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A Case Study on Representativeness Heuristic in Employed and Unemployed Women in Turkey[1]

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Abstract

This study discusses whether decisions made under uncertain conditions are affected by the representativeness heuristic in terms of employed and unemployed women. For this purpose, we investigated whether female physicians and housewives use prior information when making predictions. The main purpose of study is to understand the disadvantaged position of women in the labor market. The study's main contribution to the literature is to explore the effect of the representativeness heuristic on women's deviations from rationality. To measure the representativeness heuristic, 14 questions were asked to 428 employed and unemployed women with an online survey. Our results were consistent with the literature, and we concluded that decisions made under uncertain conditions are influenced by the representativeness heuristic, resulting in deviations from rationality.

Keywords: *behavioral economics, woman, representtativeness heuristic, employment.*

Türkiye'de İstihdam Edilen ve Edilmeyen Kadınların Temsiliyet Kısa Yolu Üzerine Bir Araştırma

Deniz Özyakışır**

Öz

Bu çalışmada bireylerin belirsizlik altında aldığı kararlarında temsiliyet kısa yolundan etkilenip etkilenmediği, istihdam edilen ve edilmeyen kadınlar çerçevesinde ele alınmıştır. Bunun için doktor olan kadınların ve ev kadınlarının karar alırken önsel bilgiyi kullanıp kullanmadıkları incelenmiştir. Çalışmanın ana amacı kadının emek piyasasındaki dezavantajlı konumunu anlamaktır. Çalışmanın literatüre temel katkısı ise kadınların rasyonellikten sapmalarında temsiliyet kısa yolunun etkisini keşfetmektir. Uygulama yapılırken online anket tekniğiyle istihdam edilmiş ve edilmemiş 428 kadına temsiliyet kısa yolunu ölçmek için on dört soru sorulmuştur. Analiz sonucu literatüre uygun olup, bireylerin belirsizlik altında temsiliyet kısa yolu ile karar alarak rasyonellikten saptığı sonucuna ulaşılmıştır.

Anahtar Kelimeler: *davranışsal iktisat, kadın, temsiliyet kısa yolu, istihdam.*

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Introduction

Traditional economics employs *homo economicus*, a model of *Homo sapiens* where psychological and sociological characteristics are set aside to simplify statistical analysis and individuals can be represented innumbers. In the context of decision making, *homo economicus* is assumed to act rationally and on complete knowledge. Because of its specific definition, *homo economicus* has been a leading subject of criticism and discussion in economics, the study of how humans make choices and decisions. The first systematic critique of the concept of *homo economicus* was brought by Herbert A. Simon. Based on the argument that people have a limited cognitive capacity, and therefore it would be very difficult, if not impossible, for humans to make the optimal informed decision on complete knowledge, Simon (1955) put forward the assumption of "bounded rationality". This assumption suggests that individuals do not always act rationally and often deviate from rationality while making choices. Accordingly, he argued that it is more appropriate for the individual who lives in a world of scarcity to choose what is 'good enough', rather than seeking for the best.

In the 1980s, behavioral economics challenged the concept of *homo economicus*, that is, the assumption of rational choice. Behavioral economics criticized the dominant contemporary economic assumptions, particularly the concept of *homo economicus*, and argued that it is imperative to observe humans' economic behavior and to include psychological and sociological dimensions in economic theories. This paradigm shift was largely influenced by the work of Amos Tversky and Daniel Kahneman. Behavioral economics proposes that people do not act perfectly rational when making decisions under uncertainty and are susceptible to heuristics and biases. In order to understand these heuristics and biases, one must first discuss the human decision-making process. The dual-process theory approaches this issue by dividing the decision process into two based on whether the individual uses automatic or controlled mental processes when making decisions. System 1 is automatic and fast and requires little or no effort, whereas System 2 requires attention, involves complex calculations, and leads to laborious mental processes (Kahneman, 2011). In System 1, likelihood is estimated based on the individual's beliefs. These beliefs can be expressed numerically as probabilities or subjective probabilities. Tversky and Kahneman sought to answer questions such as what determines these beliefs, how people evaluate the probability of an uncertain event or the value of an uncertain amount. They concluded that under uncertainty, people rely on heuristics to simplify the judgment process. Although heuristics can be useful as they facilitate and simplify decision-making, they sometimes result in major systematic errors, producing biases and deviating individuals from rationality. These heuristics can be listed as representativeness, availability, and anchoring-and-adjustment (Tversky & Kahneman, 1974).

In their studies, Kahneman and Tversky assert that individuals resort to cognitive representativeness heuristic and prejudices in their decision processes and therefore they tend to make systematic mistakes. However, they also state that if the representativeness heuristic used by individuals in their preference

processes are understood correctly, systematic errors can be eradicated especially in the cases of uncertain situations. Therefore, at this point, we suggest that raising awareness on gender equality should be the priority to unpack the cases in which representativeness heuristic could be used properly and effectively to the benefit of women in public sphere. Women significantly contribute to the development of the societies they live in with different roles they undertake, but they still face problems such as low numerical participation and lack of representation, or being ignoring within their societies. However, it is thought the increasing their visibility by their participation in employment in all areas of life will have a significant impact on breaking the prejudice they are exposed. The most obvious where the representative shortcut can be observed is the labour market. Gender inequality in the labour market has psychological as well as social reasons. The representativeness heuristic, which can be considered as one of the psychological factors, has a serious effect on women's employment. As a matter of fact, the representation of women in politics, media and medicine has been examined. The disadvantageous effect of gender roles on women employment has begun to be considered as a problem in economics with behavioural economics, although it is ignored in traditional economics.

In this direction, we suggest that policies be developed within the framework of behavioural economics to gauge whether gender inequality is determinant in the recruitment process in the low female labour force participation rate and high unemployment rate problems in Turkey. Because women are exposed to many discriminations in business life due to their gender and social value judgments. The prevalence of the perception that places women as belonging to the private sphere continues in business life, which is seen as a public sphere. For this reason, women face many problems in processes such as recruitment, placement and promotion due to stereotypes. In this context, significant gains will be achieved in the direction of women's participation in the workforce and their equal employment with the nudges to be created within the framework of behavioural economics. In this sense, we suggest that the idea of nudge should be used as a public policy tool that regulates and improves the position of women in the public sphere. Thus, we propose the implementation of policies that will ensure equality of opportunity in all areas where women play an active role in education, employment, professional advancement, access to resources, institution and organization procedures, human relations and decision mechanisms. Finally, we would like to emphasise that there is an urgent need for more feminist economic research in the field of behavioural economics both to understand and improve the position of women in the public sphere.

In this study, we conducted an application based on the representativeness heuristic described by Kahneman and Tversky. The main purpose of study is to understand the disadvantaged position of women in the labor market. In this context we discuss how doctors and housewife use heuristics in Turkey. The paper has several contributions to literature. First, when the literature on the representative heuristics in Turkey was examined, no similar study was found. In this context, we believe that this study will make an original contribution to the literature. Second, the representation heuristic plays an important role in

many decisions and judgments made in real life. Therefore, in many situations (criminal justice, health, interpersonal perceptions and stereotypes), serious consequences and bad decisions may be inevitable. In addition, considering "There is dearth of information and data on decision processes of physicians" (Gotlieb, et al., 2019), we think that the study makes an important contribution to the literature. Last, the main contribution of this paper to the literature is to explore the effect of the representativeness heuristic on women's deviations from rationality.

Theoretical Framework: Representativeness Heuristic

Heuristic is a comprehensive concept that, has been used to define everything. In literature, shortly it is defined as decision-making rules of thumb that can in practice be very effective and a method or rule for solving problems (Laver & Sergenti, 2012; Young, 2008; Shah & Oppenheimer, 2008). Representative heuristics are a kind of mental shortcut that allows us to make quick decisions in the face of uncertainty. However, this situation not only enables us to think quickly, but also causes us to neglect the factors that play a role in the emergence of events (Cherry, 2021).

Heuristic method is a simple, intuitive model that ignores some information while trying to quickly find the (sufficient) best possible solution to a particular problem, as it tends to be temporary in nature (Hillier & Lieberman, 2010:607; Gigerenzer, 2008:20). This method is largely based on basic human capacity and are easy to understand, apply and explain (Katsikopoulos, 2011:10). For this reason, while it saves time, information and energy compared to rational methods, it can reach as accurate results as ordinary rational models in some special cases (Robbins & Timothy, 2013). However, these biases used in cognitive methods lead to systematic errors or deviations from objective value (Tversky & Kahneman, 1974).

Gigerenzer (2018) suggests that these biases will be true if the individual was not trained in statistics and the relevant information is provided within conditional probabilities. But he argues that the picture will change if people are provided with some training and learn to use the proper representations. *Representativeness heuristic* does not seek to quantitatively prove that people, objects, or events belong to a certain category (e.g., by determining the base rate), but creates an estimation based on how typical or "representative" they are of the abstracted prototype. Representativeness can facilitate and accelerate certain predictions by utilizing prior experiences or existing knowledge that shape perception; however, it is also a bias that can result in significant errors in judgment (Kahneman & Tversky, 1972).

In scientific research, representativeness heuristic is often measured by asking individuals which series of coin tosses represent a fair coin toss, or which profession a particular personality better represents. This bias is different from other biases in that it is prominently directional. That is, it would be natural to describe a sample as more or less representative of its parent population, or to describe a species (e.g., penguin) more or less representative of a genus or class (e.g., bird). However, defining a population as a representation of a sample or

category will reduce the likelihood of making an accurate prediction (Tversky and Kahneman, 1983).

Subjective possibilities play an important part in human life. In most cases, decisions are based on judgments about the likelihood of uncertain events. How people perceive, process, and evaluate the likelihood of uncertain events when making decisions has been extensively studied in the empirical literature. Although this literature is yet to yield a systematic theory concerning the psychology of uncertainty, several empirical generalizations have been established. The most important of these stipulate that people ignore chance and theory of statistical prediction when making predictions and judgments under uncertainty. Instead, they rely on a limited number of heuristics. This can produce reasonable judgments but, at times, lead to severe systematic errors. Representativeness is one of such heuristics. Representativeness heuristic includes determining the subjective likelihood of an event or a sample by the degree to which it is similar in basic characteristics to its parent population and how much it reflects the prominent features of the process by which it is generated (Kahneman & Tversky, 1972).

Most probabilistic questions people are interested in concern "the probability that object A belongs to class B, event A is caused by process B, and process B produces event A". Tversky and Kahneman (1974) argue that in answering such questions, people typically rely on representativeness heuristics, in which probabilities are judged by the degree to which A represents B, that is, the degree to which A resembles B. For instance, it is decided that "If A is highly representative of B, A is highly likely to originate from B, or vice versa, if A is not similar to B, then A is less likely to originate from B" (Tversky & Kahneman, 1974).

In most cases, the results of this heuristic are indeed more likely than others. That said this is not always the case. There are factors that affect the likelihood of outcomes but not their representativeness (for example, prior probability of outcomes and reliability of evidence). As heuristics neglect to consider such factors, heuristic estimates violate statistical estimation rules in systematic and fundamental ways, leading to serious errors (Kahneman & Tversky, 1973). Below are examples to factors that should influence decisions based on likelihood but have no effect on representativeness.

Sensitivity to Prior Probability of Outcomes: With the representativeness heuristic, people will ignore prior probabilities when estimating the likelihood of an event. In line with this hypothesis, Kahneman and Tversky (1973) conducted an experiment where a team of psychologists applied personality tests to a group of 100 successful professionals, including 30 engineers and 70 lawyers. They used their results to write short personality descriptions. Subsequently, they presented a different set of subjects with five short personality descriptions randomly sampled from among this 100 'sketches', who were then asked to rate the probability that the person described was an engineer over 100. The same task was also performed by a panel of experts, who were highly accurate in assigning probabilities to the various descriptions.

Subjects whose estimates came close to those made by the expert panel were offered bonuses.

In the first experiment, the subjects were told that the personality descriptions were obtained from a group of 70 engineers and 30 lawyers, and in the second experiment, a group of 30 engineers and 70 lawyers. As the subjects were told that engineers made up the majority, Bayes' rule stipulates that the likelihood ratio (0.7:0.3) should be applied to every decision and that, in the first experiment, more descriptions should belong to an engineer than a lawyer. However, neglecting Bayes' rule, the subjects from both groups produced similar likelihood estimations. That is, when estimating the likelihood that a given description is that of a lawyer or an engineer, the subjects considered how similar the descriptions were to existing stereotypes. Hence, they made assessments almost without considering prior probabilities. When the subjects were not given any personality descriptions, they correctly utilized prior probabilities when estimating the likelihood that the person is an engineer or a lawyer (Tversky and Kahneman, 1974).

Insensitivity to Sample Size: A representativeness heuristic is often used when estimating the probability of obtaining an outcome from a sample of a particular population. That is, the likelihood of an outcome from a sample is evaluated by comparing its similarity to the parameter corresponding to the sample. As sample size does not affect the degree of similarity of the sample statistic to the population, it also does not affect representativeness. Therefore, sample size is ignored when the likelihood of an event is estimated based on representativeness (Kahneman and Tversky, 1972).

Misconceptions of Chance: For the probabilities estimated by an individual to be representative of the population, it is not enough for an uncertain event to be similar to the parent population. Probabilities are also expected to reflect the characteristics of the uncertain process by which they are generated, that is, to appear random. As with the similarity of the sample to the population, the specific characteristics that determine apparent randomness also differ depending on context (Kahneman and Tversky, 1972). In other words, people assume that the basic characteristics of the process will be locally represented in each part of the ranking. However, local representativeness can systematically deviate from the expected probabilities (Tversky and Kahneman, 1974).

A lack of a systematic model is a key feature of apparent randomness. For example, a coin toss sequence that is visibly regular is not representative of the expected outcome. Therefore, sequences that alternate between tails and heads (e.g., H-T-H-T-H-T or T-T-H-H-T-T) are perceived to fail to reflect the randomness of the process. However, it is possible to get such sequences since each coin toss is independent of previous tosses. Such sequences, however, are of relatively low probability, and they are thus avoided when simulating random sequences (Tune, 1964; Wagenaar, 1970). Hence, this bias can lead to the selection of an insufficient sample, thinking that it will not considerably affect the result, and subsequently result in the over interpretation of the results (Tversky & Kahneman, 1974).

Insensitivity to Predictability: When called upon to make numerical predictions, people often make decisions by representativeness. For example, when a person is asked to predict the future profit of a given company, they will consider a high profit best representative of a company that is described favorably, and a mediocre profit to be representative of a mediocre company. However, when making the prediction, one often ignores the accuracy or reliability of the description of the company. Therefore, if a prediction is based solely on the favorableness of the description, the prediction is insensitive to the reliability and accuracy of the definition. Such an assessment will violate normative statistical theory. If there is no accurate or reliable information to guide prediction, then each potential outcome should be considered equally probable. Ergo, if the description of a company does not provide information pertaining to profitability, the outcome of the prediction must be the same for all assessed companies. Perfect predictability is associated with the overlapping of predicted values with actual values (Tversky & Kahneman, 1974).

Another bias in which subjects show little or no interest in predictability is intuitive predictions. Intuitive predictions follow representativeness, a judgmental heuristic. With this heuristic, people predict the outcome that seems to be most representative of the available evidence. Yet, intuitive predictions are insensitive to the reliability of the evidence or prior probability of outcomes and violate the logic of statistical predictions. Consistently, studies have shown that the ranking of outcomes by likelihood coincides with their ranking by representativeness and that individuals erroneously predict rare events and extreme values in cases they are perceived to be representative (Kahneman & Tversky, 1973).

Illusion of validity: When people make predictions, they select the outcome that best represents the data. The higher the representativeness of data, the higher the confidence of a person is in their predictions. Therefore, when given a description of a stereotypical librarian, an individual will confidently indicate that the description is that of a librarian. Even if the description is inadequate, unreliable, and invalid, the outcome will remain unchanged. The unwarranted confidence in the agreement between the prediction and the provided information is called the 'illusion of validity'. Here, the most important determinant of confidence is the internal consistency of the pattern (Tversky & Kahneman, 1974).

Misconceptions of Regression: Experienced flight instructors indicate that students who were praised for a smooth landing often performed poorly in their next try, and those who were harshly criticized for a rough landing did better the next time. Instructors interpreted this observation to suggest that verbal praise is detrimental, whereas verbal punishments are useful to learning. However, a successful first attempt will likely be followed by deterioration, and likewise, a poor performance will likely be followed by an improvement, regardless of verbal input. This phenomenon is known as regression toward the mean and was first described by Galton over 100 years ago. In this example, however, the flight instructors ignored regression towards the mean and drew an incorrect and perhaps harmful conclusion. Therefore, not considering the

effect of regression results in the overestimation of the impact of punishment and underestimation of the impact of reward (Kahneman and Tversky, 1973; Tversky and Kahneman, 1974).

Methodology

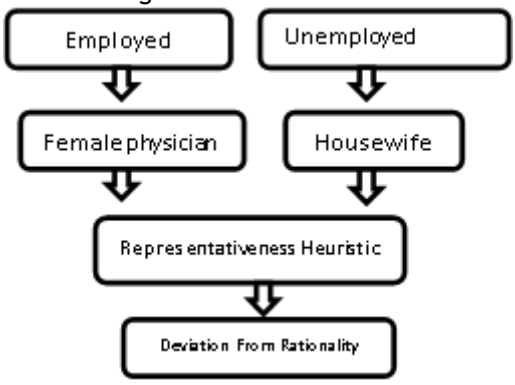
This study was designed as quantitative research. Data were collected via a survey. The main research problem is "*Is working status associated with deviation from rationality due to representativeness heuristic among women?*" In this context, the research model and hypotheses were as follows:

H_0*: *Working status is associated with deviation from rationality due to representativeness heuristic among women.

H_1*: *Working status is not associated with deviation from rationality due to representativeness heuristic among women.

Within the scope of the research, the following model was created by authors to investigate deviations from rationality due to representativeness heuristic among employed (physicians) and unemployed (housewives) women.

Figure 1.Research Model



The aim of the research was to reveal the role of the representativeness heuristic in deviation from rationality among employed and unemployed women. For this purpose, employed and unemployed women were asked the same questions based on stereotype biases to measure insensitivity to prior probability of outcomes and illusion of validity. The research population included women practicing medicine and housewives in Turkey. There were two major limitations to the research. First, the questionnaire was initially planned to be face-to-face; however, due to the COVID-19 pandemic, it was conducted online. Second, there was no available data regarding the current number of female physicians in Turkey. In order to overcome the second limitation, we accessed the most recent data from OECD.

The research population included women practicing medicine and housewives in Turkey. The profession of physician was selected to ensure that the participants had adequate knowledge to understand provided numerical data, and the questionnaire measured whether these women used the provided

data or the representativeness heuristic. In Turkey, 11 million 359 thousand of individuals over the age of 15 who did not participate in the workforce in 2019 were housewives (Turkish Statistical Institute-[TurkStat], 2020). According to OECD data (2020), the estimated number of female physicians in Turkey is 60,268. As we could not obtain the exact number of female physicians, who constitute the universe of the research, we used the *snowball sampling* method, a non-probabilistic sampling method. Snowball sampling is a purposeful data collection method in qualitative research and is applied when samples with target characteristics are rare to find (Naderifar, Goli & Ghaljaie, 2017). Although not certain, considering data from TurkStat and OECD, we estimated the universe of the study comprised of more than 11 million individuals (total number of female physicians and housewives in Turkey). In order to reach the necessary sample size to represent this universe, the link of the online survey was sent to a few physicians from the researchers' circle of acquaintances via e-mail and telephone, who then relayed the link to their colleagues. The survey form was delivered to housewives using the same method. About 450 individuals filled out the survey, and 22 surveys were omitted because they were incomplete. Therefore, the final sample size was 428 (218 physicians and 210 housewives). The required sample size was calculated as 384 for a population size of ≥1 million with a 95% confidence level and a sampling error of ±0.05. Once the population size reaches a certain number (>100.000), the sample size does not change much anymore (Hazra, 2017). Accordingly, our sample is adequately representative of the study population.

The questionnaire was based on the experimental studies published in the article "On the Psychology of Prediction" by Kahneman and Tversky (1973), which is accepted as the hallmark of the relevant literature. The first four items of the questionnaire concerned participants' demographic characteristics, and the remaining 10 questions aimed to measure the representativeness heuristic. After the questionnaire was prepared, a pilot study was conducted with a group of 30 physicians and housewives, and the questionnaire was revised according to their feedback. SPSS 20.0 program was used to evaluate the data. Evaluated data are presented in tables with number, percentage and chi-square test. In addition, Pearson Correlation Analysis was used to determine whether there was a relationship between the variables. Because the correlation coefficients define the strength and direction of the relationship between the variables (Schober et al., 2018).

Results

As can be seen in Table 1, 50.9% of the participants were physicians and 49.1% were housewives. Therefore, the two groups were of similar size. In terms of age, 2.6% of the participants were aged under 20 years old, 13.3% were 20-29 years old, 50.2% were 30-39 years old, 25% were 40-49 years old, 6.3% were 50-59 years old, and 2.6% were over 59 years old. In terms of region of residence, 5.6% of the participants resided in the Mediterranean region, 20.1% in the Black Sea region, 27.6% in Central Anatolia, 8.6% in the Aegean Region, 12.6% in Eastern Anatolia, 1.6% in Southeastern Anatolia, and 23.8% in the Marmara

Region. In terms of education status, 0.5% had not completed any tier of education, 5.4% had completed elementary school, 5.1% middle school, and 19.9% high school, while 6.5% had associate degree, 19.2% bachelor's degree, 19.4% master's degree, and 24.1% doctorate degree. Accordingly, most of the participants had completed some form of post-secondary education.

Table 1. Participants' Demographic and Socio-economic Characteristics

Profession	N	%
Physician	218	50.9
Housewife	210	49.1
Age		
Under 20	11	2.6
20-29	57	13.3
30-39	215	50.2
40-49	107	25.0
50-59	27	6.3
59 +	11	2.6
Region		
Mediterranean	24	5.6
Black Sea Region	86	20.1
Central Anatolia	118	27.6
Aegean Region	37	8.6
Eastern Anatolia	54	12.6
Southeast Anatolia	7	1.6
Marmara Region	102	23.8
Education Status		
Did not finish school	2	0.5
Elementary School (5 years)	23	5.4
Middle school (8 years)	22	5.1
High school	85	19.9
Associate degree	28	6.5
Bachelor's Degree	82	19.2
Master's Degree	83	19.4
Doctorate Degree	103	24.1
Total	428	100

Kahneman and Tversky (1973) argued that intuitive predictions follow a judgmental heuristic, representativeness, and by this heuristic, people predict the outcome that seems to best represent the available evidence. In other words, heuristic predictions are insensitive to the reliability of the evidence or the prior probability of outcomes, thus violating the logic of statistical predictions. Their study shows that the ranking of outcomes by likelihood coincides with their ranking by representativeness, and people mistakenly predict rare events and extreme values if they are representative. In this context, the fifth item of our study presented participants with five professions (housewife, realtor, mechanic, physician, and farmer) and asked the following question to determine the participants' estimated base rates: '*Imagine all individuals of working age in Turkey. Please write down your best predictions*

about the likelihood that these individuals will be among the listed professions (1:highest, 5:lowest).' In Table 2 are given the mean estimated base rates for the five professions.

Table 2.Participants' Estimated Base Rates for the Five Professions

Profession	N	%
Housewife	298	69.6
Physician	79	18.5
Farmer	30	7.0
Realtor	14	3.3
Mechanic	7	1.6
Total	428	100

Table 2 indicates that approximately 70% of the participants considered that a working-age individual in Turkey was most likely to be a housewife, followed by physician (18.5%), farmer (7%), realtor (3.3%), and mechanic (1.6%). As evident, about 70% of the participants stated that housewives were the majority among these five professions. On the other hand, Table 3 presents the mean estimated base rates for the five professions individually for physicians and housewives.

Table 3. Participants' Estimated Base Rates for the Five Professions According to Employment Status

Participants		Housewife	Physician	Farmer	Realtor	Mechanic	Total
Physician	N	170	28	12	5	3	218
	%	57.0	35.4	40.0	35.7	42.9	50.9
Housewife	N	128	51	18	9	4	210
	%	43.0	64.6	60.0	64.3	57.1	49.1
Total	N	298	79	30	14	7	428
	%	100	100	100	100	100	100

Among the 298 participants who predicted that among the listed professions an individual of working age in Turkey was most likely to be a housewife, 170 (57%) were physicians and 128 (43%) were housewives. Among the 79 participants who predicted that among the listed professions, an individual of working age in Turkey was most likely to be a physician, 35.4% were physicians, and 64.6% were housewives. This finding was statistically significant (χ^2=14.957, p=0.005).

The sixth item of the survey presented the participants with the following personality description: *"Ayşe is extroverted, successful, punctual and open to personal development. She is smart and practical. She is very good at problem solving. She has a high sense of responsibility. She likes to solve math problems.* "Subsequently, the participants were asked *"Please rank order how similar is Ayşe to the typical member of each listed profession (1: highest, 5: lowest)."* Table 4 presents participants' mean estimated similarity ratios for the five professions. Table 4 shows that among the participants, 68.5% indicated that the given personality description was most similar to that of a physician, 19.6% a housewife, 9.3% a realtor, 1.4% mechanic, and 1.2% farmer. In other words, the majority (68.5%) believed that the personality description was typical of a physician.

Table 4. Participants' Estimated Similarity Ratios for the Five Professions

Profession	N	%
Physician	293	68.5
Housewife	84	19.6
Realtor	40	9.3
Mechanic	6	1.4
Farmer	5	1.2
Total	428	100

Table 5. Participants' Estimated Similarity Ratios for the Five Professions According to Employment Status

Participants		Physician	Housewife	Realtor	Farmer	Mechanic	Total
Physician	N	175	26	16	1	0	218
	%	59.7	31.0	40.0	16.7	0.0	50.9
Housewife	N	118	58	24	5	5	210
	%	40.3	69.0	60.0	83.3	100	49.1
Total	N	293	84	40	6	5	428
	%	100	100	100	100	100	100

According to Table 5, among the 293 participants who believed that the personality description was most typical of a physician, 175 (59.7%) were physicians and 118 (40.3%) were housewives. Among the 84 participants who believed that the personality description was most typical of a housewife, 31% were physicians and 69% were housewives. This finding was statistically significant (χ^2=32.408, p=0.000). Question 7 was a follow-up to Question 6 and indicated that '*The preceding personality description of Ayşe was written during her senior year in high school. Please rank in order of the likelihood that Ayşe is employed in each of the following professions (1: highest, 5: lowest).'* Accordingly, the participants' mean estimated likelihood ratios for the five professions are given in Table 6.

Table 6. Participants' Estimated Likelihood Ratios for the Five Professions

Profession	N	%
Physician	269	62.9
Housewife	113	26.4
Realtor	39	9.1
Mechanic	4	0.9
Farmer	3	0.7
Total	428	100

The table indicates that based on Ayşe's personality description from high school, the majority (63%) of the participants predicted that she is currently most likely to be a physician, followed by housewife (26.4%), realtor (9.1%), mechanic (0.9%), and farmer (0.7%).

Table 7. Participants' Estimated Likelihood Ratios for the Five Professions According to Employment Status

Participants		Physician	Housewife	Realtor	Mechanic	Farmer	Total
Physician	N	152	51	14	1	0	218
	%	56.5	45.1	35.9	25.0	0	50.9
Housewife	N	117	62	25	3	3	210
	%	43.5	54.9	64.1	75.0	100	49.1
Total	N	269	113	39	4	3	428
	%	100	100	100	100	100	100

According to Table 7, among the 269 participants who indicated that Ayşe was currently most likely working as a physician, 152 (56.5%) were physicians and 117 (43.5%) were housewives. Among the 113 participants who indicated that Ayşe was currently most likely a housewife, 45.1% were physicians and 54.9% were housewives. This finding was statistically significant (χ^2=12.582, p=0.014). More than 60% of the participants indicated that the personality description was more likely that of a physician than a housewife. However, it is widely well known that housewives greatly outnumber physicians in Turkey. For each personality description given above, we investigated the correlations between *mean likelihood ratio* and *mean base rate*, and *mean likelihood ratio* and *mean similarity ratio* (Table 8).

Table 8. Correlation of Estimated Likelihood Ratios with Mean Base Rate and Similarity Ratios

		Mean Base Rate (Question 5[2])	Mean Similarity Ratio (Question 6[3])
Mean Likelihood Ratio (Question 7[4])	Pearson Correlation	.037	.345**
	Sig. (2-tailed)	.439	.000
	N	428	428

** Correlation is significant at the 0.01 level (2-tailed).

As can be seen in Table 8, the correlation between the mean likelihood ratio and the mean similarity ratio was 0.345, while the correlation between the mean likelihood ratio and the estimated base rate was 0.037. Hence, there was a positive and significant relationship between the likelihood and similarity ratios (r=0.345, p<0.01). Accordingly, a higher similarity ranking was associated with a higher likelihood ranking. Judgments of likelihood overlap with similarity judgments and are considerably different from estimated base rates. This finding is notable in that it confirms the hypothesis that people make predictions based on representativeness or similarity. Therefore, H_0 ('*Employment status is associated with deviation from rationality due to representativeness heuristic among women.*') was rejected and H_1 was not rejected. In other words, individuals can deviate from rationality due to using a representativeness heuristic regardless of employment status.

In general, there are three types of information relevant to statistical prediction: (a) prior knowledge or background information (e.g., base rates for the five professions), (b) specific evidence about the individual case (e.g., personality descriptions), (c) the expected accuracy of the prediction (e.g., the estimated likelihood of the choice). A fundamental rule of statistical prediction dictates that expected accuracy controls the relative weights assigned to specific evidence and to prior information. The lower the expected accuracy, the more regressive the predictions become, that is, closer to expectations based on prior or background information (Kahneman & Tversky, 1973). On the other hand, in Question 6 as the expected accuracy of the given personality description is low, rational predictions are expected to be closer to prior probabilities. But participants produced non-rational judgments based on representativeness, that is, they ranked the results according to their similarity to specific evidence, regardless of prior probabilities.

In consistence with the results reported by Kahneman and Tversky, our participants neglected several points of consideration and exclusively relied on the personality descriptions when making predictions. First, given that the validity and reliability of the method with which the information presented in the personality description are unknown, the actual individual may not be as successful or practical as suggested by their description. Second, even if the description was valid when the person was in high school (in the past), it may not be valid now. Third, even if the description is still valid, there are probably more housewives than physicians who fit this description as there are decidedly many more housewives than physicians. Subsequently, the participants were given a null personality description that did not contain any information regarding personality. In this context, the eighth item indicated *"Esra is employed in one of the listed professions. No further information will be provided about Esra. Please rank in order of likelihood that Esra is employed in each of the following professions (1: highest, 5: lowest)."* The estimated likelihood rankings for the null description are presented in Table 9.

Table 9. Participants' Estimated Likelihood Ratios for the Null Description

Profession	N	%
Housewife	277	64.7
Physician	109	25.5
Realtor	29	6.8
Farmer	12	2.8
Mechanic	1	0.2
Total	428	100

Table 9 indicates that 64.7% of all participants indicated that the null description most likely was that of a housewife, followed by a physician (25.5%), realtor (6.8%), farmer (2.8%), and mechanic (0.2%). In other words, over 60% of our participants thought it was more likely that the null description was that of a housewife than a physician.

Table 10. Participants' Estimated Likelihood Ratios for the Null Description According to Employment Status

Participants		Housewife	Physician	Realtor	Farmer	Mechanic	Total
Physician	N	156	47	14	1	0	218
	%	56.3	43.1	48.3	8.3	0.0	50.9
Housewife	N	121	62	15	11	1	210
	%	43.7	56.9	51.7	91.7	100	49.1
Total	N	277	109	29	12	1	428
	%	100	100	100	100	100	100

According to Table 10, among the 277 participants who indicated that the null description most likely belonged to a housewife, 156 (56.3%) were physicians and 121 (43.7%) were housewives. Among the 109 participants who indicated that the null description was most likely that of a physician, 43.1% were physicians and 56.9% were housewives. This finding was statistically significant (χ^2=15.710, p=0.003). The correlations between estimated likelihood ratios and mean base rate and similarity ratios for the null description are given in Table 11.

Table 11. Correlations between Estimated Likelihood Ratios and Mean Base Rate and Similarity Ratios for the Null Description

		Mean Base Rate (Question 5[5])	Mean Similarity Ratio (Question 6[6])
Mean Likelihood Ratio (Question 8[7])	Pearson Correlation	.132**	-.003
	Sig. (2-tailed)	. 006	.953
	N	428	428

** Correlation is significant at the 0.01 level (2-tailed).

The table indicates that there is a positive and significant correlation (r=0.132, p<0.01) between the mean likelihood judgment and the estimated base rate, and a negative correlation (r=-0.003) between mean likelihood and similarity judgments. In other words, the number of people working in a given profession affected the estimated likelihood that the null description would be included in the said profession, but that was not the case for the similarity ratio. Also, there was no significant relationship between mean likelihood and similarity ratios (p=0.953). Consistently with the study conducted by Kahneman and Tversky (1973), the base rate is neglected when individuating information is provided and is only utilized when there is no information available.

Here, we will discuss results from Questions 9 and 11 together. These two questions presented the same personality description except for the name and gender of the individual to whom the personality description belonged (Question 9, female, Zahra; Question 11, male, Ali). Question 9 indicated '*Zehra is a social and accommodating person. She has a high sense of morality. She is careful and punctual. She pays attention to detail and is ambitious. Please rank in order of likelihood that Zahra is employed in each of the following professions (1: highest, 5: lowest).'* and Question 11 indicated that *'Ali is a social and accommodating person. He has a high sense of morality. He is careful and punctual. He pays attention to detail and is ambitious. Please rank in order*

of likelihood that Ali is employed in each of the following professions (1: highest, 5: lowest).' The same five professions were listed for both questions. The relevant likelihood rankings are given in Tables 12 and 13.

Table 12. Participants' Estimated Likelihood Ratios for the First of the Two Personality Descriptions

Profession	N	%
Academic	303	70.8
Civil Engineer	59	13.8
Tailor	55	12.9
Driver	7	1.6
Carpenter	4	0.9
Total	428	100

Table 12 indicates that the majority (70.8%) of the participants believed that the description given in Question 9 was most likely that of an academic, followed by civil engineer (13.8%), tailor (12.9%), driver (1.6%), and carpenter (0.9%).

Table 13. Participants' Estimated Likelihood Ratios for the First of the Two Personality Descriptions According to Employment Status

Participants		Academic	Civil Engineer	Tailor	Driver	Carpenter	Total
Physician	N	172	17	27	2	0	218
	%	56.8	28.8	49.1	28.6	0.0	50.9
Housewife	N	131	42	28	5	4	210
	%	43.2	71.2	50.9	71.4	100	49.1
Total	N	303	59	55	7	4	428
	%	100	100	100	100	100	100

According to Table 13, among the 303 participants who stated that the personality description given in Question 9 was most likely that of an academic, 56.8% were physicians and 43.2% were housewives. Moreover, among the participants who believed that the description was most likely that of a civil engineer, 28.8% were physician sand 71.2% were housewives. All four participants who thought that the description was most typical of a carpenter were housewives. None of the physicians believed that the personality description was most likely that of a carpenter. This finding was statistically significant (χ^2=21.303, p=0.000).

Table 14. Participants' Estimated Likelihood Ratios for the Second of the Two Personality Descriptions

Profession	N	%
Academic	259	60.5
Civil Engineer	96	22.4
Driver	43	10.0
Tailor	17	4.0
Carpenter	13	3.0
Total	428	100

Table 14 indicates that the majority (60.5%) of the participants believed that the description given in Question 11 was most likely that of an academic, followed by civil engineer (22.4%), driver (10%), tailor (4%), and carpenter (3%). The fact that the likelihood ranking of tailor and driver professions changed for the two personality descriptions may be ascribed to differences in perceptions of genders.

Table 15. Participants' Estimated Likelihood Ratios for the Second of the Two Personality Descriptions According to Employment Status

Participants		Academic	Civil Engineer	Driver	Tailor	Carpenter	Total
Physician	N	154	40	13	7	4	218
	%	59.5	41.7	30.2	41.2	30.8	50.9
Housewife	N	105	56	30	10	9	210
	%	40.5	58.3	69.8	58.8	69.2	49.1
Total	N	259	96	43	17	13	428
	%	100	100	100	100	100	100

According to Table 15, among the participants who stated that the personality description given in Question 11 was most likely that of an academic, 59.5% were physicians and 40.5% were housewives. Among the participants who believed that the description was most likely that of a civil engineer, 41.7% were physicians and 58.3% were housewives. Presenting an individual as male instead of female increased the number of predictions that the individual was most likely a carpenter to 13 (4 physicians and 9 housewives). This difference was statistically significant (χ^2=20.968, p=0.000). Table 16 presents the correlation coefficients between the likelihood rankings for questions 9 and 11.

Table 16. Correlations between the Likelihood Rankings for the Same Personality Description Presented in Two Different Questions

		Mean Likelihood Ratio (Question 9[9])
Mean Likelihood Ratio (Question 11[8])	Pearson Correlation	.204**
	Sig. (2-tailed)	.000
	N	428

** Correlation is significant at the 0.01 level (2-tailed).

Table 16 indicates a significant positive correlation between the results of questions 9 and 11 (r=0.204, p<0.01). When the participants were presented with a personality description that they perceived as typical of an academic, they confidently indicated that the description was that of an academic. This correlation is important in that it demonstrates that the participants deviated from rationality due to the illusion of validity (Tversky & Kahneman, 1974), i.e., the unwarranted confidence in the agreement between the prediction and the provided information.

Question 10 was as follows: '*Elif loves to cook, has a strong sense of justice, is prudent and benevolent. She is a serious person. Please rank in order of*

likelihood that Elif is employed in each of the following professions (1: highest, 5: lowest).' The resulting likelihood rankings are presented in Table 17.

Table 17. Participants' Estimated Likelihood Ratios for the Five Professions

Profession	N	%
Lawyer	330	77.1
Librarian	49	11.4
Engineer	28	6.5
Pilot	17	4.0
Contractor	4	0.9
Total	428	100

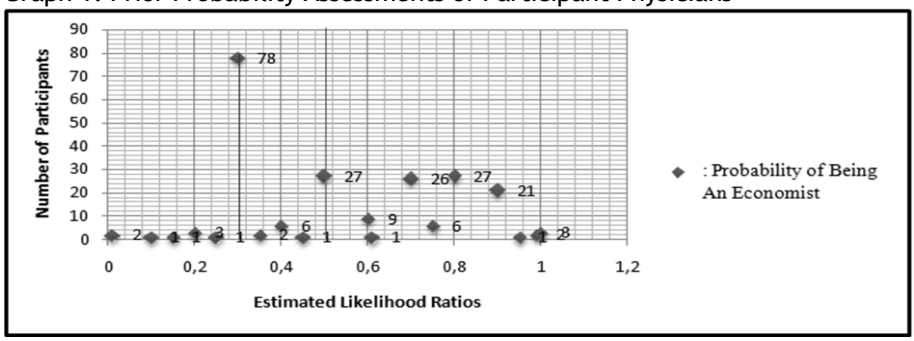
Table 17 indicates that among the participants, 77.1% predicted that the given personality description was most likely that of a lawyer, 11.4% predicted a librarian, 9.3% an engineer, 1.4% a pilot, and 1.2% a contractor. These results demonstrate that when predicting the likelihood that a given personality description belongs to a certain profession, individuals often resort to how well the description represents or how similar the description is to relevant stereotypes.

Table 18. Participants' Estimated Likelihood Ratios for the Five Professions

		Lawyer	Librarian	Engineer	Pilot	Contractor	Total
Physician	N	161	34	18	5	0	218
	%	48.8	69.4	64.3	29.4	0.0	50.9
Housewife	N	169	15	10	12	4	210
	%	51.2	30.6	35.7	70.6	100	49.1
Total	N	330	49	28	17	4	428
	%	100	100	100	100	100	100

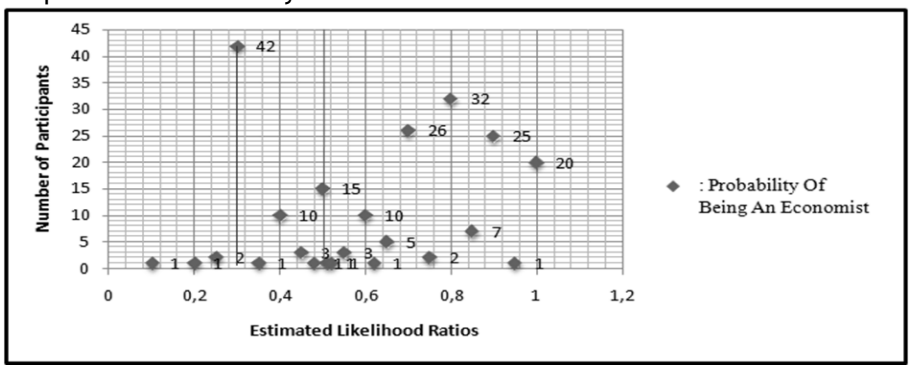
According to Table 18, among the 330 participants who stated that the given description most likely was that of a lawyer, 161 (48.8%) were physicians and 169 (51.2%) were housewives. Among the 49 participants who answered that the given personality description was most likely that of a librarian, 69.4% were physicians and 30.6% were housewives. This finding was statistically significant (χ^2=16.586, p=0.002). In their study, Kahneman and Tversky (1973) asked their participants a set of questions based on Bayes' rule, a method of classification based on probability. In this study, considering the differences in education status among our participants, we asked simple probability questions. Accordingly, question 12 was as follows: '*Personality descriptions were prepared for 30 economists and 70 teachers, each successful in their respective fields. The following description belongs to an individual in the formentioned group. Ahmad is an energetic and positive person. He closely follows current events and news. He is interested in politics. He is an innovative thinker, daring, and persuasive. What is the likelihood (in percent) that Ahmad is an economist?*'

Graph 1. Prior Probability Assessments of Participant Physicians



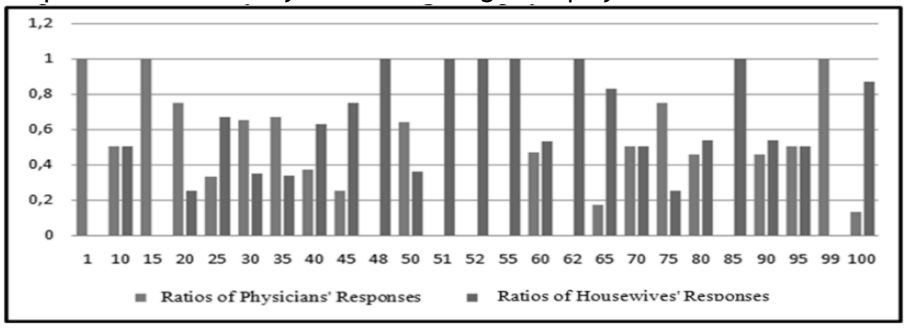
As presented in Graph 1, 78 of the 218 physicians (35.8%) used prior information and answered the question as 30% whereas 96 participants believed that the likelihood that the described person was an economist was higher than 50%.

Graph 2. Prior Probability Assessments of Housewives



Graph 2 indicates that 42 of the 210 housewives (20%) used prior information and answered the question as 30% whereas 134 participants believed that the likelihood that the described person was an economist was higher than 50%.

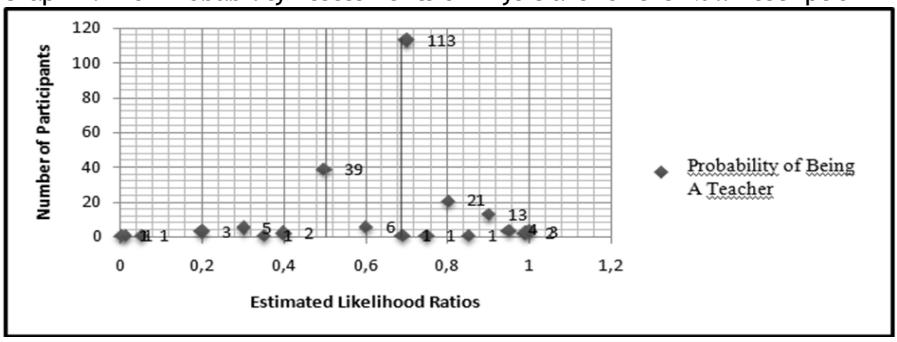
Graph 3. Prior Probability Ratios According to Employment Status



Graph 3 presents the percentages of each response for physicians and housewives. Accordingly, among the 120 participants who answered question 12 as "30%" by using prior information, 65% were physicians and 35% were housewives. The average likelihood estimation (calculated using all answers except null) was 43.7% for physicians and 63.9% for housewives.

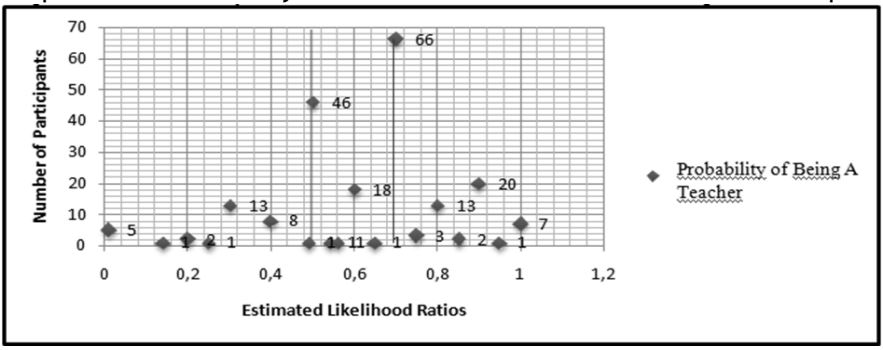
Kahneman and Tversky (1973) divided their subjects into two groups and provided each subject with five different personality sketches. The first group was told that these personality descriptions were selected from among 30 engineers and 70 lawyers, and the second group was told that they were selected from among 70 engineers and 30 lawyers. For each subject (except subjects who answered '0'), the mean likelihood estimation was calculated. The mean values were 50% for the group with 30 engineers and 55% for the group with 70 engineers. In our study, question 13 provided participants with a null description as follows: "*Personality descriptions were prepared for 30 economists and 70 teachers, each successful in their respective fields. The following description belongs to an individual in the mentioned group. Dilek is one of the mentioned individuals. No further information will be provided about Dilek. What is the likelihood (in percent) that Dilek is a teacher?*"

Graph 4.Prior Probability Assessments of Physicians for the Null Description



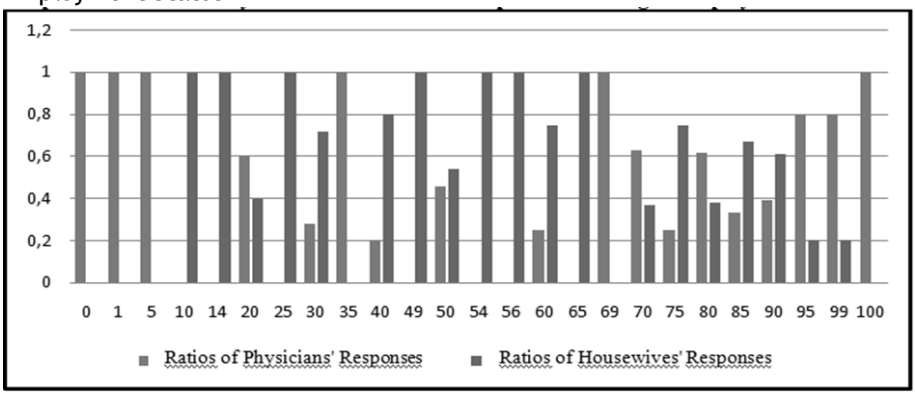
As presented in Graph 4, 113 of the 218 physicians (51.8%) used prior information and indicated that the likelihood that the null description belonged to a teacher was 70%.

Graph 5. Prior Probability Assessments of Housewives for the Null Description



As presented in Graph 5, 66 of the 210 housewives (31.4%) used prior information and indicated that the likelihood that the null description belonged to a teacher was 70%.

Graph 6. Prior Probability Ratios for the Null Description According to Employment Status

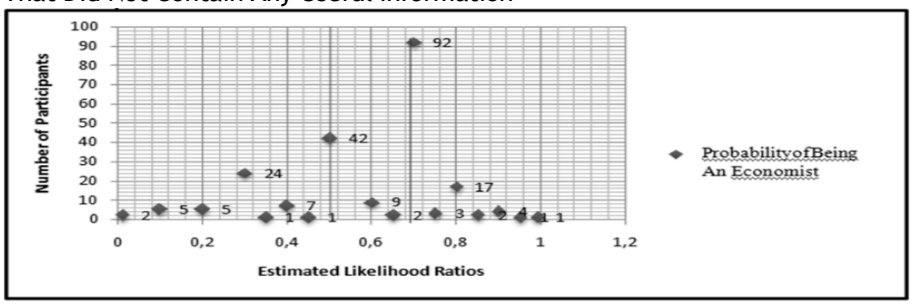


Graph 6 presents the percentages of each response for physicians and housewives. Accordingly, among the 179 participants who used prior information while making a prediction based on a null description, 63.1% were physicians and 36.9% were housewives. The average likelihood estimation (computed using all answers except null) was 66.8% for physicians (excluding one physician who answered '0') and 62.1% for housewives. Hence, the mean likelihood estimation was closest to the prior probability when the participants were not provided with any information regarding personality.

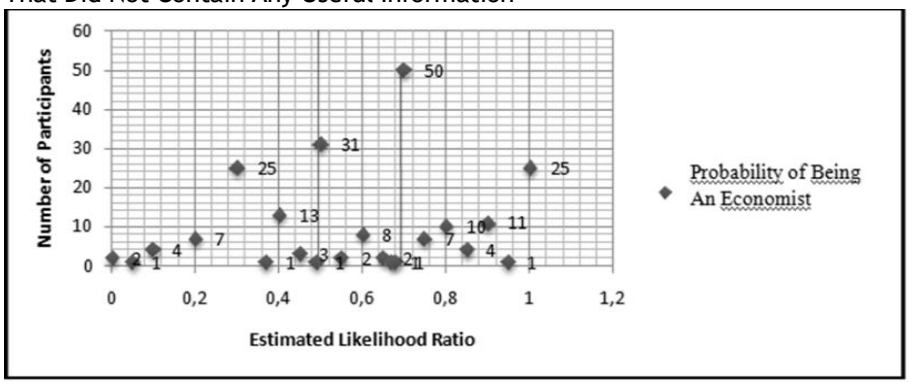
In their study, Kahneman and Tversky (1973) provided their subjects with a null personality description and asked the likelihood that the person was an engineer. When making predictions, the subjects were influenced by the similarity of the descriptions to relevant stereotypes but followed Bayes' rule when presented with a null personality description. The average answer was 30% for the group with 30 engineers and 70% for the group with 70 engineers. Correspondingly, question 14 provided the subjects with a personality description that did not contain any useful information: '*Personality descriptions were prepared for 30 economists and 70 teachers, each successful in their respective fields. The following description belongs to an individual in the mentioned group. Mert is 32 years old, married, and has one child. He is very talented and highly motivated. He is very well-liked by his colleagues. What is the likelihood (in percent) that Mert is an economist?*'

As can be seen in Graph 7, 92 of the 218 physicians (42.2%) used prior information and judged the probability that the personality description belonged to an economist to be 70%.

Graph 7.Prior Probability Assessments of Physicians for Personality Description That Did Not Contain Any Useful Information

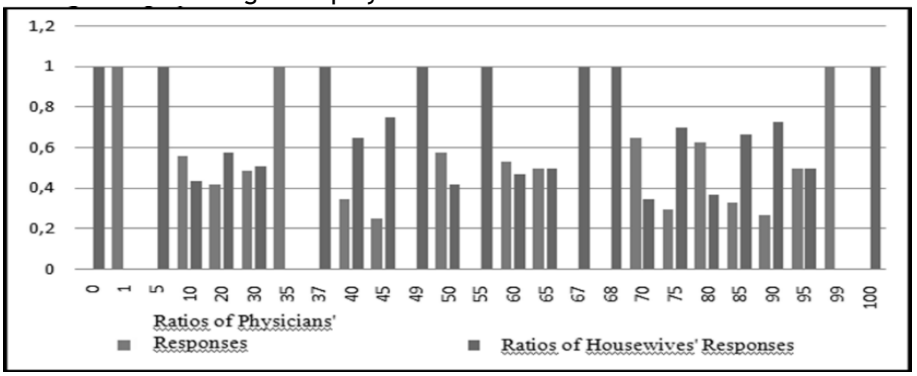


Graph 8.Prior Probability Assessments of Housewives for Personality Description That Did Not Contain Any Useful Information



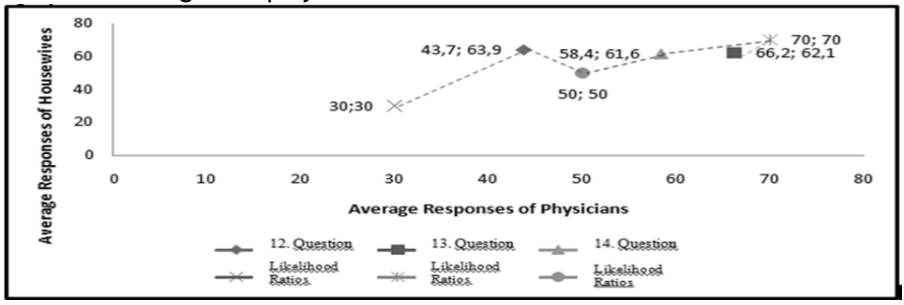
As presented in Graph 8, 50 of the 210 housewives (23.8%) used prior information and judged the probability that the personality description belonged to an economist to be 70%.

Graph 9. Prior Probability Ratios for the Personality Description without Useful Information According to Employment Status



According to Graph 9, among the 142 participants who used prior information when making predictions and answered‘70%’, 64.8% were physicians and 35.2% were housewives. The average likelihood estimation (computed using all answers except null) was 58.4% for physicians and 61.6% for housewives (excluding two housewives who answered ‘0’). In their study, Kahneman and Tversky (1973) provided their subjects with a personality description that did not contain any useful information regarding the profession of the individual and asked the likelihood that the person was an engineer. In this experiment, the mean answer of participants from both groups was approximately 50%. In other words, prior information was neglected, as was the case in the original questions with personality descriptions. The difference between the answers to the question without useful information and the question with the null description is striking. Prior information is used when the individual is not provided with any specific evidence but ignored even when the available information is useless (Kahneman and Tversky, 1973). Our results are consistent with those reported by Kahneman and Tversky. We categorized the average responses to questions 12, 13, and 14 according to employment status and compared them with likelihood ratios obtained by using prior information (Graph 10).

Graph 10. The Relationship between the Average Responses and Likelihood Ratios According to Employment Status



Graph 10 demonstrates that the mean responses to questions 12 (personality description with useful information) and 14 (personality description without useful information) were closer to 50% than the provided prior probabilities. The predictions closest to prior information were those to question 13, i.e., the null personality description. In summary, as demonstrated in the study by Kahneman and Tversky and in line with our representativeness hypothesis, prior probabilities are largely ignored when individuating information was made available. This result is also important in that it rejects H_0 and supports H_1.

Conclusion

The study of Nobel laureate Daniel Kahneman, a leading scholar in behavioral economics, and his colleagues has shed light on the psychological determinants of choices and decisions. The literature has put forward many heuristics and biases relevant to decision-making under uncertainty. Within the framework of behavioral economics, researchers have conducted various experimental studies

on how these heuristics and biases affect individuals' decision-making processes. One important heuristic that influences decision-making is representativeness. Individuals often refer to the representativeness heuristic when faced with choices in daily life. Individuals with representativeness heuristic determine the subjective likelihood of an event or a sample by the degree to which it is similar in basic characteristics to its parent population and how much it reflects the prominent features of the process by which it is generated. However, factors that affect the likelihood of outcomes but not their representativeness often mislead individuals to make severe systematic errors.

Our results suggest that representativeness influenced our participants' decisions in consistence with the study of Kahneman and Tversky (1973). First, the significant correlation between the likelihood and similarity ratios and the lack of a correlation between the likelihood ratio and the base rate demonstrate that representativeness influences decision-making and leads to deviations from rationality. Second, when asked to make a prediction, individuals neglected to consider prior information if they were given individuating information but used statistical probabilities when faced with a null description. Lastly, the fact that participants ignored prior information even when provided with a description that did not contain any useful information clearly demonstrates the effect of representativeness on deviations from rationality. When making decisions under uncertainty, individuals cannot be separated from their first impressions and internalized patterns even when they have the chance and time to think and compute. Therefore, choices cannot be independent of representativeness. We concluded that representativeness heuristic is effective in deviations from rationality in employed and unemployed women.

On the other hand, this study has shown that gender stereotypes disadvantage women in public spheres. Social construction of gender roles cause decision makers to underestimate potential contributions of women in public spheres. The preconceived perceptions on women come into effect in public spheres through their biological features such as fertility, physical appearance and emotional characteristics. Therefore, female perspective and experience have been mostly neglected in public spheres. Having the female perspective at its very centre, this study explores the perspectives of employed and unemployed women about their representation in public sphere within the framework of behavioural economics.In this context we hope that our study contributes to future research and applications on the heuristic method. Future research could build on these findings, addressing different occupations and genders.

Acknowledgement

The authors would like to thank Hatime Katipçelebi for her contribution in the master thesis period.

Notes

[1] This study was produced from Aysun Yerlikaya's master's thesis titled *Representativeness Heuristic of Employed And Unemployed Women in Turkey: A Case Study On Doctors and Housewives* under

the supervision of Deniz Özyakışır and accepted in the Institute of Social Sciences, Kafkas University (2021).

[2] Imagine all individuals of working age in Turkey. Please write down your best guesses about the likelihood that these individuals will be among the listed professions (1: highest, 5: lowest). Profession: Housewife, Realtor, Mechanic, Physician, Farmer

[3] "Aisha is extroverted, successful, punctual and open to personal development. She is smart and practical. She is very good at problem solving. She has a high sense of responsibility. She likes to solve math problems." Please rank order how similar is Aisha to the typical member of each listed profession (1: Highest, 5: Lowest). Profession: Housewife, Realtor, Mechanic, Physician, Farmer

[4] The preceding personality sketch of Aisha was written during her senior year in high school. Please rank in order of the likelihood that Aisha is employed in each of the following professions (1: highest, 5: lowest)." Profession: Housewife, Realtor, Mechanic, Physician, Farmer

[5] Imagine all individuals of working age in Turkey. Please write down your best guesses about the likelihood that these individuals will be among the listed professions (1: highest, 5: lowest). Profession: Housewife, Realtor, Mechanic, Physician, Farmer

[6] "Aisha is extroverted, successful, punctual and open to personal development. She is smart and practical. She is very good at problem solving. She has a high sense of responsibility. She likes to solve math problems." Please rank order how similar is Aisha to the typical member of each listed profession (1: Highest, 5: Lowest). Profession: Housewife, Realtor, Mechanic, Physician, Farmer

[7] "Esra is employed in one of the listed professions. No further information will be provided about Esra." Please rank in order of the likelihood that Esra is employed in each of the following professions (1: highest, 5: lowest). Profession: Housewife, Realtor, Mechanic, Physician, Farmer

[8] "Ali is a social and accommodating person. He has a high sense of morality. He is careful and punctual. He pays attention to detail and is ambitious." Please rank in order of the likelihood that Ali is employed in each of the following professions (1: highest, 5: lowest). Professions: Academic, Driver, Civil Engineer, Tailor, Carpenter

[9] "Zahra is a social and accommodating person. She has a high sense of morality. She is careful and punctual. She pays attention to detail and is ambitious." Please rank in order of the likelihood that Zahra is employed in each of the following professions (1: highest, 5: lowest). Professions: Academic, Driver, Civil Engineer, Tailor, Carpenter.

References

Cherry, K. (2021, April 10). What Is the Representativeness Heuristic? Verywel Mind. https://www.verywellmind.com/representativeness-heuristic-2795805 Access: 28.12. 2021.

Gigerenzer, G. (2018). The Bias Bias in Behavioral Economics. *Review of Behavioral Economics*, 5(3-4): 303-336.

Gigerenzer, G. (2008). Why Heuristics Work. *Perspectives on Psychological Science,* 3(1):20-29.

Gotlieb, R. et al. (2019). Gender Differences in How Physicians Access and Process Information. *Gynecologic Oncology Reports*, 27:50-53.

Hazra, A. (2017). Using the Confidence Interval Confidently. *Journal of Thoracic Disease*. 9(10):4125-4130.

Hillier, F. S. & Lieberman, G. J. (2010). *Introduction to Operations Research* (9th ed). New York: McGraw-Hill.

Kahneman, D. & Tversky, A. (1972). Subjective Probability: A Judgment of Representativeness. *Cognitive Psychology*. 3(3):430-454.

Kahneman, D. & Tversky, A. (1973). On the Psychology of Prediction. *Psychological Review*. 8(4):237-251.

Kahneman, D. (2011). *Thinking, Fast and Slow*. London: Allen Lane.

Katsikopoulos, K.V. (2011). Psychological Heuristics for Making Inferences: Definition, Performance, and the Emerging Theory and Practice. *Decision Analysis*, 8(1):10-29.

Laver, M. & Sergenti, E. (2012). *Party Competition: An Agent-Based Model*. Princeton, NJ: Princeton University Press.

Naderifar, M., Goli, H., & Ghaljaie, F. (2017). Snowball Sampling: A Purposeful Method of Sampling in Qualitative Research. *Strides in Development of Medical Education,* 14:e67670.

Organisation for Economic Co-operation and Development (2020). Health Care Resources: Physiciansby Age and Gender. https://stats.oecd.org/index.aspx?queryid=30172. Access: 25.05.2021.

Robbins, S.P. & Timothy, A.J. (2013). *Organizational Behavior* (15th ed). New Jersey: Pearson.

Schober, P., Boer, C. & Schwarte, L.A. (2018). Correlation Coefficients: Appropriate Use and Interpretation. *Anesthesia & Analgesia,* 126(5):1763-1768.

Shah, A.K., & Oppenheimer, D.M. (2008). Heuristics Made Easy: An Effort-Reduction Framework. *Psychological Bulletin,* 134(2): 207-222.

Simon, H. A. (1955). A Behavioral Model of Rational Choice. *The Quarterly Journal of Economics*. 69(1):99-118.

Tune, G.S. (1964). Response Preferences: A Review of Some Relevant Literature. *Psychological Bulletin*. 61(4):286-302.

Turkish Statistical Institute. (2020). Reasons for Not Included in the Labor Force 2019/Women. https://tuikweb.tuik.gov.tr/PreTablo.do?alt_id=1 007. Access: 10.06.2021

Tversky, A. & Kahneman. D. (1974). Judgment under Uncertainty: Heuristics and Biases. *Science*. 185(4157):1124-1131.

Tversky, A. & Kahneman, D. (1983). Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment. *Psychological Review,* 90(4):293-315.

Wagenaar, W.A. (1970). Appreciation of Conditional Probabilities in Binary Sequences. *Acta Psychologica*, 34(2-3):348-356.

Young, H.P. (2008). Adaptive Heuristics. In, Durlauf, S.N & Blume, L.E. (eds). *The New Palgrave Dictionary of Economics*, (2nd ed.) New York: Palgrave Macmillan.