



FREE ASSOCIATIONS TO THE COLOUR TERMS: GENDER-RELATED DIFFERENCES

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Abstract

Word association is one of the major subjects studied in linguistics, psychology and psycholinguistics. According to Sinopalnikova (2003), the simplest experiment technique to reveal the association mechanisms is a free association test. It gives the broadest information on the way knowledge is structured in the human mind. The present study is an attempt to investigate whether the speaker's gender contributes to the quantity of associated concepts. In a word association test, a list of words is presented to subjects that are asked to respond with the first word/s coming into their mind. 1037 valid concepts as a response to 11 color terms have been assembled and evaluated in terms of the number of nouns, adjectives, verbs, proper nouns, abstract concepts, syntagmatic and paradigmatic responses. The study illustrates that the gender of the speaker has effect on the number of free association to the stimulus words. (1) The female participant tend to use adjectives and verbs while almost all of the words associated by males are nouns. (2) The number of the abstract concepts shows difference according to the gender. (3) Men tend to use more proper nouns than women do. (4) Women tend to give much more paradigmatic responses than men.

Keywords: Gender, Word Association, Mental Lexicon, Psycholinguistics.

INTRODUCTION

The term association is used in psycholinguistics to refer to "the connection or relation between ideas, concepts, or words, which exists in the human mind and manifests in a following way: an appearance of one entity entails the appearance of the other in the mind" (Sinopalnikova, 2003).

Free associations have a long history in psychology, dating back to Galton and Wundt (Szalay and Deese, 1978), but reached prominence as a window to the mind. Freud used an event or word as a stimuli, asked what came to the participants' mind in response and got the train of thoughts from the participants (Freud, 1920). In a more modern framing, free associations might be considered to be located somewhere between explicit attitudes and beliefs, as measured by the implicit attitudes test (IAT) (Greenwald et al., 1998).

A major problem with free associations is that they are very much subject to context and momentary states. In effect, they are "noisy" outputs. There is some stability in free associations; for example, for a given individual, the first associate to a word is the same 60% of the time in tests one week apart (Szalay and Brent, 1967). Free associations turn out to be much more sgraphicand useful measures for groups, as opposed to individuals, since the "noisiness" of individual associations can thus be averaged out. Therefore, in this methodology, two groups of people (according to the gender) are given 30 seconds to write down all of their word associationsto the particular words.

For Miller (1996) word associations show the familiarity effect: responses are faster to familiar words and if a word has been presented before, it takes a shorter time to respond to that word. According to Kess (1992), context is an important factor in giving responses: if subjects must respond quickly, clang responses are common, if there is no time limitation more idiosyncratic responses occur.

For Kess, word association system is like a spiderweb in which words in the mental network are related to other words. "Word Association Test", which was invented by F. Galton, is a technique in order to test associations people make and it was widely used in psychology by psychiatrists such as C. Jung, G. H. Kent and A. J. Rosanoff. Kent & Rosanoff's study was the first large scale study which was carried out in English with 1,000 men and women. They used 100 probe words and read one word at a time to a person who was to give the first word that came into his/her mind. After analysing the data, they claimed that there was uniformity in the organization of associations and people shared sgraphic networks of connections among words. In this study, it is hypothesized that there will be some differences even ifboth men and women show sgraphic networks of connections among words. The researcher assume that this gender-based difference will be morphological as it is also suggested by Vainik (2006: 174). That is, it is hypothesized that the female participants will tend to use adjectives and verbs following nouns while most of the words written by the males are nouns and nearly none of them are adjectives and verbs, as other studies have

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shown (Wang and Shelley, 2007). Lakoff's hypothesis is that women use evaluative adjectives more than men (Haas, 1979). Hartman (1976) tested and supported Lakoff's hypothesis. In her study of 70-year-old native Maine men and women, she found that women compared with men used many more words such as lovely, delightful, wonderful, nice, pretty, cute, dearest, gentle, gaily, beautifully, lovelies, very very, devoted, meek, perfectly wonderful, and stylish. Also, according to the studies by Brandis and Henderson and Entwisle and Garvey, girls use more adjectives than boys (Haas, 1979). In present study, after comparing the number of nouns, adjectives and verbs written by male and female adults, the researcher will classify the responses as paradigmatic and syntagmatic responses which are two word association classification types of Kess. In addition to the morphological analysis of the data, the researcher will focus on the number of the concepts the participants write. Therefore, in this study, it is examined whether the associations of the women and men show difference in terms of the number. Lakoff (1973) says that " 'Women's language' shows up in all levels of the grammar of English. We find differences in the choice and frequency of lexical items." As a result of the studies she had carried out, Lakoff (1973) claims that the women dominate men in terms of the frequency of lexical items they produce. Women make far more precise discriminations in naming colors than do men, words like beige, ecru, aquamarine, lavender and so on, are remarkable in a women's active vocabulary, but absent from that of most men. (Lakoff, 1973). In this study, it is also hypothesized that women will make many more association than men. Thinking of another point which is related with the use of precise discriminations of women, it is also expected that women will use many more proper nouns as responses to the colour stimuli. In her *Language and Woman's Place* Robin Lakoff (1975) set up a collection of basic suppositions about the language of women. Among her assertions is that females have a special lexicon. That is, they use more words for things such as colour terms. In a study on the students' thinking styles based on Herrmann Whole Brain Model, the researchers have concluded that the girls are more detailed than the boys in carrying activities in the classroom (Bawaneh et al., 2011).

Another point which is questioned in this study is that there will be quantitative difference on abstract words written by male and female adults. Some studies show that there is an equal density on abstract words according to the gender. As a result of Altarriba's study (2008), in which sex differences in word ratings across concrete, abstract, and emotion words are investigated, it is indicated that sex differences did not emerge in the ratings of abstract and emotion words.

Researchers show both that brain areas associated with language work harder in girls during language tasks, and that boys and girls rely on very different parts of the brain when performing these tasks. In the study conducted by Northwestern University, it is resulted that language processing is more abstract in girls (Sciencedaily, 2008). Another study shows that male students have no advantage over female students by ability in abstract thinking (Roberts, 2010). On the other hand, electroencephalogram measurements have also shown a difference. When given abstract problems to work out, men showed a great deal of activity in the right side of their brain, while for women the activity was more generalised to both sides (Corpus callosum, 2011).

It was found that the gender of the speaker has no effect on the lexical density of discourse (Alami et al., 2012). However, in this study the researcher claims that the gender of the speaker has effect on word association in terms of number. To study the lexical density, word association test is applied in this study. According to Bahar and Hansell (2000), word association test is one of the commonest and oldest methods for investigating cognitive structure and has been used by several researchers. Therefore, it will be made clear whether cognitive structure of the men and women reveal some differences or similarities in terms of the number of the associated nouns, adjectives, verbs, proper nouns and abstract concepts. According to Richards (1991), the responses to free association tests give much information about the psychological structuring of vocabulary in an individual and offer a way of investigating the syntactic and semantic relationships among words. In this study, semantic and syntactic relations will be disregarded.

In classifying word associations, different classification systems which have some common characteristics were applied by different researchers. Kess (1992) divided word associations into 3 types:

1. Members of the same part of speech class
 - a) paradigmatic responses (responses which fall in the same syntactic category such as synonyms or antonyms such as thin-skinny, black-white)
 - b) syntagmatic responses (responses which fall into other categories such as dig/hole)
2. Members of the same taxonomy
 - a) Subordinate (dog/retriever)
 - b) Superordinate (dog/animal)

3. Ryming or clang responses (sister/blister, yellow/fellow)

Among the word association types of Kess which are given above, the researcher will evaluate only the paradigmatic and syntagmatic responses of the participants, in this study.

Miller (1996; *ibid*) reports that associative responses of adults can be investigated by using four types of semantic relations which were found to be salient in the lexical organization of most speakers of English:

1. superordinate, coordinate and subordinate terms
2. attributive terms
3. part-whole relations
4. functional terms.

There are different variations of word association tests but the underlying principle remains the same: stimuli words are presented to the subject (either verbally or in written form) who is asked to respond with the first word or words that come to mind. The resulting word association is thought to mirror the way the words are stored and linked in the mental lexicon.

AIM OF THE STUDY

This study aims at investigating word associations of female and male students at Hacettepe University in order to find the type and number of associations male students and female students make and to reveal whether there are any similarities and differences between their associations in terms of number and type of the concepts which were written.

After reviewing the related literature, it has been found that word association studies have generally been carried out to reveal how the children make word association and the difference between adults and children. Also, there have been lots of studies which examines whether word association varies according to the gender in children. Especially, syntagmatic and paradigmatic word association type is studied mostly to examine the language use differences between adults and children or between girl children and boy children. In this study, the researcher aims at revealing similarities and differences of the concepts associated by female and male adults in terms of number. This is a descriptive study which will show the frequency lists of the concepts associated.

In the light of above mentioned reasons, this study aims at answering the following *research questions*:

1. How many concepts were associated by female and male adults for each colour and does the number of the concepts differ according to the gender?
2. Which colour terms are the most & the least associated ones by the female and male adults?
3. Among the concepts written by the female and male adults, how many of them are a) nouns, b) adjectives, c) verbs, d) abstract concepts, e) proper nouns? Does the number of them differ according to the gender?
4. For which colour, abstract concepts were written most by female and male adults?
5. Do the concepts written differ in terms of paradigmatic and syntagmatic types according to gender?

This study is the first to examine the of free associations to colour target according to the gender, in terms of the number of the nouns, adjectives, verbs, proper nouns and abstract concepts. As mentioned in the Introduction part, the following results are expected in the current study:

- The gender of the speaker will have effect on word association in terms of number. Some studies show that there is no gender-based difference on lexical density (Alami et al., 2012) whereas other studies show the woman dominance (Lakoff, 1975).
- The adjectives will be written more by the female adults as also suggested by Lakoff in her studies.
- Male adults will tend to use nouns more than adjectives and verbs because they do not tend to make evaluations as woman do, which is also supported by Hass in his research (1979).
- Females will use more proper nouns than males (Bawaneh et al., 2011)
- The number of the abstract concepts will show difference according to the gender. Some of the studies show that the females are dominant in abstract thinking (Sciencedaily, 2008) whereas other studies suggest that there is not gender-based difference in terms of abstract thinking and use of abstract concepts or there is male-dominant abstract language use (Altarriba 2008; Roberts, 2010; Corpus callosum, 2011).
- The responses of female and male adults will be predominantly in the same category, paradigmatic or syntagmatic as shown in another study (Kent & Rosanoff, 1910). Also suggested by "Bybee's

model of morphological structures in the mental lexicon (1988), morphologically related words are indeed linked in form as well as meaning" (Jong, 1976).

These hypotheses are based on evidence that the responses to free association tests give much information about the psychological structuring of vocabulary in an individual (Richards, 1991). This information in the mental lexicon which is also different from a person to another. In this study, gender has been taken differently but equal to research whether mental lexicon of female and male adults show similarity within the same gender, and whether it shows difference between them.

METHODOLOGY

The rationale for using word association tests (WATs) in linguistics is to access the mental lexicon on the assumption that one may be able to, as Aitchison (2003: 85) observes: '...draw up a reasonably reliable map of the average person's word-web'. WATs can provide accounts of the formal (grammatical and lexical) relations between words and the individual's internal (psycholinguistic) knowledge.

From a procedural point of view, the free association method consists initially in asking subject to produce, from a stimuli word (the object of representation being studied), the words or expressions which spontaneously came into their mind. In present study, There will be eight stimuli words to which the participants will make free associations. "This method allows to access the cognemes in order to describe representations" (Lahlou and Abric, 2012).

1. Instrument

In its basic form, word association needs only subjects, a word list, and an experimenter. In order to examine the word associations of the adults in each gender, a questionnaire which includes 11 words was designed by the researcher. These 11 words are all the colour names. These colour terms were not selected randomly. Berlin and Kay (1969), and later Kay and Maffi (1999), showed that often colour terms appeared in languages in certain groups. If a language has only two colour terms, then they are white and black. If a language has three colour terms, then they are white, black, and red. If a language has four colour terms, then they are white, black, red, and green, and so on up to eleven colour terms. From these groupings, the colour terms can be ranked as follows: 1. white, 2. black, 3. red, 4. green, 5. yellow, 6. blue, 7. brown, 8. pink, 9. purple, 10. orange, 11. grey.

There are hundreds of different words for colour terms. To make the task feasible, it was necessary to choose a relatively small list of basic colour terms. Therefore, in this study, the eleven basic colour terms of Berlin and Kay have been used (1969). Also, the order of the colour terms are given as the same as the Berlin and Kay (B&K) order.

The questionnaire was written in Turkish because of the fact that the participants native language is Turkish.

2. Subjects

This study was carried out with 30 adults in order to examine the word associations of female and male adults. Students in two genders for chosen for this study in order to make comparisons between them. 15 females and 15 males (between the ages of 19- 21) participated in the study. The students were at the same department in the same university.

3. Data Collection

The data were collected from the students in their classrooms at the university. The students were given the questionnaires and were given 30 seconds to write down all of their free associations to each particular word. The number is an important criterion in free association studies. A subject can be asked to produce one, two, three or even more words. Within the framework of studies carried out, 3 and 5 responses are most often requested. In this study, the multiple response free association is used. As Schmitt (1998) states, asking for multiple responses gives the subjects additional chances to supply these more typical associations, and thus may well be a fairer measure. Providing multiple typical responses would supply a more convincing illustration that the stimuli word is incorporated into a subject's lexicon. The participants wrote the words or expressions without restriction. Abric (1976) suggests that the multiple response free association is the most frequently used one (Dany et al., 2009).

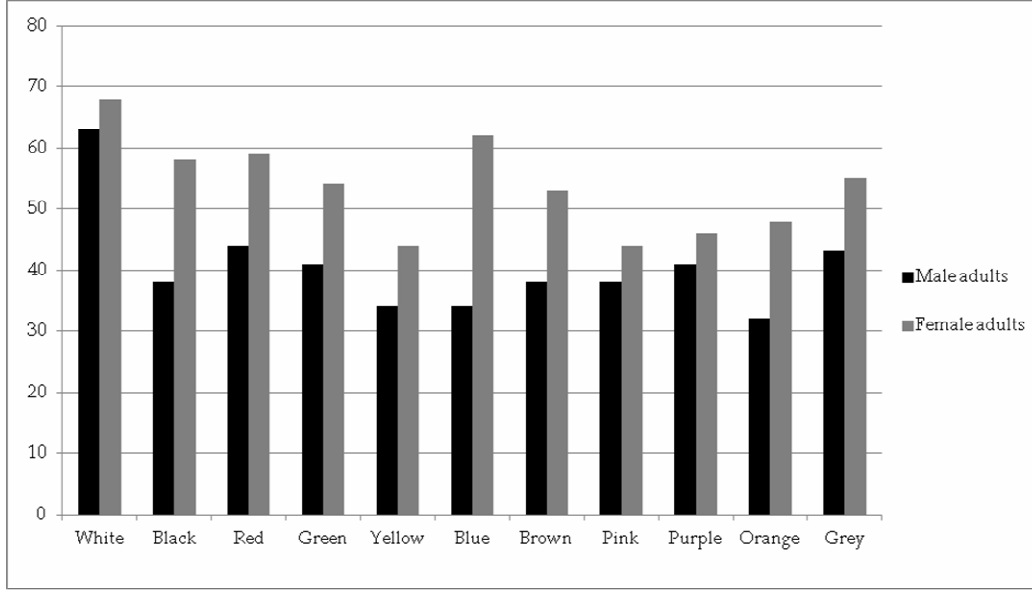
In this research, the restriction is not on the number, but on the time. The participants have maximum 30 seconds to write their responses for each stimulus. Time limitation was necessary to make comparison between the female and male students in terms of the number of the concepts they made association. Among the responses, only paradigmatic and syntagmatic responses have been evaluated.

Furthermore, the number of the nouns, adjectives, verbs, abstract concepts and proper nouns written by the participants have been compared according to the gender.

4. Data Analysis

All responses of male and female adults were counted. First research question was "How many concepts were associated by female and male adults for each colour and does the number of the concepts differ according to the gender? Graphic 1 shows the number of the free associations to each colour according to the gender.

Graphic 1: The number of free association to the colour terms according to the gender



Not the words, but the concepts were taken into consideration. One of the male responses to the *pink* stimuli was "dış cephe boyası" *housepaint*.

The important one in this study is the mental representations of the colour terms. Therefore, the researcher evaluated this expression as 1 representation, not word by word. A female response to the stimulus *pink* was "eskiden oda rengim" *the colour of my room beforetime* which is also counted as only one representation, hence 1 concept. Some responses given by the participants to the stimulus *white* are "gül" *rose*, "silgi" *eraser*, "elbise" *dress*, "eroin" *heroin*, "inci" *pearl*, "aydınlık" *light*, "peynir" *cheese*, "peace", "kefen" *shroud*, "gelinlik" *wedding dress*, "perde" *curtain*, "çarşaf" *sheet*, "BMW", "iç çamaşırı" *underwear*, "bulut" *cloud*, "pamuk" *cotton*, "inek" *cow*, "Beyazıt Öztürk", "evlenmek" *to get married*, "duvar" *wall*, "huzur" *peace*; for the stimuli *black*: "at" *horse*, "ayakkabı" *shoes*, "asalet" *nobility*, "kötülük" *malignancy*, "patlıcan" *eggplant*, "şeytan" *devil*, "gece" *night*, "uzay" *space*, "gizem" *mystery*, Max Black, "kömür" *coal*. Here are some responses to the 11 colour stimuli words: for the stimuli *red*: kan "blood", araba "car", top "ball", kurdele "ribbon", hell, Red John, tutku "passion", domates çorbası "tomato soap", ruj "lipstick", cüzdan "wallet", kadınlık "femininity"; for the stimulus *green*: dağ "mountain", doğa "nature", yatak örtüsü "bed covering", odam "my room", saksı "flowerpot", huzur "peace", orman "forest", enerji "energy", babamın gözleri "my father's eyes", ayakkabı "shoes", bahçe "garden", elma "apple", Bursa, erik "plum"; for the stimulus *yellow*: saç "hair", duvar boyası "wall paint", hastalık "illness", papatya "daisy", trafik ışıkları "traffic lights", ten rengi "skin tone", altın "gold", bira "beer", kuzenim "my cousin", kanarya "canary"; for stimulus *blue*: deniz "sea", nazar boncuğu "evi leye talisman", göz "eye", derinlik "depth", okyanus "ocean", gökyüzü "sky", güneşlenmek "sunbathe", köri sos "curry sauce", hastalık "illness", üzüntü "sadness", çiş "piddle", muz "banana", kusmak "to vomit"; for stimuli *brown*: yaşlılık "old age", toprak "land", hüznün "sadness", rahatlama "relief", eski "old", tarih "date", dışkı "stool", kurabiye "cookie", ağaç "tree", kahve "coffee"; for stimulus *pink*: çiçek "flower", aşk "love", kalp "heart", gül reçeli "rose jam", boya "paint", pamuk şeker "cotton candy", bebekler "babies", umut "hope", utangaçlık "shyness", çocukluğum "my childhood", Pink Floyd; for stimulus *purple*: Deep Purple, balık "fish", lavanta "lavender", gül "rose", üzüm "grapes", bere "bruise", kafayı yemişlik "be out of your tree", Hacettepe, kadın hakları "women's rights", şizofreni "schizophrenia", menekşe "viola"; for stimulus *orange*: portakal "orange", mandalina "tangerine", Fanta, havuç "carrot", şemsiye "umbrella", Antalya, bürokrasi "bureaucracy", Hollanda, kavun "melon", tiksinti "disgust", böcek "insect", irrite edici "irritant", Alanya; for stimulus *grey*: Fifty Shades of Grey, Ankara, gökyüzü "sky", toz "dust", duman "smoke", kaldırım "pavement", Cem Adrian, yağlı boya "oil paint", resim "painting".

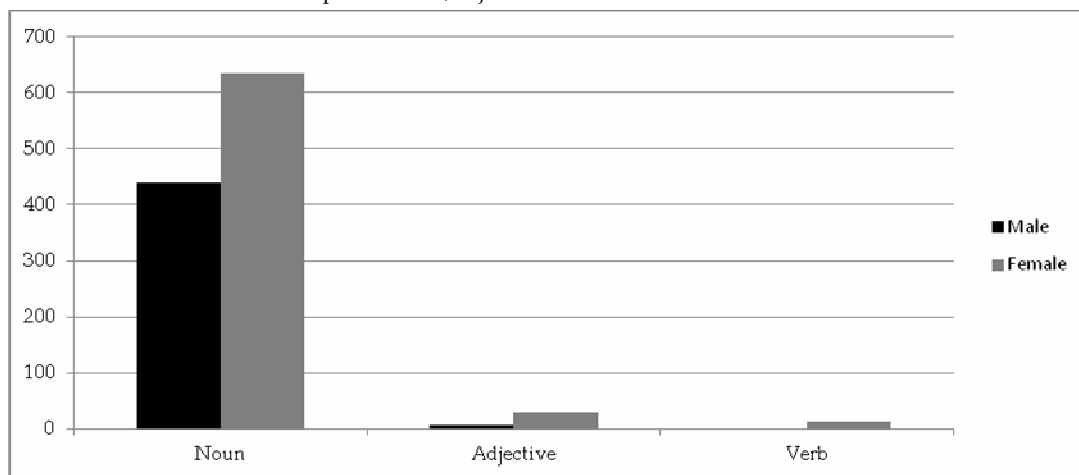
What is interesting in this study is that the participants wrote English words. However, the researcher did not interfere in the responses. After the questionnaire was done, some participants explained that they had written English words because they were the ones first came to their mind, it was related with that education language in the department is English. The researcher include the English words as responses, too. There is another point taken into consideration during the data analysis. The researcher excluded some responses and did not count them. These responses were related with the participants' comments on the stimuli word and Turkish synonym of the same colour. They were not association to the stimuli. Some of them are: *en sevmediğim renk* "the colour I dislike most", *en sevdiğim renk* "my favourite colour", *ak* "white", *güzel bir renk* "a nice colour", *bu da güzel bir renk* "another nice colour".

Second research question was "Which colour terms are the most & the least associated ones by the female and male adults? Graphic 1 also helps to see the result.

Third research question was "Among the concepts written by the female and male adults, how many of them are a) nouns, b) adjectives, c) verbs, d) abstract concepts, e) proper nouns? Does the number of them differ according to the gender?"

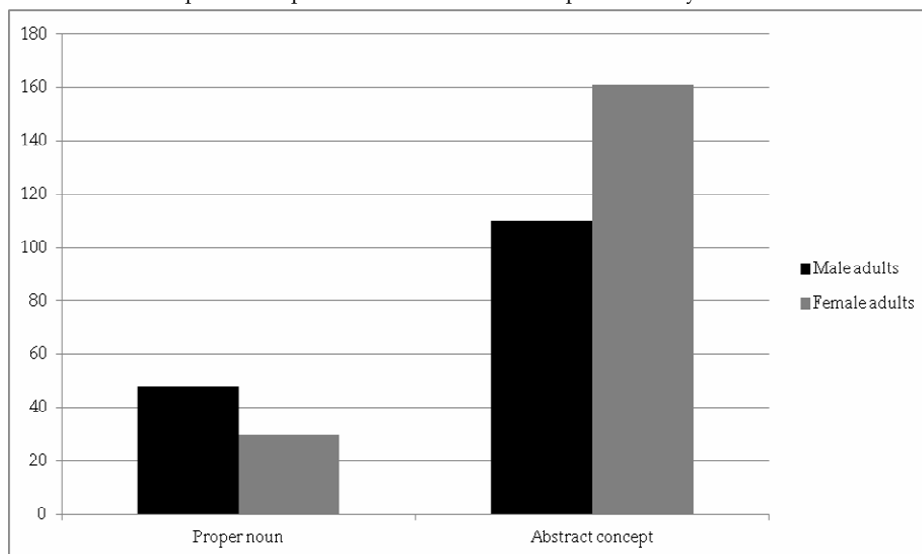
Graphic 2 shows the responses of male and female adults as noun, adjective, verb, proper noun, abstract concepts. It can give the opportunity to make comparison of the responses of female adults with the male adults.

Graphic 2: Noun, adjective and verb associations of male and female adults



What is interesting in the graphic 2 is that 15 male adults did not give made any verb association to any stimulicolour terms. Furthermore, they wrote only 7 adjectives as response for the whole colour terms. Graphic 3 shows the number of proper nouns and abstract concepts written by female and male adults for the 11 stimulicolour terms.

Graphic 3: Proper nouns and abstract concepts written by female and male adults

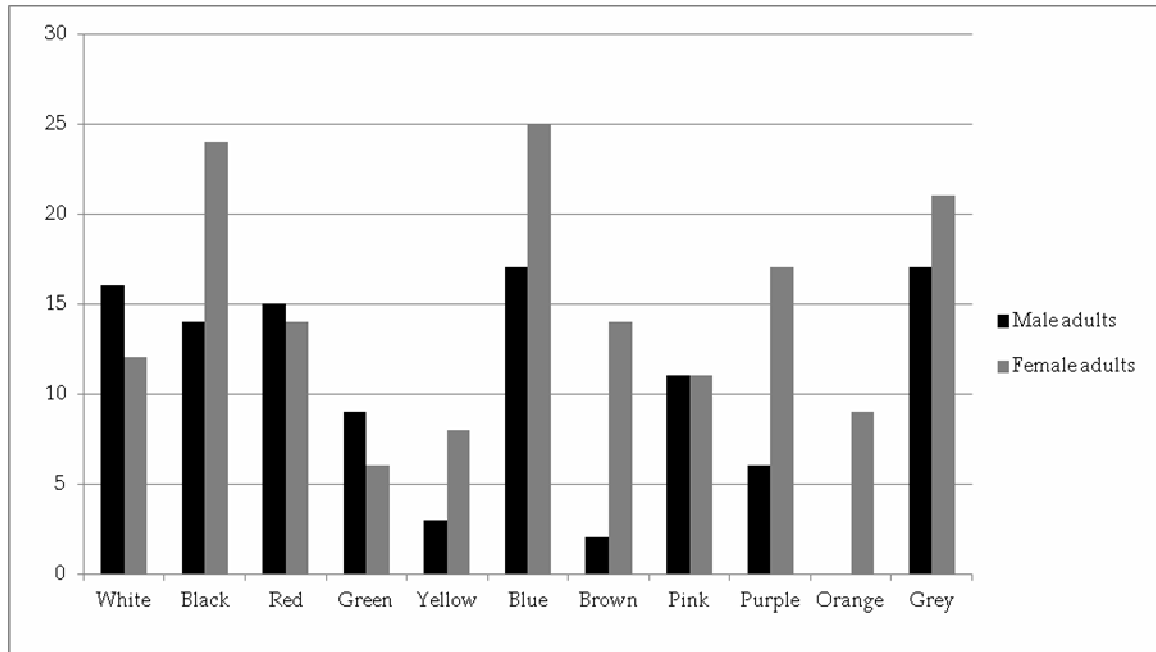


48 proper nouns are among 440 nouns which are written by the male adults. 30 proper nouns are among 636 nouns which are written by the female adults.

It can be clearly seen that male adults dominate the female adults in terms of the number of proper nouns they had written as association to eleven stimulicolour terms.

The forth research question to which the researcher aims to answer was “For which colour, abstract concepts were written most by female and male adults?” The comparison of the abstract responses to the 11 colour stimuli according to the gender are given in the Graphic 4.

Graphic 4: Abstract responses to 11 colour terms by female and male adults



Totally, 110 abstract concepts were given by male adults as responses and 161 abstract concepts were given by female adults as responses.

The last research question was “Do the concepts written differ in terms of paradigmatic and syntacmatic types according to gender?” With the help of the Graphic 1 the answer can be realized clearly.

FINDINGS AND DISCUSSION

In total, 1037 valid concepts were collected for the eleven stimuli words. The main purpose of the study was to reveal the gender-based differences or similarities. Therefore, the responses were evaluated under two categories as free associations of male adults and female adults. There were three steps that the researcher followed during the data analysis. The researcher firstly counted all valid responses given by the female adults and male adults to each stimuli words. Secondly, the concepts were categorized as noun, verb, adjective, proper noun and abstract concepts to compare them according to the gender. In the third step, the researcher categorized all the abstract responses according to the eleven stimuli words. With these three steps, the researcher have found the answers to all research questions. Here are the findings and answers to the research questions, also the evaluation of the hypotheses according to the findings.

How many concepts were associated by female and male adults for each colour and does the number of the concepts differ according to the gender?

15 female and 15 male adults made free associations to eleven stimuli words which are colour terms. In total, female adults wrote 591 concepts as free association to the stimuli words whereas male adults gave 446 responses. Graphic 1 shows that the number of the associations to each colour given by female adults is higher than the number of the responses given by male adults. So, it can be realized that the number of the free association to each colour differ according to the gender. Therefore, it can be said that cognitive structure of the men and women reveal some differences in regard to the number of concepts which are free associations to the stimuli words. The responses to free association tests give much information about the psychological structuring of vocabulary (Richard, 1991). Furthermore, Lakoff (1975) suggests that women have a special lexicon. Therefore, they can write many more words than the male adults do, for each stimuli words. As also the researcher hypothesized and the other studies suggest, the gender of the speaker have effect on word association in terms of number and lexical density.

Which colour terms are the most and the least associated ones by the female and male adults?

The number of free association made by female adults outnumber the ones made by male adults. The least associated colour terms by female adults are pink and yellow with the same numbers whereas they are green and purple by male adults again, with the equal numbers (See Graphic 1). The most associated colour by female and male adults is the same: it is white, by a high number in comparison to other colour terms. The researcher researched the answer of this research question because of the curiosity. Whether the most/least associated colour terms would be the same according to the gender or not was the object of curiosity. The research has revealed that besides being the most associated one, white is the associated with a high number difference by both female and male adults when compared with the other colour terms.

Among the concepts written by the female and male adults, how many of them are a) nouns, b) adjectives, c) verbs, d) abstract concepts, e) proper nouns? Does the number of them differ according to the gender?

The number of the noun concepts written by female adults is 636 whereas it is 440 for male adults. The females dominate the male adults in terms of the number of the noun concepts (See graphic 2). While female adults wrote 29 adjectives concepts in total, the male adults wrote only 7 concepts. The dominance of the female adults is valid also for the verb concepts which are written as free association to the stimuli words. The number of the verb concepts written by female adults is 13 whereas male adults did not make any verb association to the stimuli words. Therefore, it can be concluded that noun, verb and adjective associations by female adults outnumber the ones made by male adults. It is interesting that the male adults did not give any verb association. As also assumed by the researcher, this gender-based difference is morphological. This finding is consistent with Lakoff's hypothesis (1975) which suggests that women use evaluative adjectives more than men. They use and adjectives more because they tend to use more words to describe their feelings and often express their emotion with words.

Among 636 nouns written by female adults, 30 concepts were proper nouns. Among 440 nouns written by male adults, 48 concepts were proper nouns (Graphic 3). Male adults dominate females in terms of proper nouns written as free association. Therefore, it can be said that this is the only area that the male adults dominate female adults in this study. It was an unexpected result because previous studies and some hypothesis of other researcher suggest that women have special lexicon and use precise discriminations and they are detailed people. It is related with the thinking style of women. In this study, the researcher thought that these aspects would affect the proper noun use of females in positive way and they would write more concepts.

Female adults wrote 161 abstract concepts, while male adults wrote 110 abstract concepts as free association to the stimuli words. The researcher hypothesized that the number of the abstract concepts would show difference according to the gender. Females dominate males in terms of the abstract concepts written as association to the stimuli words, as also some of the previous studies show.

For which colour, abstract concepts were written most by female and male adults?

The number of abstract concept association to the colour terms according to the gender was given in the graphic 4. It is interesting abstract concepts were written most by female and male adults to the same colour; it is blue. Female adults wrote 25 concepts for the stimuli colour blue, whereas male adults wrote 17 concepts to the stimuli word blue. There is another colour, association number of which is also 17 and also done by male adults. It is grey. It is outstanding that both male and female adults wrote much more abstract concepts to the stimuli blue than the other stimuli words. There is also another striking point in the table 4 that the male adults did not write any abstract concept for the stimuli colour orange. This colour is also penultimate in regard to the abstract concept associations of female adults, which is another eye-brow raising situation.

Do the concepts written differ in terms of paradigmatic and syntactic types according to gender?

Among the grammatical categories, noun is the mostly associated one by both male and female adults. There are 446 noun concepts which were written by male adults and 591 concepts by female adults. The colour terms are adjectives. Therefore colour terms and the grammatical category that both male and female adults write most are from different grammatical category, hence the majority of the responses are syntagmatic responses (graphic 2). Preceding the data analysis, the researcher hypothesized that the responses of female and male adults would be predominantly in the same category, paradigmatic or syntagmatic. Graphic 2 shows that while female adults tend to use more adjectives than the male adults do. Taking into consideration that the grammatical class of stimuli words are adjectives, it can be said that the women tend to give much more paradigmatic responses than men. Morphological structuring in the mental lexicon may differ from one person to another, from a gender to another.

CONCLUSION

The aim of this study was to reveal whether the number of free association differ according to the gender consistently, and to focus on the differences if there are any. The results obtained in this study have shown that the number of the concepts as free associations to the stimuli words differ according to the gender. Data analysis showed that female adults made much more free association than men did. Among noun, verb, adjective, proper noun and abstract concept, the only category on which the male adults are dominant is proper noun. The colour terms for which the least association done by the female and male adults are different. However, the colour for which male and female participants did association most is white. Another finding was that *blue* is the colour for which abstract concepts were written most. All these findings have shown that there are both similarities and differences in regard to the free association made by female and male adults to eleven stimulicolour terms. However, this study questioned and focused on the differences. Based on the current results and previous researches, it can be said that the mental lexicon is personal. The sex of the people lead them to behave as a collective and distinctive groups. With reference to the characterization of women and men as belonging to social categories, women are said to talk more, chat more, make backbiting more while men do not talk much and talk about sports more. In the process of the time, not only the social rules or conventions but also the psychological and mental structures are formed differently according to the gender. That is, it would not be wrong to say that the mental lexicon is personal and also substitutes for the gender the person has. In the present study, male adults and female adults made consistent free associations for each stimuli word in terms of quantity. Male adults have less association than female adults for all of the stimulicolour terms. The gender of the speaker has effect on the number of the free association to the colour terms.

Mental lexicon is like a library or computer always being updated. New words are added, new connections to existing words are made. Women defined as being more expressive. So long as they write more, they get into more detail. Women tend to express themselves in detail and it shows how the concepts are connected tightly to each other in their mental lexicon.

Limitations and Suggestions for Further Research

This study was limited to 30 participants. Therefore, it would be wrong to make generalizations. It would be better if more subjects used in this study, hence more free associations. This study might also be carried out by children and adults of different age groups. 11 stimuli words were used in this study. In a further study, this number can be increased. Educational levels of the students were not taken as independent variable in this study but in another research word associations of adults with different educational backgrounds can be investigated.

The current study has been conducted by the analysis on 1037 responses by of 30 participants. Future researchers can use more participants to enhance their validity. Some replies which includes comment not association have been omitted to retain the research's validity and reliability. The responses could be classified into other association types too and they can be evaluated from semantic aspect of the language.

It was really interesting that the noun concepts that both female and male adults wrote were in a great number when compared with the adjectives and verbs. Another similar study can be investigated to see whether this situation is valid again or not and the reason behind it can be investigated.

In the process of data analysis, three points took the researcher's attention. However, these points were not taken into consideration because they were not in the scope of research. One of them is the phrase use by the participants. The researcher did not focus on the phrases in the data. Future researcher can investigate the phrases are used by female and male participants in terms of type or number. Another point is that the researcher came across the brackets used by the participants while analysing the data. The frequency of the brackets can also be studied and compared according to the gender in a further research. The other point is that first person singular suffixes are used from time to time. It can be investigated whether the gender of the participant has effect on using the possessive words as free association or not.

REFERENCES

- AICHISON, J. (2003). *Words in the Mind: An Introduction to the Mental Lexicon* (3rd ed.), London: Blackwell.
- AITCHISON, J. and Lewis, D. (1995). "How to Handle Wimps: Incorporating New Lexical Items as an Adult", *Folia Linguistica*, XXIX/1-2.
- LAHLOU, S. and Abric, J.-C. (2011). "What are the 'Elements' of a Representation?", *Papers on Social Representations*, 20, p. 20-1.
- ALAMI, M., Sabbah M., & Iranmanesh, M. (2013). "Male-Female Discourse Difference in Terms of Lexical Density", *Research Journal of Applied Sciences*, 5368.

- BAHAR, M. and Hansell, M. H. (2000). "The Relationship between Some Psychological Factors and their Effect on the Performance of Grid Questions and Word Association Tests", *Educational Psychology*, 20, No: 3.
- BAUER, L., Altarriba, J. (2008). "An Investigation Of Sex Differences In Word Ratings Across Concrete, Abstract, And Emotion Words", *the Psychological Record*, 58 (3), p. 465
- BAWANAH, A., Abdullah, A., Saleh, S., Yin Yin, K. (2011). "Jordanian Students' Thinking Styles Based On Herrmann Whole Brain Model", *International Journal of Humanities and Social Science*, 1, p. 9.
- DANY, L., Urdapilleta, I. & Lo Monaco, G. (2014). "Free Associations and Social Representations: Some Reflections on Rank-Frequency and Importance-Frequency Method", *Quality and Quantity*, 49 (2), p. 489-507.
- DEESE, J. (1962). "On the Structure of Associative Meaning", *Psychological Review*, 69 (3), p. 161.
- FREUD, S. (1917/1966). *A General Introduction to Psychoanalysis*. New York: W.W. Norton.
- FROMM, E. (1995). "Remarks on the Problem of Free Association". In D. B. Stern, C. H. Mann, S. Kantor, & G. Schlesinger (Eds.), *Pioneers of Interpersonal Psychoanalysis* (pp. 128-134). Hillsdale, NJ: The Analytic Press.
- GREENWALD, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). "Measuring Individual Differences in Implicit Cognition: The Implicit Association Test", *Journal of Personality & Social Psychology*, 74, p. 1464-1480.
- HARTMAN, M. (1976). "Descriptive Study of the Language of Men and Women Born in Maine around 1900 As It Reflects the Lakoff Hypotheses in "Language and Women's Place". In B. L. Dubois & I. Crouch (Eds.), *The Sociology of the Languages of American Women*, San Antonio, Tex: Trinity University Press.
- HASS, W. A., & Wepman, J. M. (1973). "Constructional Variety in the Spoken Language of School Children", *Journal of Genetic Psychology*, 122, p. 297-308.
- HAAS, A. (1979). "Male and Female Spoken Language Differences: Stereotypes and Evidence", *Psychological Bulletin*, 86, p. 616-626.
- JONG, D. Nivja, H. (2002). *Morphological Families in the Mental Lexicon*, Diss, Universtiy of Nijmegen.
- KESS, J. F. (1992). *Psycholinguistics: Psychology, Linguistics and the Study of Natural Language*, Amsterdam/Philadelphia: John Benjamins Publishing Company.
- LAKOFF R. (1975). *Language and Woman's Place*, New York.
- SINOPALNIKOVA, A. (2004). "Word Association Thesaurus as a Resource for Building WordNet". In *Proceedings of the 2nd International WordNet Conference* (pp.199-205).
- MEI-RONG, W., Hsieh, S. (2007). "Gender Differences in the Language for Emotions", *Asian Journal of Management and Humanity Sciences*, 2, p. 89-97.
- Miller, G. A. (1996). *The Science of Words*, New York: Scientific American Library.
- Roberts, P. (2009). Abstract thinking: a predictor of modeling ability Retrieved from http://www.cs.colostate.edu/models09/eduPapers/1_RobertsFinal.pdf, on May 31, 2014.
- ScienceDaily (2008). Boys' And Girls' Brains Are Different: Gender Differences In Language Appear Biological Retrieved from <http://www.sciencedaily.com/releases/2008/03/080303120346.htm>, on May 30, 2014.
- SCHMITT, N. (1998). "Quantifying Word Association Responses: What is Native-Like?", *System*, 26, pp. 389-401.
- Corpus Callosum (2014). Sex Differences, Retrieved from http://www.gender.org.uk/about/07neur/77_diffs.htm, on 29 May, 2014.
- SZALAY, L. B., & Brent, J. E. (1967). "The Analysis of Cultural Meanings through Free Verbal Associations", *The Journal of Social Psychology*, 72, p. 161-187.
- SZALAY, L. B., & Maday, B. C. (1967). "Verbal Associations in the Analysis of Subjective Culture", *Current Anthropology*, 14, p.33-42.
- SZALAY, L. B., & Deese, J. (1978). *Subjective Meaning and Culture: An Assessment through Word Associations*, Hillsdale, NJ: Lawrence Erlbaum.
- VAINIK, E. (2006). "Intracultural variation of semantic and episodic emotion knowledge in Estonian", *Trames*, 10(2), p. 169-189.