0.39683327	0.19841664	0.11	0.8951

Tukey's Studentized Range (HSD) Test for A03

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.781524
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.8084
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.2500	20	M
A			
A	-0.3929	28	F

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```
                MOBILE PHONE 7 – Adjective Pair 4 (Cold – Hot)

Dependent Variable: A04

                                      Sum of
      Source                 DF       Squares    Mean Square   F Value   Pr > F
      Model                  24    33.43654424    1.39318934      0.75   0.7513
      Error                  23    42.48012243    1.84696184
      Corrected Total        47    75.91666667

                 R-Square     Coeff Var     Root MSE     A04 Mean
                 0.440437     -296.5156     1.359030     -0.458333

      Source                 DF      Type I SS    Mean Square   F Value   Pr > F

      GENDER                  1     4.40238095     4.40238095      2.38   0.1363
      AGE                    17    23.15501856     1.36205992      0.74   0.7376
      OCC                     4     5.00208034     1.25052009      0.68   0.6148
      EDU                     2     0.87706439     0.43853219      0.24   0.7906

                  Tukey's Studentized Range (HSD) Test for A04

                  Alpha                                   0.05
                  Error Degrees of Freedom                  23
                  Error Mean Square                   1.846962
                  Critical Value of Studentized Range  2.92553
                  Minimum Significant Difference        0.8231
                  Harmonic Mean of Cell Sizes         23.33333

           Means with the same letter are not significantly different.

                  Tukey Grouping        Mean      N    SEX

                        A            -0.1000      20    M
                        A
                        A            -0.7143      28    F

                MOBILE PHONE 7 - Adjective Pair 5 (Youthful – Mature)

Dependent Variable: A05

                                      Sum of
      Source                 DF       Squares    Mean Square   F Value   Pr > F
      Model                  24    20.33385475    0.84724395      1.14   0.3807
      Error                  23    17.14531192    0.74544834
      Corrected Total        47    37.47916667

                 R-Square     Coeff Var     Root MSE     A05 Mean
                 0.542538     118.4083      0.863394     0.729167

      Source                 DF      Type I SS    Mean Square   F Value   Pr > F

      GENDER                  1     0.50059524     0.50059524      0.67   0.4209
      AGE                    17    17.33352474     1.01961910      1.37   0.2387
      OCC                     4     2.12316705     0.53079176      0.71   0.5921
      EDU                     2     0.37656772     0.18828386      0.25   0.7789

                  Tukey's Studentized Range (HSD) Test for A05

                  Alpha                                   0.05
                  Error Degrees of Freedom                  23
                  Error Mean Square                   0.745448
                  Critical Value of Studentized Range  2.92553
                  Minimum Significant Difference        0.5229
                  Harmonic Mean of Cell Sizes         23.33333

           Means with the same letter are not significantly different.

                  Tukey Grouping        Mean      N    SEX

                        A             0.8500      20    M
                        A
                        A             0.6429      28    F
```

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                    MOBILE PHONE 7 - Adjective Pair 6 (Inert - Energetic)

Dependent Variable: A06

                                        Sum of
Source                      DF         Squares     Mean Square    F Value    Pr > F
Model                       24      22.26006280     0.92750262       0.67    0.8358
Error                       23      32.05243720     1.39358423
Corrected Total             47      54.31250000

               R-Square     Coeff Var      Root MSE      A06 Mean
               0.409852     171.7093       1.180502      0.687500

Source                      DF       Type I SS     Mean Square    F Value    Pr > F

GENDER                       1      0.90535714      0.90535714       0.65    0.4285
AGE                         17     16.17318021      0.95136354       0.68    0.7883
OCC                          4      3.96446745      0.99111686       0.71    0.5927
EDU                          2      1.21705800      0.60852900       0.44    0.6514

                  Tukey's Studentized Range (HSD) Test for A06

                  Alpha                                   0.05
                  Error Degrees of Freedom                  23
                  Error Mean Square                   1.393584
                  Critical Value of Studentized Range 2.92553
                  Minimum Significant Difference         0.715
                  Harmonic Mean of Cell Sizes         23.33333

             Means with the same letter are not significantly different.

                  Tukey Grouping        Mean       N    SEX

                          A           0.8500      20    M
                          A
                          A           0.5714      28    F
```

```
                    MOBILE PHONE 7 - Adjective Pair 7 (Serious – Humorous)

Dependent Variable: A07

                                        Sum of
Source                      DF         Squares     Mean Square    F Value    Pr > F
Model                       24      53.57716259     2.23238177       1.14    0.3819
Error                       23      45.23533741     1.96675380
Corrected Total             47      98.81250000

               R-Square     Coeff Var      Root MSE      A07 Mean
               0.542210    -2243.856       1.402410     -0.062500

Source                      DF       Type I SS     Mean Square    F Value    Pr > F

GENDER                       1      0.13392857      0.13392857       0.07    0.7965
AGE                         17     44.33315933      2.60783290       1.33    0.2604
OCC                          4      8.52551454      2.13137864       1.08    0.3877
EDU                          2      0.58456015      0.29228007       0.15    0.8627

                  Tukey's Studentized Range (HSD) Test for A07

                  Alpha                                   0.05
                  Error Degrees of Freedom                  23
                  Error Mean Square                   1.966754
                  Critical Value of Studentized Range 2.92553
                  Minimum Significant Difference        0.8494
                  Harmonic Mean of Cell Sizes         23.33333

             Means with the same letter are not significantly different.

                  Tukey Grouping        Mean       N    SEX

                          A           0.0000      20    M
                          A
                          A          -0.1071      28    F
```

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Dependent Variable: A08

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	30.42511038	1.26771293	0.92	0.5763
Error	23	31.55405628	1.37191549		
Corrected Total	47	61.97916667			

R-Square	Coeff Var	Root MSE	A08 Mean
0.490893	224.8873	1.171288	0.520833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	9.30059524	9.30059524	6.78	0.0159
AGE	17	15.31153935	0.90067879	0.66	0.8115
OCC	4	5.75928696	1.43982174	1.05	0.4036
EDU	2	0.05368883	0.02684441	0.02	0.9806

Tukey's Studentized Range (HSD) Test for A08

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.371915
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.7094
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.8929	28	F
B	0.0000	20	M

Dependent Variable: A09

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	34.18341339	1.42430889	1.97	0.0544
Error	23	16.62908661	0.72300377		
Corrected Total	47	50.81250000			

R-Square	Coeff Var	Root MSE	A09 Mean
0.672736	-80.02789	0.850296	-1.062500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.83392857	2.83392857	3.92	0.0598
AGE	17	21.58245896	1.26955641	1.76	0.1036
OCC	4	6.36742025	1.59185506	2.20	0.1006
EDU	2	3.39960561	1.69980280	2.35	0.1178

Tukey's Studentized Range (HSD) Test for A09

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.723004
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.515
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.8571	28	F
A			
A	-1.3500	20	M

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Dependent Variable: A10

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	28.38399323	1.18266638	1.64	0.1208
Error	23	16.61600677	0.72243508		
Corrected Total	47	45.00000000			

R-Square	Coeff Var	Root MSE	A10 Mean
0.630755	-339.9847	0.849962	-0.250000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	1.37142857	1.37142857	1.90	0.1815
AGE	17	23.10060756	1.35885927	1.88	0.0789
OCC	4	0.42129085	0.10532271	0.15	0.9630
EDU	2	3.49066624	1.74533312	2.42	0.1116

Tukey's Studentized Range (HSD) Test for A10

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.722435
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5148
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.1071	28	F
A			
A	-0.4500	20	M

Dependent Variable: A11

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	16.86916393	0.70288183	0.89	0.6084
Error	23	18.11000274	0.78739142		
Corrected Total	47	34.97916667			

R-Square	Coeff Var	Root MSE	A11 Mean
0.482263	-86.92416	0.887351	-1.020833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.02916667	0.02916667	0.04	0.8491
AGE	17	13.67492895	0.80440759	1.02	0.4723
OCC	4	3.09801729	0.77450432	0.98	0.4359
EDU	2	0.06705102	0.03352551	0.04	0.9584

Tukey's Studentized Range (HSD) Test for A11

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.787391
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5374
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-1.0000	28	F
A			
A	-1.0500	20	M

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APPENDIX F-8

Analysis of Mobile Phone 8

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MOBILE PHONE 8 - ANOVA and TUKEY's Studentized Range Test
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The GLM Procedure

Class Level Information

Class	Levels	Values
GENDER	2	F (Female) M (Male)
AGE	18	20 24 25 26 27 28 29 30 31 32 34 35 36 37 38 39 40 41
OCC	5	OCC01 OCC02 OCC03 OCC04 OCC05

```
                                OCC01 - Academician
                                OCC02 - Research Assistants
                                OCC03 - Software Engineer
                                OCC04 - Student
                                OCC05 - Official
```

Class	Levels	Values
EDU	3	EDU01 (Bachelor) EDU02 (Graduate -MSc) EDU03 (PhD)

Number of observations   48

```
MOBILE PHONE 8 - Adjective Pair 1 (Traditional - Modern)
```

The GLM Procedure

Dependent Variable: A01

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	47.65627956	1.98567831	1.14	0.3767
Error	23	40.01038711	1.73958205		
Corrected Total	47	87.66666667			

R-Square	Coeff Var	Root MSE	A01 Mean
0.543608	-226.1027	1.318932	-0.583333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.46666667	0.46666667	0.27	0.6094
AGE	17	33.48182095	1.96951888	1.13	0.3842
OCC	4	11.59564654	2.89891163	1.67	0.1920
EDU	2	2.11214540	1.05607270	0.61	0.5534

Tukey's Studentized Range (HSD) Test for A01

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.739582
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.7988
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.5000	28	F
A			
A	-0.7000	20	M

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```
                         MOBILE PHONE 8 - Adjective Pair 2 (Boring - Interesting)
```

Dependent Variable: A02

		Sum of			
Source	DF	Squares	Mean Square	F Value	Pr > F
Model	24	23.51653914	0.97985580	0.69	0.8162
Error	23	32.79596086	1.42591134		
Corrected Total	47	56.31250000			

R-Square	Coeff Var	Root MSE	A02 Mean
0.417608	-173.6895	1.194115	-0.687500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.13392857	0.13392857	0.09	0.7620
AGE	17	17.73830549	1.04342973	0.73	0.7429
OCC	4	4.98194953	1.24548738	0.87	0.4949
EDU	2	0.66235554	0.33117777	0.23	0.7946

Tukey's Studentized Range (HSD) Test for A02

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.425911
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.7232
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.6429	28	F
A			
A	-0.7500	20	M

```
                         MOBILE PHONE 8 - Adjective Pair 3 (Hard - Soft)
```

Dependent Variable: A03

		Sum of			
Source	DF	Squares	Mean Square	F Value	Pr > F
Model	24	36.09315994	1.50388166	1.25	0.2947
Error	23	27.57350673	1.19884812		
Corrected Total	47	63.66666667			

R-Square	Coeff Var	Root MSE	A03 Mean
0.566908	1313.903	1.094919	0.083333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	3.80952381	3.80952381	3.18	0.0879
AGE	17	20.59115626	1.21124449	1.01	0.4820
OCC	4	9.90677047	2.47669262	2.07	0.1184
EDU	2	1.78570940	0.89285470	0.74	0.4860

Tukey's Studentized Range (HSD) Test for A03

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.198848
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.6631
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.3214	28	F
A			
A	-0.2500	20	M

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Dependent Variable: A04

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	33.80366331	1.40848597	1.79	0.0840
Error	23	18.11300336	0.78752189		
Corrected Total	47	51.91666667			

R-Square	Coeff Var	Root MSE	A04 Mean
0.651114	-125.2834	0.887424	-0.708333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.68809524	0.68809524	0.87	0.3596
AGE	17	20.93020561	1.23118857	1.56	0.1574
OCC	4	7.80284702	1.95071176	2.48	0.0725
EDU	2	4.38251544	2.19125772	2.78	0.0828

Tukey's Studentized Range (HSD) Test for A04

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.787522
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5375
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.6071	28	F
A			
A	-0.8500	20	M

Dependent Variable: A05

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	27.89648773	1.16235366	1.48	0.1740
Error	23	18.02017894	0.78348604		
Corrected Total	47	45.91666667			

R-Square	Coeff Var	Root MSE	A05 Mean
0.607546	163.4118	0.885147	0.541667

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.00238095	2.00238095	2.56	0.1235
AGE	17	23.25081637	1.36769508	1.75	0.1060
OCC	4	2.31190176	0.57797544	0.74	0.5758
EDU	2	0.33138865	0.16569432	0.21	0.8109

Tukey's Studentized Range (HSD) Test for A05

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.783486
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5361
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.7143	28	F
A			
A	0.3000	20	M

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Dependent Variable: A06

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	21.45029082	0.89376212	0.96	0.5379
Error	23	21.36220918	0.92879170		
Corrected Total	47	42.81250000			

R-Square	Coeff Var	Root MSE	A06 Mean
0.501029	-102.7988	0.963738	-0.937500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.13392857	0.13392857	0.14	0.7076
AGE	17	13.23784873	0.77869698	0.84	0.6406
OCC	4	6.93822443	1.73455611	1.87	0.1504
EDU	2	1.14028909	0.57014454	0.61	0.5499

Tukey's Studentized Range (HSD) Test for A06

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.928792
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5837
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.8929	28	F
A			
A	-1.0000	20	M

Dependent Variable: A07

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	21.75504326	0.90646014	1.10	0.4088
Error	23	18.91162341	0.82224450		
Corrected Total	47	40.66666667			

R-Square	Coeff Var	Root MSE	A07 Mean
0.534960	-108.8132	0.906777	-0.833333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	1.15238095	1.15238095	1.40	0.2486
AGE	17	14.30468360	0.84145198	1.02	0.4708
OCC	4	4.54470187	1.13617547	1.38	0.2712
EDU	2	1.75327683	0.87663841	1.07	0.3607

Tukey's Studentized Range (HSD) Test for A07

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.822244
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5492
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	-0.6500	20	M
A			
A	-0.9643	28	F

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```
                        MOBILE PHONE 8 - Adjective Pair 8 (Ornate - Plane)
```

Dependent Variable: A08

```
                                            Sum of
         Source                      DF     Squares     Mean Square    F Value    Pr > F
         Model                       24   39.23993619    1.63499734      3.20     0.0034
         Error                       23   11.73923048    0.51040133
         Corrected Total             47   50.97916667

                     R-Square     Coeff Var      Root MSE      A08 Mean
                     0.769725     52.75745       0.714424      1.354167

         Source                      DF     Type I SS     Mean Square    F Value    Pr > F

         GENDER                       1    0.37202381     0.37202381      0.73     0.4020
         AGE                         17   31.94712459     1.87924262      3.68     0.0021
         OCC                          4    6.88786566     1.72196641      3.37     0.0260
         EDU                          2    0.03292214     0.01646107      0.03     0.9683

                         Tukey's Studentized Range (HSD) Test for A08

                    Alpha                                        0.05
                    Error Degrees of Freedom                       23
                    Error Mean Square                          0.510401
                    Critical Value of Studentized Range        2.92553
                    Minimum Significant Difference              0.4327
                    Harmonic Mean of Cell Sizes                23.33333

             Means with the same letter are not significantly different.

                  Tukey Grouping          Mean      N    SEX

                            A            1.4286     28    F
                            A
                            A            1.2500     20    M
```

```
                        MOBILE PHONE 8 - Adjective Pair 9 (Proud - Humble)
```

Dependent Variable: A09

```
                                            Sum of
         Source                      DF     Squares     Mean Square    F Value    Pr > F
         Model                       24   23.10135493    0.96255646      1.06     0.4453
         Error                       23   20.87781174    0.90773095
         Corrected Total             47   43.97916667

                     R-Square     Coeff Var      Root MSE      A09 Mean
                     0.525280     83.14902       0.952749      1.145833

         Source                      DF     Type I SS     Mean Square    F Value    Pr > F

         GENDER                       1    0.31488095     0.31488095      0.35     0.5616
         AGE                         17   18.37789716     1.08105277      1.19     0.3425
         OCC                          4    4.12183179     1.03045795      1.14     0.3647
         EDU                          2    0.28674502     0.14337251      0.16     0.8548

                         Tukey's Studentized Range (HSD) Test for A09

                    Alpha                                        0.05
                    Error Degrees of Freedom                       23
                    Error Mean Square                          0.907731
                    Critical Value of Studentized Range        2.92553
                    Minimum Significant Difference               0.577
                    Harmonic Mean of Cell Sizes                23.33333

             Means with the same letter are not significantly different.

                  Tukey Grouping          Mean      N    SEX

                            A            1.2143     28    F
                            A
                            A            1.0500     20    M
```

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Dependent Variable: A10

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	18.31436425	0.76309851	0.99	0.5073
Error	23	17.66480242	0.76803489		
Corrected Total	47	35.97916667			

R-Square	Coeff Var	Root MSE	A10 Mean
0.509027	76.48372	0.876376	1.145833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.07202381	2.07202381	2.70	0.1141
AGE	17	12.13658865	0.71391698	0.93	0.5543
OCC	4	3.94909794	0.98727448	1.29	0.3047
EDU	2	0.15665385	0.07832692	0.10	0.9035

Tukey's Studentized Range (HSD) Test for A10

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.768035
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.5308
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.3214	28	F
A			
A	0.9000	20	M

Dependent Variable: A11

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	24	34.46678516	1.43611605	0.88	0.6195
Error	23	37.44988150	1.62825572		
Corrected Total	47	71.91666667			

R-Square	Coeff Var	Root MSE	A11 Mean
0.479260	3062.475	1.276031	0.041667

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.00238095	2.00238095	1.23	0.2789
AGE	17	20.79537585	1.22325740	0.75	0.7245
OCC	4	10.24375372	2.56093843	1.57	0.2151
EDU	2	1.42527464	0.71263732	0.44	0.6508

Tukey's Studentized Range (HSD) Test for A11

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	1.628256
Critical Value of Studentized Range	2.92553
Minimum Significant Difference	0.7728
Harmonic Mean of Cell Sizes	23.33333

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.2143	28	F
A			
A	-0.2000	20	M

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APPENDIX G

ANOVA AND TUKEY'S STUDENTIZED RANGE TEST FOR PERSONAL MOBILE PHONE FOR EACH ADJECTIVE PAIR

PERSONAL MOBILE PHONE - Adjective Pair 1 (Traditional – Modern)

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                             The GLM Procedure
                          Class Level Information

             Class       Levels   Values
             GENDER          2    F (Female) M (Male)

             AGE            17    20 24 25 26 27 28 29 30 31 32 35 36 37 38 39 40 41

             OCC             5    OCC01 OCC02 OCC03 OCC04 OCC05
                                           OCC01 – Academician
                                           OCC02 – Research Assistants
                                           OCC03 – Software Engineer
                                           OCC04 – Student
                                           OCC05 – Official
             EDU             3    EDU01 (Bachelor) EDU02 (Graduate - MSc) EDU03 (PhD)


                          Number of observations    39
```

PERSONAL MOBILE PHONE - Adjective Pair 1 (Traditional – Modern)

Dependent Variable: A01

```
                                   Sum of
      Source                DF     Squares      Mean Square    F Value    Pr > F
      Model                 23    59.69464159    2.59541920      2.83     0.0206
      Error                 15    13.74125584    0.91608372
      Corrected Total       38    73.43589744

              R-Square    Coeff Var    Root MSE    A01 Mean
              0.812881    373.2778    0.957123    0.256410

      Source                DF    Type I SS      Mean Square    F Value    Pr > F
      GENDER                 1    0.35958165     0.35958165      0.39     0.5404
      AGE                   16   45.58245502     2.84890344      3.11     0.0168
      OCC                    4    7.00165791     1.75041448      1.91     0.1609
      EDU                    2    6.75094702     3.37547351      3.68     0.0499

                 Tukey's Studentized Range (HSD) Test for A01

            Alpha                                          0.05
            Error Degrees of Freedom                         15
            Error Mean Square                          0.916084
            Critical Value of Studentized Range        3.01432
            Minimum Significant Difference              0.6536
            Harmonic Mean of Cell Sizes               19.48718

          Means with the same letter are not significantly different.

            Tukey Grouping         Mean      N   SEX
                          A       0.3500     20   M
                          A
                          A       0.1579     19   F
```

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```
                    PERSONAL MOBILE PHONE - Adjective Pair 2 (Boring - Interesting)
Dependent Variable: A02

                                        Sum of
          Source                 DF     Squares      Mean Square    F Value    Pr > F
          Model                  23   24.51656622     1.06593766      1.58     0.1831
          Error                  15   10.15010044     0.67667336
          Corrected Total        38   34.66666667

                     R-Square     Coeff Var      Root MSE      A02 Mean
                     0.707209     246.7805       0.822602      0.333333

          Source                 DF    Type I SS     Mean Square    F Value    Pr > F
          GENDER                  1   0.01140351     0.01140351      0.02     0.8984
          AGE                    16   20.51326017    1.28207876      1.89     0.1117
          OCC                     4   3.59022666     0.89755667      1.33     0.3053
          EDU                     2   0.40167589     0.20083794      0.30     0.7475

                        Tukey's Studentized Range (HSD) Test for A02

                   Alpha                                       0.05
                   Error Degrees of Freedom                      15
                   Error Mean Square                        0.676673
                   Critical Value of Studentized Range      3.01432
                   Minimum Significant Difference            0.5617
                   Harmonic Mean of Cell Sizes              19.48718

             Means with the same letter are not significantly different.

             Tukey Grouping           Mean      N    SEX

                          A          0.3500     20    M
                          A
                          A          0.3158     19    F
```

```
                      PERSONAL MOBILE PHONE - Adjective Pair 3 (Hard - Soft)

Dependent Variable: A03

                                        Sum of
          Source                 DF     Squares      Mean Square    F Value    Pr > F
          Model                  23   28.77700437     1.25117410      0.71     0.7769
          Error                  15   26.45376486     1.76358432
          Corrected Total        38   55.23076923

                     R-Square     Coeff Var      Root MSE      A03 Mean
                     0.521032     345.2800       1.328000      0.384615

          Source                 DF    Type I SS     Mean Square    F Value    Pr > F
          GENDER                  1   2.25971660     2.25971660      1.28     0.2754
          AGE                    16   23.30806950    1.45675434      0.83     0.6464
          OCC                     4   1.16474993     0.29118748      0.17     0.9528
          EDU                     2   2.04446834     1.02223417      0.58     0.5722

                        Tukey's Studentized Range (HSD) Test for A03

                   Alpha                                       0.05
                   Error Degrees of Freedom                      15
                   Error Mean Square                        1.763584
                   Critical Value of Studentized Range      3.01432
                   Minimum Significant Difference            0.9068
                   Harmonic Mean of Cell Sizes              19.48718

             Means with the same letter are not significantly different.

             Tukey Grouping           Mean      N    SEX

                          A          0.6316     19    F
                          A
                          A          0.1500     20    M
```

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```
                    PERSONAL MOBILE PHONE - Adjective Pair 4 (Cold - Hot)
Dependent Variable: A04

                                            Sum of
            Source                   DF     Squares      Mean Square    F Value    Pr > F
            Model                    23    26.23281358    1.14055711      0.99     0.5179
            Error                    15    17.20308386    1.14687226
            Corrected Total          38    43.43589744

                         R-Square     Coeff Var      Root MSE     A04 Mean
                         0.603943     417.6593       1.070921     0.256410

            Source                   DF    Type I SS     Mean Square    F Value    Pr > F
            GENDER                    1    1.00431849    1.00431849      0.88     0.3642
            AGE                      16   19.65648819    1.22853051      1.07     0.4492
            OCC                       4    4.38166156    1.09541539      0.96     0.4600
            EDU                       2    1.19034533    0.59517267      0.52     0.6054

                         Tukey's Studentized Range (HSD) Test for A04

                         Alpha                                       0.05
                         Error Degrees of Freedom                      15
                         Error Mean Square                       1.146872
                         Critical Value of Studentized Range     3.01432
                         Minimum Significant Difference           0.7313
                         Harmonic Mean of Cell Sizes             19.48718

                  Means with the same letter are not significantly different.

                  Tukey Grouping        Mean      N    SEX

                         A            0.4211     19    F
                         A
                         A            0.1000     20    M
```

                    PERSONAL MOBILE PHONE - Adjective Pair 5 (Youthful - Mature)

```
Dependent Variable: A05

                                            Sum of
            Source                   DF     Squares      Mean Square    F Value    Pr > F
            Model                    23    28.00945025    1.21780218      0.90     0.6029
            Error                    15    20.34952411    1.35663494
            Corrected Total          38    48.35897436

                         R-Square     Coeff Var      Root MSE     A05 Mean
                         0.579199     146.5327       1.164747     0.794872

            Source                   DF    Type I SS     Mean Square    F Value    Pr > F
            GENDER                    1    1.72739541    1.72739541      1.27     0.2769
            AGE                      16   16.84559774    1.05284986      0.78     0.6902
            OCC                       4    4.17182480    1.04295620      0.77     0.5620
            EDU                       2    5.26463230    2.63231615      1.94     0.1781

                         Tukey's Studentized Range (HSD) Test for A05

                         Alpha                                       0.05
                         Error Degrees of Freedom                      15
                         Error Mean Square                       1.356635
                         Critical Value of Studentized Range     3.01432
                         Minimum Significant Difference           0.7953
                         Harmonic Mean of Cell Sizes             19.48718

                  Means with the same letter are not significantly different.

                  Tukey Grouping        Mean      N    SEX

                         A            1.0000     20    M
                         A
                         A            0.5789     19    F
```

```
                    PERSONAL MOBILE PHONE - Adjective Pair 6 (Inert - Energetic)
Dependent Variable: A06

                                          Sum of
           Source                    DF    Squares     Mean Square   F Value   Pr > F
           Model                     23  41.35620646    1.79809593     2.45    0.0384
           Error                     15  11.00276790    0.73351786
           Corrected Total           38  52.35897436


                   R-Square    Coeff Var    Root MSE     A06 Mean
                   0.789859    417.5226     0.856457     0.205128


           Source                    DF    Type I SS    Mean Square   F Value   Pr > F
           GENDER                     1   0.36950067    0.36950067     0.50    0.4887
           AGE                       16  26.11594176    1.63224636     2.23    0.0646
           OCC                        4  13.88935561    3.47233890     4.73    0.0114
           EDU                        2   0.98140841    0.49070421     0.67    0.5269

                        Tukey's Studentized Range (HSD) Test for A06

                     Alpha                                    0.05
                     Error Degrees of Freedom                   15
                     Error Mean Square                    0.733518
                     Critical Value of Studentized Range   3.01432
                     Minimum Significant Difference         0.5848
                     Harmonic Mean of Cell Sizes          19.48718

               Means with the same letter are not significantly different.

                     Tukey Grouping         Mean      N    SEX

                             A            0.3000     20    M
                             A
                             A            0.1053     19    F
```

```
                    PERSONAL MOBILE PHONE - Adjective Pair 7 (Serious – Humorous)
Dependent Variable: A07

                                          Sum of
           Source                    DF    Squares     Mean Square   F Value   Pr > F
           Model                     23  42.71717741    1.85726858     1.70    0.1446
           Error                     15  16.35974567    1.09064971
           Corrected Total           38  59.07692308


                   R-Square    Coeff Var    Root MSE     A07 Mean
                   0.723077    -678.8221    1.044342     -0.153846


           Source                    DF    Type I SS    Mean Square   F Value   Pr > F
           GENDER                     1   0.44271255    0.44271255     0.41    0.5337
           AGE                       16  27.67435573    1.72964723     1.59    0.1891
           OCC                        4  12.96639760    3.24159940     2.97    0.0542
           EDU                        2   1.63371153    0.81685576     0.75    0.4897

                        Tukey's Studentized Range (HSD) Test for A07

                     Alpha                                    0.05
                     Error Degrees of Freedom                   15
                     Error Mean Square                     1.09065
                     Critical Value of Studentized Range   3.01432
                     Minimum Significant Difference         0.7131
                     Harmonic Mean of Cell Sizes          19.48718

               Means with the same letter are not significantly different.

                     Tukey Grouping         Mean      N    SEX

                             A           -0.0500     20    M
                             A
                             A           -0.2632     19    F
```

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                PERSONAL MOBILE PHONE - Adjective Pair 8 (Ornate - Plane)

Dependent Variable: A08

                                      Sum of
        Source                DF      Squares      Mean Square   F Value   Pr > F
        Model                 23   20.11637189      0.87462486      0.53   0.9186
        Error                 15   24.85798709      1.65719914
        Corrected Total       38   44.97435897

                     R-Square      Coeff Var      Root MSE      A08 Mean
                     0.447285      132.1199       1.287322      0.974359

        Source                DF    Type I SS      Mean Square   F Value   Pr > F
        GENDER                 1    1.24804318     1.24804318      0.75   0.3992
        AGE                   16   15.15638199     0.94727387      0.57   0.8610
        OCC                    4    2.03009898     0.50752475      0.31   0.8693
        EDU                    2    1.68184773     0.84092387      0.51   0.6120

                     Tukey's Studentized Range (HSD) Test for A08

                 Alpha                                       0.05
                 Error Degrees of Freedom                      15
                 Error Mean Square                       1.657199
                 Critical Value of Studentized Range     3.01432
                 Minimum Significant Difference             0.879
                 Harmonic Mean of Cell Sizes            19.48718

            Means with the same letter are not significantly different.

                 Tukey Grouping        Mean      N    SEX

                          A          1.1579      19    F
                          A
                          A          0.8000      20    M
```

```
                PERSONAL MOBILE PHONE - Adjective Pair 9 (Proud - Humble)


Dependent Variable: A09

                                      Sum of
        Source                DF      Squares      Mean Square   F Value   Pr > F
        Model                 23   38.66076121      1.68090266      2.16   0.0629
        Error                 15   11.64693109      0.77646207
        Corrected Total       38   50.30769231

                     R-Square      Coeff Var      Root MSE      A09 Mean
                     0.768486      127.2802       0.881171      0.692308

        Source                DF    Type I SS      Mean Square   F Value   Pr > F
        GENDER                 1    0.34979757     0.34979757      0.45   0.5123
        AGE                   16   37.47657934     2.34228621      3.02   0.0192
        OCC                    4    0.24153182     0.06038296      0.08   0.9880
        EDU                    2    0.59285248     0.29642624      0.38   0.6891

                     Tukey's Studentized Range (HSD) Test for A09

                 Alpha                                       0.05
                 Error Degrees of Freedom                      15
                 Error Mean Square                       0.776462
                 Critical Value of Studentized Range     3.01432
                 Minimum Significant Difference            0.6017
                 Harmonic Mean of Cell Sizes            19.48718


            Means with the same letter are not significantly different.

                 Tukey Grouping        Mean      N    SEX

                          A          0.7895      19    F
                          A
                          A          0.6000      20    M
```

PERSONAL MOBILE PHONE - Adjective Pair 10 (Insane - Sane)

Dependent Variable: A10

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	23	24.70855210	1.07428487	2.85	0.0200
Error	15	5.65042226	0.37669482		
Corrected Total	38	30.35897436			

R-Square	Coeff Var	Root MSE	A10 Mean
0.813880	70.40127	0.613755	0.871795

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	2.01950067	2.01950067	5.36	0.0352
AGE	16	19.03155141	1.18947196	3.16	0.0157
OCC	4	3.31465576	0.82866394	2.20	0.1183
EDU	2	0.34284426	0.17142213	0.46	0.6429

Tukey's Studentized Range (HSD) Test for A10

Alpha	0.05
Error Degrees of Freedom	15
Error Mean Square	0.376695
Critical Value of Studentized Range	3.01432
Minimum Significant Difference	0.4191
Harmonic Mean of Cell Sizes	19.48718

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.1053	19	F
B	0.6500	20	M

PERSONAL MOBILE PHONE - Adjective Pair 11 (Masculine-Feminine)

Dependent Variable: A11

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	23	46.74721806	2.03248774	1.81	0.1188
Error	15	16.84252553	1.12283504		
Corrected Total	38	63.58974359			

R-Square	Coeff Var	Root MSE	A11 Mean
0.735138	-1033.148	1.059639	-0.102564

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	12.30290148	12.30290148	10.96	0.0048
AGE	16	31.49787136	1.96861696	1.75	0.1420
OCC	4	1.31926845	0.32981711	0.29	0.8775
EDU	2	1.62717676	0.81358838	0.72	0.5007

Tukey's Studentized Range (HSD) Test for A11

Alpha	0.05
Error Degrees of Freedom	15
Error Mean Square	1.122835
Critical Value of Studentized Range	3.01432
Minimum Significant Difference	0.7236
Harmonic Mean of Cell Sizes	19.48718

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.4737	19	F
B	-0.6500	20	M

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APPENDIX H

ANOVA AND TUKEY'S STUDENTIZED RANGE TEST FOR FACTORS AFFECTING BUYING DECISIONS

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        The SAS System                      11:49 Sunday, January 22, 2006    1
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Factors Affecting Buying Decisions - ANOVA and TUKEY's Studentized Range Test

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                             The GLM Procedure

                         Class Level Information

             Class        Levels    Values

             GENDER            2    F (Female) M (Male)

             AGE              18    20 24 25 26 27 28 29 30 31 32 34 35 36 37 38 39 40 41

             OCC               5    OCC01 OCC02 OCC03 OCC04 OCC05
                                         OCC01 - Academician
                                         OCC02 - Research Assistants
                                         OCC03 - Software Engineer
                                         OCC04 - Student
                                         OCC05 - Official
             EDU               3    EDU01 (Bachelor) EDU02 (Graduate - MSc) EDU03 (PhD)

                         Number of observations    37
```

PERSONAL MOBILE PHONE - Effect of Brand

```
Dependent Variable: BRAND
                                        Sum of
             Source               DF     Squares     Mean Square   F Value   Pr > F
             Model                23   58.58380351    2.54712189      1.67    0.1700
             Error                13   19.84862892    1.52681761
             Corrected Total      36   78.43243243

                     R-Square     Coeff Var    Root MSE    BRAND Mean
                     0.746933     190.4952     1.235645     0.648649

             Source               DF    Type I SS    Mean Square   F Value   Pr > F
             GENDER                1    1.46167220    1.46167220     0.96    0.3457
             AGE                  16   50.70210984    3.16888187     2.08    0.0950
             OCC                   4    6.22487569    1.55621892     1.02    0.4333
             EDU                   2    0.19514578    0.09757289     0.06    0.9384

                 Tukey's Studentized Range (HSD) Test for BRAND

             Alpha                                         0.05
             Error Degrees of Freedom                        13
             Error Mean Square                         1.526818
             Critical Value of Studentized Range       3.05529
             Minimum Significant Difference               0.878
             Harmonic Mean of Cell Sizes              18.48649

         Means with the same letter are not significantly different.

             Tukey Grouping        Mean     N    SEX

                        A         0.8421    19    M
                        A
                        A         0.4444    18    F
```

Dependent Variable: PRICE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	23	21.76596962	0.94634651	0.87	0.6274
Error	13	14.12592227	1.08660941		
Corrected Total	36	35.89189189			

R-Square	Coeff Var	Root MSE	PRICE Mean
0.606431	110.1972	1.042406	0.945946

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	0.10241821	0.10241821	0.09	0.7637
AGE	16	12.16850047	0.76053128	0.70	0.7533
OCC	4	3.75847897	0.93961974	0.86	0.5106
EDU	2	5.73657197	2.86828598	2.64	0.1091

Tukey's Studentized Range (HSD) Test for PRICE

Alpha	0.05
Error Degrees of Freedom	13
Error Mean Square	1.086609
Critical Value of Studentized Range	3.05529
Minimum Significant Difference	0.7407
Harmonic Mean of Cell Sizes	18.48649

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.0000	18	F
A			
A	0.8947	19	M

Dependent Variable: COLOR

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	23	20.46275399	0.88968496	0.36	0.9852
Error	13	32.45616492	2.49662807		
Corrected Total	36	52.91891892			

R-Square	Coeff Var	Root MSE	COLOR Mean
0.386681	265.7394	1.580072	0.594595

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	1.17622886	1.17622886	0.47	0.5045
AGE	16	13.29770871	0.83110679	0.33	0.9800
OCC	4	0.99372562	0.24843141	0.10	0.9807
EDU	2	4.99509080	2.49754540	1.00	0.3944

Tukey's Studentized Range (HSD) Test for COLOR

Alpha	0.05
Error Degrees of Freedom	13
Error Mean Square	2.496628
Critical Value of Studentized Range	3.05529
Minimum Significant Difference	1.1228
Harmonic Mean of Cell Sizes	18.48649

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	0.7778	18	F
A			
A	0.4211	19	M

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Dependent Variable: TECH_FUNCS

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	23	30.31771553	1.31816154	1.48	0.2338
Error	13	11.57417637	0.89032126		
Corrected Total	36	41.89189189			

R-Square	Coeff Var	Root MSE	TECH_FUNCS Mean
0.723713	89.51802	0.943568	1.054054

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	5.26031294	5.26031294	5.91	0.0303
AGE	16	18.48508861	1.15531804	1.30	0.3214
OCC	4	3.05114719	0.76278680	0.86	0.5149
EDU	2	3.52116678	1.76058339	1.98	0.1779

Tukey's Studentized Range (HSD) Test for TECH_FUNCS

Alpha	0.05
Error Degrees of Freedom	13
Error Mean Square	0.890321
Critical Value of Studentized Range	3.05529
Minimum Significant Difference	0.6705
Harmonic Mean of Cell Sizes	18.48649

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	SEX
A	1.4211	19	M
B	0.6667	18	F

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APPENDIX I

CORRELATION AND CLUSTER ANALYSIS FOR ADJECTIVE PAIRS FOR MALES AND FEMALE PARTICIPANTS

Table 14 The Correlation Matrix of Adjective Pairs for FEMALE Participants

	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11
A01	1.00										
A02	**0.72**	1.00									
A03	0.37	0.45	1.00								
A04	0.44	**0.53**	**0.73**	1.00							
A05	-0.19	-0.16	-0.38	-0.37	1.00						
A06	**0.73**	**0.75**	0.41	**0.55**	-0.21	1.00					
A07	**0.52**	**0.56**	**0.60**	**0.67**	-0.49	**0.60**	1.00				
A08	-0.42	-0.44	**-0.53**	**-0.56**	0.39	-0.46	**-0.55**	1.000			
A09	**-0.52**	-0.51	-0.17	-0.30	0.29	**-0.63**	-0.46	0.49	1.00		
A10	-0.38	-0.37	-0.29	-0.37	0.50	-0.40	**-0.54**	**0.62**	**0.52**	1.00	
A11	0.24	0.33	**0.74**	**0.64**	-0.47	0.34	**0.57**	**-0.52**	-0.19	-0.40	1.00

A1-Traditional - Modern   *A5-Youthful - Mature*   *A9-Proud - Humble*
A2-Boring - Interesting   *A6-Inert - Energetic*   *A10-Insane - Sane*
A3-Hard - Soft   *A7-Serious - Humorous*   *A11-Masculine - Feminine*
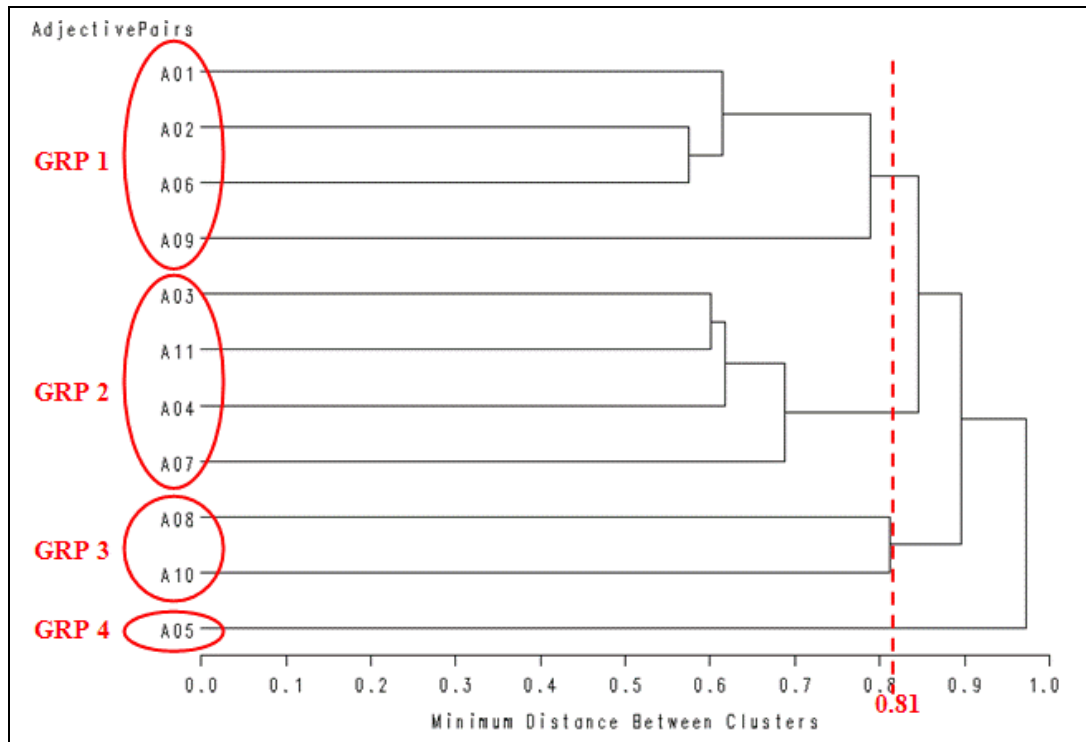*A4-Cold - Hot*   *A8-Ornate - Plane*

Figure 34 Resulting Groups for the Cluster Analysis for FEMALE Participants

Table 15 The Correlation Matrix of Adjective Pairs for MALE Participants

	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11
A01	1.00										
A02	**0.69**	1.00									
A03	0.11	0.29	1.00								
A04	0.27	0.44	**0.65**	1.00							
A05	0.05	0.00	-0.45	-0.23	1.00						
A06	**0.57**	**0.70**	0.24	**0.52**	-0.01	1.00					
A07	0.29	0.37	**0.63**	**0.53**	-0.50	0.40	1.00				
A08	-0.27	-0.37	-0.43	-0.45	0.44	-0.41	**-0.51**	1.00			
A09	**-0.65**	**-0.62**	-0.21	-0.34	-0.06	**-0.63**	-0.27	0.45	1.00		
A10	-0.35	-0.45	-0.39	-0.35	0.41	-0.45	-0.50	**0.61**	**0.52**	1.00	
A11	-0.02	0.11	**0.65**	0.45	-0.50	0.06	**0.53**	**-0.51**	0.02	-0.36	1.00

A1-Traditional - Modern   *A5-Youthful - Mature*   *A9-Proud - Humble*
A2-Boring - Interesting   *A6-Inert - Energetic*   *A10-Insane - Sane*
A3-Hard - Soft   *A7-Serious - Humorous*   *A11-Masculine - Feminine*
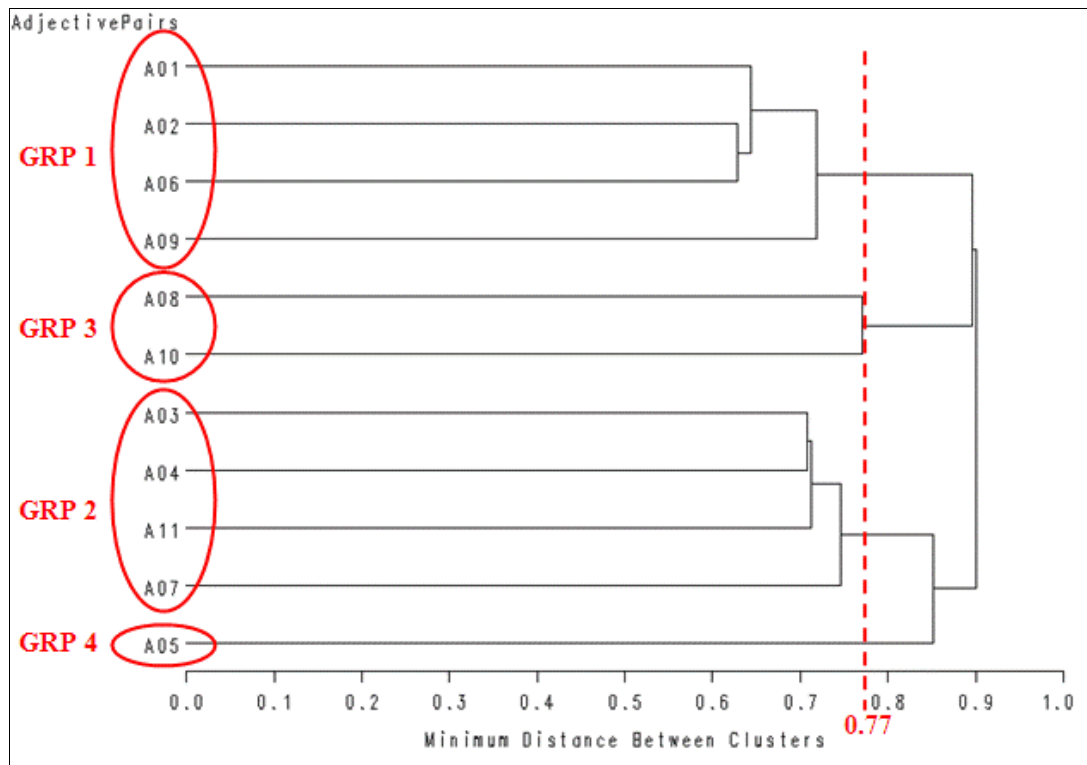*A4-Cold - Hot*   *A8-Ornate - Plane*

Figure 35 Resulting Groups for the Cluster Analysis for MALE Participants