



MEMORY ILLUSIONS IN CHICKEN CONSUMPTION: THINKING STYLE RELATIONSHIP ANALYSIS⁴

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Abstract

Research on memory, a focal point of numerous disciplines, is extensively documented in the literature, particularly concerning psychological processes and brain-behavior relationships. Beyond merely observing memory's functionality, it is crucial to scrutinize the phenomenon of memories that are misremembered or recalled as if they never occurred—processes characterized by errors, distortions, and reconstructions. Memory illusions involve the acceptance of semantically accurate yet structurally altered, unreal thoughts as genuine. To study these illusions, the Deese-Roediger-McDermott (DRM) paradigm—a widely adopted cognitive framework that conceptualizes memory as a network of nodes and their interconnections—is utilized. This research aims to explore memory illusions and false memories through the application of DRM lists, examining the intricate relationship between these phenomena, source memory, and individuals' thinking styles, as well as their implications for chicken consumption within the context of memory distortion.

Key words: Memory Illusion, False Memory, DRM Paradigm, Chicken Consumption, Brain-Behaviour Relationships, Memory Recall

Introduction

Although research focusing on human memory has attracted the attention of scientists many years ago, it still remains largely unknown about the mechanisms underlying certain significant memory phenomena, such as false memories. Our memories always contain a mixture of fact and fiction. Recall of past events can be distorted by various factors, such as transferred information or expectations.

The brain, endowed with free will, makes its decisions and choices based on information from the outside world, internal objectives and complex reasoning. The amalgamation of various factors, namely past memories, genetic factors, history, external world factors and emotional state, is responsible for the decisions made as well as thoughts (Harris, 2019). There are many studies in the literature on memory, an essential cognitive system, in terms of both psychological processes and brain-behavior relationships. Since these studies are thought to be a situation that belongs to the person, they include measurements based on individual memory performances. In addition to observing the functioning of memory, it is crucial to observe the memories that are remembered as if they never happened or that are inaccurately remembered, as the memory is subject to error, deterioration and change processes (Şahin, 2019).

Memory gains biological function only to the extent that it contributes to the regulation of current behavior. Memory, which is patterned into intertwined behaviors such as reasoning and thoughts, is one of the fundamental functions for an individual's life. Memory is precisely the capacity that allows us to connect experiences, learn, and give meaning to our lives. The function of memory is to extract meaningful and general information from experienced details. In short, it facilitates the construction of an individual's story (Eduardo and Francisco 2017; Boyer and Wertsch, 2015).

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Throughout development, sensory perception, cognitive functions, and brain functions such as language are acquired during the human development. It is the development of the nervous system that affects the formation of synaptic connections of experiences and the formation of specialized neuronal networks. However, plasticity, or neuronal plasticity, which means changeable, malleable, and transformable, which manifests itself in every corner and level of the brain, defines the concepts of learning, remembering, and forgetting based on experiences, and shows the change in the process of experiencing, which is the most critical stimulus (Barnes, 2020; Gürpınar et al., 2007; Shepard, 2019). It is possible to have memories thanks to plasticity. Furthermore, it refers the changes in the synapses where neurotransmitters, which are chemical messengers, are secreted and seen as a result of the storage process, and the restructuring of the brain. Changes in the synapses, which are receivers and transmitters, are defined as the result of the storage process in memory, which creates a sense of self with integrity and continuity (Eagleman, 2021; Ledoux, 2002). Additionally, the hippocampus, which is the memory region where information about memories is stored, plays a role in the development of emotional responses and learning, creates episodic representations. In episodic, or narrative, memory, personal information, past experiences, as well as the storage, retrieval and recall of transferred memories when necessary are conscious. Memories typically contain information about the time and place of an event, as well as detailed information about the event itself. However, the hippocampus, a component of the limbic system, is not a sufficiently stable storage area. This is because the fixation of memories transferred to the cortex and the consolidation of relationships between groups require the activation of the event pattern pathway several times (Eagleman, 2021; Styliadis et al., 2014).

Memories formed as a result of experiences contain various perceptual flaws and errors from the moment they are first formed. It is suggested that the sense of vestibular balance, proprioceptive sense, vision, taste, touch and temperature can all be deceived. Memories held in autobiographical memory, which is a fragile cerebral state belonging to the past and consists of numerous cross-coded memories obtained through the self, are resurrected in the process of remembering. During the recall process, information is recalled during the usage phase and re-coded in the brain (coding). Subsequently, the selection and recall of information shape current and future behaviours (İnan and Yücel, 2020). Accordingly, false perceptions, although not real, are encoded and recalled by the individual, eventually becoming embedded in the memory system. False memories can be formed with coding and recall. In this context, there is a change in the place of real and unreal thoughts. In other words, the person reconstructs the information transferred to his/her memory (re-constructive). Along with the frequent errors in reconstruction, the active process of filling in missing elements during remembering is emphasized. In addition, memories can be affected by old information (Barlett, 1932). The situation where unreal thoughts that are semantically correct but different in form are accepted by the person as real is called memory illusion (Tversky and Tuchin, 1989; Shaw, 2017). Cognitive psychologist Elizabeth Loftus suggests that the information in active memory can be altered not only by experienced memories but also by others. In summary, it is stated that false memories can be transferred to a individual through suggestive methods by others (Loftus, 2013). However, when individuals believe they have witnessed the same event, they can affect each other by transferring false information despite being exposed to different situations in details. In this case, perceptual factors are important, the details in the person's memories can change and an unreal event can be accepted as real. It is suggested that individuals who are not sure about their memories are open to conforming to the memories of others. In addition, since individuals tend to trust individuals perceived as experts, there is a greater tendency to adapt and adopt the information conveyed by these individuals (Şahin, 2017; Wright et al., 2000).

According to Kensinger (2009); Individuals do not remember everything that happens to them. Memories often change and become distorted. It is suggested that even if past events are kept in mind, the memories that are kept are not copies of the first experience and some parts are remembered and others are forgotten. It is stated that the original event remembered and the memory are shaped by the experience and the person's thoughts. Moreover, It is noted that negative stimuli have an advantageous position in memory. Negative stimuli are remembered better than positive stimuli (Kensinger, 2009). According to the research of Porter and Peace (2007), memories of negative life experiences are resistant to forgetting and show significant stability over time. It is also suggested that there is no strong relationship between the confidence in memories and their accuracy during the recall process (İnan and Yücel, 2020).

Emotions strengthen memory, which does not work perfectly and is prone to errors, both quantitatively and qualitatively. The recall of the situation depends on the amount of information transferred, the level of activity, and the priorities of the individual. With emotional arousal, details that are integrated into the event

perceptually, semantically, and temporally and directly related to the individual's goals are strengthened in the memory. Conversely, unrelated environmental factors tend to weaken in memory (Easterbrook, 1959).

As an individual gains experience, previously recorded memory patterns are affected, leading to a different pattern in the brain's recording system (Canan, 2015). In order to form new memories, existing memories must be forgotten (Shaw, 2017; Doige, 2019). For example, some files must be removed from a shelf full of files in order to put more files on it. Although this may suggest that the memory is reinforced during recall, in reality, the recalled memories are entirely reconstituted from scratch. However, an individual can remember a single event in different ways at different periods of their life during the formation of a memory. This situation varies according to the prioritized goals and their connections with episodic memories (Boyer and Wertsch, 2015; Eagleman, 2015).

There are various theories that examine the memory illusion. These theories allow us to understand how memory can be distorted and why inaccurate and deceitful information is sometimes perceived as true in memory. Theories that examine the false memory accentuate the complexity of memory and how vulnerable to misjudgements and serves as a guide for researchers to perceive the processes. Deese-Roediger-McDermott (DRM) paradigm is the theory most often employed in examining memory related misconceptions.

Theories Developed on Memory Illusion

Deese-Roediger-McDermott (DRM) Paradigm

In the realm of memory research, The Deese-Roediger-McDermott (DRM) paradigm holds a crucial role in understanding memory processes. The study of James Deese conducted on nonpresented erroneous words and correct recall allowed for the foundation for this method (Deese, 1959). DRM plays a dual role in clarifying the functional and structural dynamics of memory research and beneficial tool for exploring neurocognitive mechanisms underlying memory's reconstructive tendencies. The purpose of DRM paradigm is to focus on understanding the mechanisms of the remembering process (Pardilla-Deşgado and Payne, 2017).

Researchers studying false memories employ meticulously controlled word lists in conjunction with designed experimental parameters. In recognition and recall experiments, individuals showed a tendency to discern certain words systematically, though incorrectly. As a useful tool, DRM focuses on analyzing the tendency to falsely recall related words related to the presented ones, that were not included in the presented list (Uvruk, Turan and Kapucu, 2019). This approach involves presenting conceptually linked word lists to participants, structured around a central term associated with excluded words. Studies frequently reveal that participants recall the critical word, despite its absence from the list, when asked to remember the listed terms. This situation represents an example of false memory.

The term false memories was first mentioned by Elizabeth Loftus in 1992 at the meeting on "Remembering Repressed Abuse" organized by the American Psychological Association (Mendes Oliveira, Albuquerque, and Saraiva, 2018). False memories can be revealed by experimental methods applied in a laboratory environment. The DRM paradigm, which is based on the idea that memory, organized as a network, is formed by nodes and the connections between them, is most commonly used today. Loftus suggests that beyond experiencing a memory illusion, false memories can also be transferred to the individuals through suggestion and manipulation methods (Loftus, 2005).

Associative Activation / Fuzzy Traces Theory and Activation Monitoring Theory, which are effective in the encoding and retrieval stages and can be used to explain many theories about memory, are also considered important tools for the DRM paradigm (Erol and Aytimur, 2023).

Activation-Monitoring Theory

The source monitoring approach is in question within the framework of the Activation-Monitoring Theory, which is associated with the spread of words studied in the DRM lists towards the critical distractor. It was developed to understand the processes of storing and recall transferred information. It is also stated that recall is triggered by internal and external stimuli (Roediger, Balota et al., 2001). The theory posits that recall is related to how individuals' mental networks are reactivated and processed. Distinctively, being able to be perceived with sensory organs or better imagined facilitates source monitoring (Erol and Aytimur, 2023). However, Activation-Monitoring Theory is used to describe the process that mentally activates the critical distractor or causes the retrieval of potentially false information (Gallo, 2010).

Fuzzy Trace Theory

In the literature, the most widely used DRM paradigm, the Fuzzy Traces Theory, which is used to explain the formation of memory illusions, proposes that the remembered includes two phenomena. These are; the gist memory trace is the remembrance of the meaning and main idea of an experience. The second phenomenon is the verbatim trace where certain details are remembered. In studies conducted with DRM lists, features related to the word are coded for each word presented with a verbatim trace. This theory, which is gathered under the principles of parallel processing and storage, separate recall, error proneness and vividness, offers a broad framework that includes when, why and how false memories are formed. It has been suggested that the Fuzzy Traces Theory is not primarily about memory illusions, but rather to explain the relationships between memory and reasoning processes. According to fuzzy trace theory, false memories are arised from the fragmented storage of experience and reconstructs them inaccurately. This theory indicates that memory has a natural tendency to retrieves information of ideas that are connected (Brainerd and Kingma, 1984; Brainerd and Reyna, 2002, 2004; Shaw, 2017).

Source Memory Test

The source monitoring theory holds a prominent position in the studies of memory inaccuracies. This theory examines on understanding individuals' ability to recall the source of a learned memory or experiences memory. For instance, it necessitates location, time, or individual from whom the information was learned. Source memory, embedded within episodic memory, requires monitoring the origins of information and separating memory entries from diverse sources. The concept of source memory, which deals with recalling the context of presented information, integrates the retrieval of details through the source monitoring process (Mitchell and Johnson 2009; Tanyaş and Mısırlısoy, 2018).

Source Memory evaluations focus on evaluating the precision of memory recall, the frequency of incorrect source associations, and the neurocognitive basis of these functions. The approach includes gathering data, testing recall and recognition, analyzing false source attributions, conducting statistical evaluations, and exploring neurocognitive foundations (Çavuşoğlu, 2020).

Thinking Style and Memory Illusion

Within diverse disciplines, thinking styles and memory inaccuracies are two prominent areas and they are analyzed for their interrelation. Within the scope of memory inaccuracies, thinking styles exert a notable influence. Thinking styles are characterized by the methods individuals take in processing information, approaching problem solving, and making decisions. Furthermore, it signifies the methods by which information is perceived, understood and processed. The widely recognized thinking styles are typically classified into analytical and intuitive thinking. While analytical thinkers concentrate on details by deriving logical analysis based on objective data, intuitive thinkers aim to perceive the comprehensive perspective by making decisions swiftly with flimited information (Umay ve Arıol, 2011).

Memory Illusion in Chicken Consumption

A false memory for chicken consumption can cause a individual to form false memories based on or without previous experiences. False memories for chicken consumption can cause a person to form false or inaccurate memories when remembering chicken consumption within the context of past experiences. These false memories can include events or experiences that never actually happened and can affect how a person remembers consuming chicken in the past. False memories are an example of the fallibility of memory and can cast doubt on the reality of the experiences a person remembers.

Memory illusion related to chicken consumption can be analyzed through a variety of research strategies. These methods are generally designed to determine the precision of recalling past events and to identify any related misconceptions or erroneous recollections. The DRM paradigm can be modified by presenting chicken related words and asking participants to confirm if the word 'chicken' was actually included in the list. The influence of participants' recall performance and misleading memories can be studied, and questionnaires or scales can be employed to assess their consumption related recollections.

False memories are can disrupt perceptions of consumption, emotional states, established habits. Misleading or erroneous memories tied to chicken consumption, especially given the decline in chicken consumption following the bird flu epidemic, may distort how individuals remember their past chicken consumption experiences. Such false memories may include nonexistent experinces, and could potentially distort how individuals recall their previous chicken consumption experiences. False memories underscore the misleading

traits of memory and provoke doubts about the truthfulness of recalled events (Sayılı, 2006; Şengül and Zeybek, 2020).

Research Objective

In recent studies on false memory and the role of suggestion effect reveal critical aspects that merit close attention. Numerous studies employing the different versions of the DRM paradigm have extensively explored how easily false memories can be embedded into an individuals' memory.

This research aims to investigate the connection between thinking styles, DRM list induces false memories, and memory distortions related to chicken consumption. Through the use of DRM lists, the research seeks to asses the impact of thinking styles in the creation of false memories and how these dynamics contribute to memory errors in chicken consumption.

The objective of the study is to highlight the impact of thinking styles on false memory and memory distortions. Additionally, the objective also contribute to understanding of eating habits and memory distortions especially regarding chicken consumption. The findings will shed light on the interactions among false memories, cognitive functions influene behavioral preferences, contributing to a more comprehensive understanding of psychological determinants in food choices.

Potential impacts: This research could emphasize the role of false memories and memory inaccuracies on individual decision making processes, may provide crutial insights into how cognitive and psychological underpinnings of food choice behaviours. The findings can be used to design strategic measures in public health and nutrition science.

The purpose of the research can be enumerated as follows:

- 1- Assessing the connection between false memories drived from DRM paradigm correlate with thinking styles of individuals.
- 2- Analyzing memory inaccuracies related to chicken consumption and correlation with false memories.
- 3- Examining the effects of thinking styles on memory inaccuracies and the formation of false memories.

Methodology

In this research, a quantitative research design was applied, which involves the sturctured collectiong and analysis of numerical data. The implementation of quantitative methods provides substantial benefits in examining cognitive processes, memory inaccuracies, and false memories. The application of numerical data allows for statistical analysis of variable relationships, leading to results that are more broadly applicable (Karasar, 2013). Using a quantitive approach enables the systematic and unbiased collectiong and analyzing data objectively (Creswell, 2016). Through this approach, the impact of cognitive biases and false memories on particular variables through statistical analysis. The implementation of this method supports the researchers to gather data collection via standardize measurement tools and evaluate the results under validity and reliability criteria.

Furthermore, the quantitative approach enhances the generalizability of the results, thereby extending the scope of the research. The inclusion of numerical data ensures the reproducibility of the study and verify whether comparable results accross diverse samples (Karasar, 2013). Hence, this study employed quantitative approach methods to reveal the influential factors on cognitive processes in a systematic and concrete manner.

Ethical approval for this study was obtained from the Ethics Committee of İstanbul Kent University with session 6, decision no.4 dated 26.04.2024.

Universe and Sample

The population of the research comprises adult individuals in Turkey. This research is structured to cover wide geographical range and includes individuals with diverse demographic attributes. Due to its extensive scope, the precise numerical value of the populations remains indeterminable. For this reason, in cases where the population is undefined, "Cochran Formula", commonly employed when the population is indetermined, was used to determine the sample size and select a representative sample:

$$n = \frac{Z^2 \times p \times (1 - p)}{e^2}$$

In this formula:

- n: Refers to the essential minimum sample size.
- Z: The value of 1.96, which corresponds to a 95% confidence level.
- p: the most conservative value of 50% (0.5) has been used.
- e: The selected margin of error has been defines as 5% (0.05).

According to the calculation determined that at least 384 participants is required for an undefined population. In this research, using random sampling technique was conducted, data collection was gathered from 692 participants. This method of random sampling provides equal participation chances for all participants (Creswell, 2016). By surpassing the minimum threshold required by Cochran formula, bolsters the research’s reliability and validity of the findings. As the findings become more representative of a diverse adult populations, ensures the scientific integrity of the study.

Data Analysis

The analysis of the data gathered in this research was analyzed using thorough SPSS 27 (Statistical Package for the Social Sciences). To evaluate the dataset’s normality, skewness and kurtosis values were examined during the initial data processing stage. When skewness and kurtosis values in the interval of -1 to +1, the data was assumed to be normally distributed. For variables adhering to normality, parametric test procedures were selected.

To examine the impact of demographic variables such as gender, marital status, age groups, and education attainment on cognitive biases and false memories, independent sample t-tests and one-way ANOVA were conducted. The independent sample t-test aimed to detect significant differences between two groups, and ANOVA was applied to analyze the effect of variables among three or more groups.

The data analysis using SPSS software findings were presented using tables and charts, with post-hoc tests elaborating on significant differences between groups. These methodological steps facilitated a systematic and consistent processing of data, ensuring reliable interpretation of the findings.

Findings

Demographic Findings

Table 1. Demographic Findings

Variable	Category 1	%	Category 2	%
Gender	Female	88.6%	Male	11.4%
Age Range	18-14	14.7%	25-34	28.4%
	35-44	33.4%	45-54	13.4%
	55+	10.9%		
	Total (n=692)	100.0%		
Education Level	High School	16.55%	Associate Degree	23.8%
	Bachelor’s Degree	48.7%	Graduate Degree	11.3%
	Total (n=692)	100.0%		
Marital Status	Single	41.9%	Married	58.1%
	Total (n=692)	100.0%		
Occupation	Public Sector Emp.	23.7%	Private Sector Emp.	62.4%
	Total (n=692)	100.0%		
	Unemployed	33.9%		
City of Residence	SEGE 1	68.2%	SEGE 2	14.7%
	SEGE 3	3.3%	SEGE 4	4.2%
	SEGE 5	8.7%	SEGE 6	7.7%
	Total (n=692)	100.0%		

Table 1 provides of the participants’ characteristics, including their gender, age brackets, professions, marital statuses, socioeconomic development indices of the cities reside in. These findings shed light on critical aspects of the sample and reflects the demographic variations to be accounted for in the analyses.

An analysis of gender demographics indicates that women constitute a considerable majority of the participants (88.6%). The male participants comprise 11.4% of the total. This disparity may create certain limitations in

generalizing the gender-related findings of the research. The predominance of women among participants might stem from their stronger connection on the research subject or possibly to more favorable access conditions.

In the distribution by age range, it is seen that the majority of the participants are concentrated in the 25-44 age range (28.4% + 33.4%). This shows that the research mainly focuses on young adults and middle-aged groups. The fact that the rate of participants aged 55 and over is 10.9% reveals that the representation of this age group is lower and therefore the views of this group may find limited space in the analyses. This finding may suggest that older participants may have less opportunity or motivation to access or participate in the research.

When the level of education is examined, it is seen that 48.7% of the participants have a bachelor's degree. Associate degree graduates are represented by 23.8%, high school graduates by 16.5% and those with postgraduate education by 11.3%. This distribution shows that the study has a very diverse sample in terms of education level. A higher number of participants with a higher level of education may positively affect the general findings of the study because it can be assumed that this group may have a higher capacity to understand and respond to the research questions.

In terms of marital status distribution, indicates that the percentages of single and married participants are fairly similar, with 41.9% being single and 58.1% married. The distribution indicates that the research's findings on family structure and relational dynamics may represent a broad spectrum. With its significant effects on individual's socioeconomic and psychological aspects of individuals, marital status should be considered a critical factor in the analyses.

According to the occupational group distribution, it is observed that 62.4% of the participants are private sector employees, while public sector employees are represented by 23.7%. The percentage of nonworking participants is 33.9%. This distribution demonstrates that the research has a diverse participant profile across occupational groups, and this diversity emphasizes its potential to influence the findings of the research. The substantial number of private sector employees in the research may indicate their stronger connection to work life and relevant issues.

Lastly, when examining the participants' distribution by the socioeconomic development index, it is noted that 68.2% are from SEGE 1 level cities, which have the highest level of socioeconomic development. The data demonstrates that the research's findings are primarily representative of opinions of participants from highly developed regions. The participant ratios from less developed regions like SEGE 5 (8.7%) and SEGE 6 (7.7%) are relatively low, and the representation of these areas is restricted, which might influence the generalizability of the findings. These findings indicate that the level of socioeconomic development significantly contributes to individuals' participation in the research.

Normality of Data

The assumption of normality, as an essential prerequisite for the validity of parametric statistical procedures, was evaluated through skewness and kurtosis values for the correct recall and studied words variables. These indices serve as diagnostic metrics to determine the degree of deviation from a normal distribution, with acceptable thresholds typically ranging between -1 and +1 (George and Mallery, 2009).

For the correct recall variable, the skewness value was calculated as 0.28, and the kurtosis value as -0.85. The relatively low skewness indicates only a minor asymmetry in the distribution, suggesting a slight right-tailed tendency. The negative kurtosis, while modest, reflects a platykurtic distribution, flatter than the normal curve, yet remains within the bounds of statistical normality. Collectively, these values support the contention that the distribution approximates normality to a satisfactory degree.

Similarly, the studied words variable exhibited a skewness coefficient of 0.55 and a kurtosis value of -0.44. These values denote a mildly right-skewed and marginally platykurtic distribution, respectively. Nonetheless, the parameters fall comfortably within conventional thresholds, further substantiating the assumption of univariate normality for both variables. This statistical conformity justifies the subsequent application of parametric analyses, including independent samples t-test and ANOVA, which are known to yield robust and reliable results under conditions of normal distribution.

Difference Analyses

Table 2. Independent Samples t-Test for Differences in Scale Scores by Gender

Variable	Group	N	\bar{X}	ss	t	df	p
Correct Recall	Women	607	3,07	1,17	-1,15	683	0,251
	Men	78	3,23	0,95			
Studied Words	Women (a)	607	31,95	6,57	2,95	683	0,003**
	Men (b)	78	29,67	5,21			

*p<.05, **p<.01. Different superscript letter denote statistically significant differences between groups. a>b for Studied Words.

According to Table 2, the analysis of “correct recall” scores by gender did not reveal a significant difference between female and male participants ($t(683) = -1.15, p = 0.251$). The average score for women was 3.07, whereas for men, it was calculated as 3.23. High scores in correct recall reflect a decrease in cognitive bias and enhancement in recall capacity. According to these findings, the recall capacities of both genders were found to be at similar levels. This indicates that there are no substantial differences in recall process between genders.

In the dimension of studied words, a significant gender difference was observed ($t(683) = 2.95, p = 0.003$). Women (a) has an average score of 31.95, whereas men (b) scored an average of 29.67. Higher scores in this dimension reflect increased cognitive bias, meaning a greater likelihood of false recall. The higher scores among women suggest that they exhibit more cognitive bias compared to men, pointing to a greater tendency for false recall in such tasks ($a > b$).

The absence of significant difference in correct recall scores between genders demonstrates that gender is not a determining factor in recall capacity. Women’s higher scores in studied words could indicate a higher probability of making mistakes due to increased efforts in information processing. The findings imply that gender-related variations in cognitive functions like language and word recall, may be intricately structured.

Furthermore, these findings highlight that gender has a complex effect on cognitive performance. Although correct recall performance did not differ between genders, women were shown to experience higher cognitive bias in the studied words variable. The observed difference indicates that gender affects cognitive tasks in distinct ways, and that these effects could be influenced by the characteristics and content of the task ($t(683) = 2.95, p = 0.003$) ($a > b$).

Table 3. Independent Samples t-Test for Differences in Scale Scores by Marital Status

Variable	Group	N	\bar{X}	ss	F	df	p	Tukey
Correct Recall	Single	266	3,32	1,18	15,44	2, 672	0,000**	Single > Married
	Married	368	2,92	1,05				Divorced > Married
	Divorced	41	3,66	0,99				
Studied Words	Single	266	29,23	4,41	31,50	2, 672	0,000**	Married > Single,
	Married	368	33,11	6,76				Married > Divorced,
	Divorced	41	32,15	8,77				Divorced > Single

*p<.05, **p<.01

According to Table 3, singles have a higher mean than marrieds in terms of correct recall ($F(2, 672) = 15.44, p = 0.000$). The mean score of singles was found to be 3.32, while the mean score of marrieds was 2.92. Divorced individuals had the highest correct recall score ($\bar{X} = 3.66$). This result shows that singles and divorced individuals have higher recall capacities than marrieds. A possible reason for singles and divorced individuals having higher recall capacities than marrieds may be that these groups have more individual time and energy.

In the studied words dimension, it was observed that married individuals had a higher score than the other groups ($F(2, 672) = 31.50, p = 0.000$). While the average score of the married was 33.11, the average score of the singles was 29.23 and the divorced ones was 32.15. This finding shows that marrieds have a higher cognitive load in the studied words. This situation can be explained by the fact that married individuals have more responsibilities in daily life and therefore have a higher cognitive load. The fact that divorced individuals are in between these two groups may reflect the changing cognitive loads of these groups depending on their different lifestyles.

Therefore, it is seen that marital status has a significant effect on cognitive performance. While single and divorced individuals are more successful in terms of correct recall capacity, married individuals have higher cognitive misconceptions in the dimension of studied words. These findings provide important information in terms of understanding how marital status affects individuals' cognitive performance and recall capacity ($F(2, 672) = 31.50, p = 0.000$).

Table 4. Independent Samples t-Test for Differences in Scale Scores According to Working Status

Variable	Group	N	\bar{X}	ss	F	df	p	Tukey	
Correct Recall	Public Sector Employee (a)	122	3,24	1,13	8,97	2, 61	0,000**	Public Sector Employee > Unemployed	
	Private Sector Employee (a)	321	3,33	1,12					Private Sector Employee > Unemployed
	Unemployed (b)	172	2,88	1,13					
Studied Words	Public Sector Employee (ab)	122	31,76	5,18	4,19	2, 61	0,016**	Unemployed > Private Sector Employee	
	Private Sector Employee (b)	321	30,53	6,26					
	Unemployed (a)	172	32,15	7,20					

* $p < .05$, ** $p < .01$. Different superscript letters indicate statistically significant differences at $p < .05$ level according to Turkey's HSD post-hoc test. Groups sharing the same letter do not differ significantly. For Correct Recall: a>b. For Studied Words: a>b.

According to the results of Table 4, which shows that the scale scores differ according to the employment status, significant differences were found in the dimensions of “correct recall” and “studied words”. In the correct recall dimension, public employees (a) and private sector employees (a) received higher scores compared to unemployed individuals (b) ($F(2, 61) = 8.97, p = 0.000$). While the average score of public employees was 3.24, the average score of private sector employees was found to be 3.33. Unemployed individuals fell behind the other groups with an average score of 2.88. This finding shows that the recall capacity of public and private sector employees is higher than that of unemployed individuals. The regular work life and duties that require discipline of public and private sector employees to keep their cognitive processes constantly active. This suggests that a regular work life may strengthen cognitive skills. On the other hand, the fact that unemployed individuals are exposed to less cognitive stimulation may contribute to their lower recall capacity.

In the dimension of studied words, unemployed individuals (a) were found to have higher cognitive misconceptions compared to private sector employees (ab) scored in between ($F(2, 61) = 4.19, p = 0.016$). While the average score of unemployed individuals was 32.15, the average score of public employees was 31.76 and that of private sector employees was 30.53. A high score in studied words indicates an increase in cognitive misconceptions, that is, more false recall. This suggests that unemployed individuals are exposed to less mental stimulation in their daily routines and therefore the risk of cognitive misconceptions increases. The fact that private sector employees have the lowest cognitive misconceptions can be explained by the fact that this group may require them to be more careful in memory and cognitive processes due to higher workload and mental demands. In this context, it has been observed that working status has a significant effect on the cognitive performance of individuals. Public and private sector employees were more successful in recall capacity and had lower risks of cognitive errors than unemployed individuals. The fact that unemployed individuals had higher cognitive errors can be considered as one of the negative effects of their deprivation of a regular working life ($F(2, 61) = 4.19, p = 0.016$).

Table 5. One-Way ANOVA for Differences in Scale Scores by Age Groups

Variable	Group	N	\bar{X}	ss	F	df	p	Tukey	
Correct Recall	18-24 (a)	101	3,35	1,29	38,73	4, 687	0,000**	18-24 > 45-54, 18-24 > 55+	
	25-34(a)	195	3,31	1,24					25-34 > 45-54, 25-34 > 55+
	35-44(a)	229	3,44	0,94					35-44 > 45-54, 35-44 > 55+
	45-54(b)	92	2,32	0,71					
	55+(b)	75	2,15	0,59					

Studied Words	18-24 (b)	101	32,06	6,32	45,88	4, 687	0,000**	18-24 > 25-34
	25-34 (a)	195	28,36	4,58				25-34 < 35-44, 25-34 < 45-54, 25-34 < 55+
	35-44 (ab)	229	30,82	5,44				35-44 < 45-54, 35-44 < 55+
	45-54(bc)	92	35,27	7,26				45-54 < 55+
	55+ (c)	75	37,53	6,54				55+>18-24

*p<.05, **p<.01. Superscript letters indicate significant group differences based on Turkey’s HSD post-hoc test. Groups sharing the same letter do not differ significantly. Correct Recall: a>b; Studied Words: c>b>ab>a

The findings of Table 5 clearly show the effect of age groups on both correct recall and studied words. First, when examining correct recall scores, it is seen that younger age groups (18-24 (a) and 25-34(a), and 35-44 (a)) perform better in this area. The higher scores of these groups indicate that cognitive capacity is stronger in this age range ($F(4, 687) = 38.73, p = 0.000$). This situation is explained by the fact that younger individuals are more active in memory tasks and their speed of processing information is higher.

The correct recall values of middle-aged individuals, specifically 35-44 (a) group, yielded similar results to those of younger age groups, indicating sustained cognitive strength. It is understood that this age group is still cognitively strong, but it was also observed that some cognitive processes began to slow down with increasing age ($F(4, 687) = 38.73, p = 0.000$). The significant decrease in correct recall values, especially in the 45-54 (b) and 55+(b) age groups, reveals that cognitive capacity decreases with aging.

In the studied words dimension, an inverse relationship is observed among age groups. It was determined that cognitive error was lower in younger age groups, particularly the 25-34 group (a), but this error increased with age ($F(4, 687) = 45.88, p = 0.000$). The fact that individuals in the 55+ age group received the highest scores indicates that more errors are made in the recall process in this age group. It is understood that aging has negative effects on cognitive flexibility and information processing.

The fact that the 25-34 (a) age group received the lowest scores in the studied words dimension reveals that this group is more careful and successful in memory tasks. However, the increase in scores starting from the 35-44 (ab) age group shows that cognitive processes slow down with age and this leads to an increase in recall errors ($F(4, 687) = 45.88, p = 0.000$). The high scores of individuals in the 45-54 (bc) and 55+ (c) age groups reveal that they face age-related difficulties.

The fact that younger age groups (a) were more successful in both correct recall and studied words dimensions suggests that these individuals are more cognitively active and are exposed to more mental stimuli in their daily lives. The decreases in cognitive capacities with advancing age, particularly in groups (b) and (c), indicate that older individuals have more difficulty in memory processes and that these processes become less effective due to aging ($F(4, 687) = 38.73, p = 0.000; F(4, 687) = 45.88, p = 0.000$).

Table 6. One-Way ANOVA for Differences in Scale Scores by Education Level

Variable	Group	N	\bar{X}	ss	F	df	p	Tukey
Correct Recall	High School	114	2,81	1,08	5,35	3, 688	0,001**	Bachelor’s > High School, Graduate > High School, Bachelor’s > Associate, Graduate > Associate
	Associate	165	2,96	1,12				
	Bachelor’s	335	3,22	1,13				
	Graduate	78	3,28	1,24				
Studied Words	High School	114	34,62	8,47	12,42	3, 688	0,000**	High School > Associate, High School > Bachelor’s, High School > Graduate, Graduate > Önlisans
	Associate	165	31,85	6,86				
	Bachelor’s	335	30,96	5,36				
	Graduate	78	29,67	5,05				

The findings of one-way variance analysis according to education level in Table 6 reveal significant differences in correct recall and studied words dimensions. It was observed that correct recall scores increased as education level increased. High school graduates had the lowest mean in this dimension ($\bar{X} = 2.81$), while those with undergraduate and graduate education received higher mean scores ($\bar{X} = 3.22$ and $\bar{X} = 3.28$) ($F(3, 688) = 5.35, p = 0.001$). This shows that individuals with higher education have stronger cognitive capacities and are more successful in correct recall tasks.

The difference related to education level indicates that higher education enhances cognitive development and makes individuals more effective in memory processes. The higher correct recall scores of individuals with undergraduate and postgraduate education, compared to those with high school or associate degrees reflects their exposure to more cognitive stimuli and have more advanced information processing skills. These findings explicitly demonstrate the significant effect of education level on cognitive abilities.

The analysis revealed that high school graduates had significantly higher scores in the studied words dimension compared to other groups ($\bar{X} = 34,62$) ($F(3, 688) = 12,42, p = 0,000$). The findings indicate that high school graduates are more susceptible to cognitive bias and perform with a higher number of errors in studied words. The individuals with higher education achieve lower scores, suggesting that they are more careful in memory processes and tend to avoid cognitive biases.

The fact that individuals with postgraduate education scored the lowest in the studied words dimension ($\bar{X} = 29,67$), indicates that this group exhibits greater cognitive caution and precision. This finding highlights that higher education level allows individuals to reduce errors in their cognitive processes, which helps to minimize cognitive biases. As education levels increase, the differences in cognitive processes point to the essential role of education in developing cognitive abilities.

Table 7. One-way ANOVA for Differences in Scale Scores by Socioeconomic Development Index (SEGE) Levels of Participants' Cities

Variable	Grup	N	\bar{X}	ss	F	df	p	Tukey
Correct Recall	SEGE 1	437	3,18	1,14	2,97	5, 678	0,012**	SEGE 1 > SEGE 5
	SEGE 2	94	3,13	1,14				
	SEGE 3	21	2,76	1,48				
	SEGE 4	27	3,22	1,28				
	SEGE 5	56	2,61	0,87				
	SEGE 6	49	3,08	1,10				
Studied Words	SEGE 1	437	30,03	5,71	26,93	5, 678	0,000**	SEGE 4 > SEGE 1, SEGE 4 > SEGE 2, SEGE 4 > SEGE 3, SEGE 4 > SEGE 5, SEGE 4 > SEGE 6
	SEGE 2	94	31,73	6,31				
	SEGE 3	21	29,67	9,80				
	SEGE 4	27	37,81	4,67				
	SEGE 5	56	36,63	5,62				
	SEGE 6	49	36,12	4,82				

* $p < .05$, ** $p < .01$

The data presented in Table 7 demonstrate meaningful differences in participants' cognitive performance relative to the socioeconomic development levels of their regions. Participants from regions with higher socioeconomic development, such as SEGE 1 and SEGE 4, demonstrated significantly better performance in the correct recall dimension compared to those in SEGE 5. This situation may stem from the increased access to education and informational resources in more socioeconomically developed areas ($F(5, 678) = 2.97, p = 0.012$). The findings show that the low correct recall scores of participants in SEGE 5 indicate that cognitive processes in these regions might be hindered by limited educational and informational resources. Individuals in SEGE 1 and SEGE 4 regions seem to make more effective use of their cognitive capacities, likely due to the benefits of higher socioeconomic development. Enhanced access to educational and informational resources allow participants in these regions to perform better in recall processes, which is reflected in their correct recall performance ($F(5,678) = 2.97, p= 0.012$).

On the other hand, in the studied words dimension, shows that participants residing in SEGE 4, SEGE 5, and SEGE 6 regions demonstrated higher scores in the studied words dimension than individuals in other groups. The findings highlight that individuals in regions with lower socioeconomic development levels are more likely to encounter errors in their cognitive process ($F(5, 678) = 26.93, p=0.000$). As the socioeconomic development level decreases, more errors are observed in recall processes. Participants in SEGE 4 scored the highest in the studied words dimension indicate that this group is more susceptible to errors in cognitive processes relative to other groups. The data highlights that individuals from these regions struggle more under cognitive load, which adversely affects their recall performance ($F(5, 678) = 26.93, p=0.000$). The decline in development level, restricted education and access to information might cause an increase in cognitive errors.

The findings indicates that socioeconomic development level significantly affects cognitive performance in both correct recall and studied words categories. Individuals residing in highly developed regions display enhanced cognitive performance, whereas individuals in less developed regions are more prone to cognitive biases. The distinctions could stem from improved Access to education and information, decreased stress levels, and elevated overall quality of life in more developed regions. The detrimental effects of these conditions on cognitive performance are more pronounced in regions with lower levels of socioeconomic development ($F(5, 678) = 2.97, p = 0.012$; $F(5, 678) = 26.93, p = 0.000$).

Table 8. One-Way ANOVA for Differences in Scale Scores Based on Participants' Responses to Survey Items

	Independent Variable	Group	N	\bar{X}	ss	t	df	p
I think eating chicken is unhealthy	Correct Recall	Heard	306	2,99	1,13	4,77	690	0,029*
		Not Heard and Don't Know	386	3,18	1,15			
	Studied Words	Heard	306	31,31	6,42	1,33	690	0,249
		Not Heard and Don't Know	386	31,88	6,49			
I think eating chicken has environmental effects	Correct Recall	Heard	206	2,75	1,16	28,16	690	0,000**
		Not Heard and Don't Know	486	3,25	1,11			
	Studied Words	Heard	206	32,12	7,16	1,71	690	0,192
		Not Heard and Don't Know	486	31,42	6,14			
I think chicken meat may have hormones	Correct Recall	Heard	444	2,77	1,07	120,86	690	0,000**
		Not Heard and Don't Know	248	3,69	1,04			
	Studied Words	Heard	444	32,78	6,58	41,77	690	0,000**
		Not Heard and Don't Know	248	29,56	5,70			
I think there may be antibiotic residues in chicken meat	Correct Recall	Heard	381	2,82	1,10	56,35	690	0,000**
		Not Heard and Don't Know	311	3,45	1,10			
	Studied Words	Heard	381	32,41	6,81	12,76	690	0,000**
		Not Heard and Don't Know	311	30,67	5,88			
I think eating chicken can cause diseases	Correct Recall	Heard	392	3,01	1,09	5,27	690	0,022*
		Not Heard and Don't Know	300	3,21	1,20			
	Studied Words	Heard	392	32,46	7,07	15,15	690	0,000**
		Not Heard and Don't Know	300	30,55	5,39			
I think chicken meat is less nutritious than other meat products	Correct Recall	Heard	200	2,18	0,62	250,87	690	0,000**
		Not Heard and Don't Know	492	3,48	1,09			
	Studied Words	Heard	200	32,86	7,84	10,36	690	0,001**
		Not Heard and Don't Know	492	31,13	5,74			
I think eating chicken can cause food poisoning	Correct Recall	Heard	377	2,43	0,80	483,71	690	0,000**
		Not Heard and Don't Know	315	3,90	0,96			
	Studied Words	Heard	377	32,97	6,75	37,32	690	0,000**
		Not Heard and Don't Know	315	30,03	5,71			
I think animals are mistreated in chicken production	Correct Recall	Heard	335	2,43	0,76	324,88	690	0,000**
		Not Heard and Don't Know	357	3,73	1,09			
	Studied Words	Heard	335	32,04	7,07	2,66	690	0,103
		Not Heard and Don't Know	357	31,24	5,81			
		Heard	202	2,36	0,77	143,72	690	0,000**

I think chicken consumption is risky for human health	Correct Recall	Not Heard and Don't Know	490	3,40	1,13			
	Studied Words	Heard	202	31,96	7,04	0,75	690	0,386
		Not Heard and Don't Know	490	31,49	6,21			
	I don't think eating chicken is part of a healthy diet	Correct Recall	Heard	330	3,22	1,27	6,49	690
Studied Words		Not Heard and Don't Know	362	2,99	1,01			
		Heard	330	30,44	6,66	21,90	690	0,000**
Not Heard and Don't Know		362	32,71	6,09				

* $p < .05$, ** $p < .01$

The data in Table 8 reveal the effects of participants' perceptions of chicken consumption on their cognitive performance. The responses to each item show significant differences in both correct recall and studied words.

In fact, those who agreed with the statement “I think eating chicken is unhealthy” had lower scores in the correct recall test than those who did not agree with this view. This point suggests that the perception of unhealthiness may negatively affect cognitive processes ($t(690) = 4.77, p = 0.029$). The participants' health concerns may have weakened their recall capacity.

Likewise, those who agreed with the statement “I think there are environmental effects of eating chicken” also showed lower performance in the correct recall dimension. Environmental concerns may have strained the participants' cognitive functioning, leading to errors in their recall processes ($t(690) = 28.16, p = 0.000$).

Those who expressed agreement with the statement “I think eating chicken meat may have hormones” performed significantly lower on the recall test compared to those who disagreed. Concerns about hormones may have negatively impacted their cognitive performance, leading to difficulties in recall processes ($t(690) = 120.86, p = 0.000$).

Likewise, participants who agreed with “I think there may be antibiotic residues in chicken meat” scored lower in the correct recall dimension, suggesting that antibiotic related anxieties might interfere with cognitive functioning and reduce recall capacity ($t(690) = 56.35, p = 0.000$).

Participants who endorsed the statement “I think eating chicken can cause diseases” demonstrated lower correct recall scores compared to those who disagreed. The perception of disease risk might negatively impact recall processes ($t(690) = 5.27, p = 0.022$).

Participants who agreed with “I think chicken meat is less nutritious than other meat products” indicate that nutritional concerns may hinder cognitive processes, reducing recall capacity ($t(690) = 250.87, p = 0.000$).

Participants endorsing the statement “I think eating chicken can cause food poisoning” was associated with lower scores, suggesting that poisoning risk perception creates a negative effect on cognitive processes and could have reduced recall capacity ($t(690) = 483.71, p = 0.000$).

Likewise, participants who agreed with “I think animals are mistreated in chicken production” had lower recall scores than others, indicating that ethical concerns negatively affect cognitive performance and hinder memory processes ($t(690) = 324.88, p = 0.000$).

Lower correct recall scores were observed among participants who agreed with “I think chicken consumption is risky for human health”, reflecting the possible impact of health risk concerns on cognitive processes and reduce recall ability ($t(690) = 143.72, p = 0.000$).

In a similar vein, those agreeing with “I don't think eating chicken is part of a healthy diet” scored lower in correct recall than those who disagreed, implying that concerns about nutrition may negatively affect cognitive processes ($t(690) = 6.49, p = 0.011$).

These findings demonstrate the significant role of health, safety, and ethical anxieties significantly impact cognitive performance. Those experiencing these worries, particularly in the correct recall dimension, tend to underperform compared to others, underscoring the negative impact of health and safety fears on cognitive processes.

In the dimension of studied words, it was observed that individuals with negative perceptions of chicken meat are more inclined to cognitive inaccuracies. Specifically, those who believed that chicken meat contains

hormones or antibiotic residues had higher scores in this dimension, indicating that health and safety anxieties impair cognitive processes and lead to more recall errors.

The findings highlight that health, safety, and ethical anxieties affect cognitive processes as well as physical ones. Health and safety concerns can reduce recall performance and lead to a greater susceptibility to cognitive biases.

Conclusion and Discussion

This research examined the effect of memory distortions on chicken consumption, aiming to understand the role of memory processes in food consumption behavior. Memory illusions can lead to inaccurate or misleading recall of past experiences. Using DRM (Deese-Roediger-McDermott) paradigm, the study revealed that participants often formed false memories when recalling words associated with chicken. This finding shed light on how memory illusions influence chicken consumption and affect individuals' food choices.

The findings of the research highlight that memory illusions directly affect individuals' chicken consumption choices. These inaccuracies may influence future decisions about chicken consumption and consumption level. Particularly, recalling negative or positive false memories associated with chicken, these memories impacted their future eating behavior. For instance, a participant recalling discomfort from previous chicken consumption experience might decrease future consumption, whereas positive false memories could encourage increased consumption.

These results are consistent with prior research demonstrating the behavioral consequences of memory distortions. Berstein and Loftus (2009) showed that false memories regarding specific food products could alter actual consumption preferences. Laney et al. (2008) similarly reported that implanted aversive food-related memories resulted in measurable changes in dietary choices. While these studies primarily addressed sweet or high-calorie food products, the present study contributes to the literature by focusing on protein-based consumption, namely chicken. Thus, the current research expands the existing body of knowledge by applying the DRM paradigm to a less explored domain in food-related memory studies.

The effects of memory illusions on chicken consumption have critical implications for both the food industry and public health. False memories can affect individuals' perceptions of chicken, altering their consumption quantities and eating habits. This is particularly important in the context of public health initiatives and food safety communication. By combating misinformation and preventing false memories, effective consumer education programs can mitigate the impact of memory illusions and encourage more informed food choices. For instance, memory illusions arising after incidents like bird flu outbreaks could amplify negative attitudes toward chicken consumption, but accurate awareness campaigns can counter negative perceptions fueled by memory illusions.

This research sheds light on the effect of memory illusions on chicken consumption preferences. However, future studies could analyze the effects of memory illusions on other food groups and evaluate their wider effects. Additionally, examining the vulnerability of demographic segments, such as age, gender, or cultural background, to memory illusions would be a meaningful contribution. Cross-cultural comparisons, in particular, may help identify how social narratives and cultural schemas shape memory-related distortions. These approaches could further refine our understanding of the broader influence of memory illusions on consumption behavior.

While this study emphasizes short-term memory distortions, it is equally critical to examine the potential long-term consequences of such cognitive biases. Future research may explore how false memories shape persistent consumption habits over time, offering a longitudinal perspective. Methods, such as in-depth interviews, may additionally provide a more nuanced understanding of the personal and emotional dimensions of food-related memory distortions.

In summary, this research demonstrates how memory illusions influence food choices and highlights the role of cognitive styles in shaping these decisions. Understanding false memories and memory illusions can contribute to the development of more effective strategies in food consumption and public health.

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