



CATÓLICA
LISBON
SCHOOL OF BUSINESS & ECONOMICS

UNIVERSIDADE CATÓLICA PORTUGUESA

Master of Science in Business Administration

“Consumers’ Memory in Supermarkets”

Patrícia Santos Silva Neto

Advisor:

Daniel von der Heyde Fernandes

Dissertation submitted in partial fulfillment of requirements for
the degree of MSc in Business Administration, at the
Universidade Católica Portuguesa

March 2014

ABSTRACT (EN)

Title: *Consumers' Memory in Supermarkets*

Author: Patrícia Santos Silva Neto

In literature it is possible to find several studies of marketing and consumer behavior about factors that influence consumers' choices in the act of consumption (Harris, 1958; McClure and West, 1969; McEnally and Hawes, 1984; Yalch and Spangenberg, 2000). However, only a few of that literature is related to supermarkets.

The aim of this thesis is to extend the literature on consumer's memory in a supermarket context, providing a better understanding on why consumers continue to not use shopping lists even though the presence of forgetfulness is present. With that purpose, was analyzed how some influential factors act, such as the use of external memory aids, on consumers' memory performance and memory prediction, while shopping in supermarkets.

In order to collect data to determine whether our hypotheses are factual or not, one pre-test and two studies were conducted. Findings confirmed our expected correlations between product's familiarity (Familiar vs. Unfamiliar) and how easily we remember it (Recall vs. Recognition). The reasons why consumers persist in not using shopping lists were also discovered.

These findings contribute with further insights on how consumers' memory work and what are the factors that influence consumers' memory in a supermarket experience, with the particular purpose of trying to comprehend why the majority of consumers have already forgotten to buy a planned purchase and still persist in not to use shopping lists.

ABSTRACT (PT)

Título: *Memória dos consumidores em supermercados*

Autor: Patrícia Santos Silva Neto

Na literatura é possível encontrar diversos estudos de *Marketing* e *Consumer Behavior* sobre factores que influenciam as escolhas dos consumidores no acto de compra (Harris, 1958; McClure e West, 1969; McEnally e Hawes, 1984; Yalch e Spangenberg, 2000). No entanto, apenas uma pequena percentagem desses estudos está relacionada com experiências em supermercados.

A presente tese tem como principal objectivo alargar a literatura existente relativa à memória dos consumidores quando estudada tendo os supermercados como contexto, proporcionando uma melhor percepção sobre o porquê dos mesmos continuarem a não usar listas de compras, apesar de terem consciência que a sua memória pode falhar. Com essa finalidade, foi analisada a influência que alguns factores, como é o caso dos auxiliares de memória externa, detêm sobre a *memory performance* e *memory prediction* dos consumidores no momento da realização das suas compras.

A fim de reunir dados para determinar a veracidade, ou não, das nossas hipóteses, foi realizado um pré-teste e dois estudos. A informação recolhida confirmou a existência de uma correlação entre a familiaridade dos produtos (*Familiar vs Unfamiliar*) e a maneira como nos recordamos deles (*Recall vs Recognition*). As razões que justificam o facto de os consumidores persistirem em não usar lista de compras sempre que vão ao supermercado, foram também descobertas.

Este estudo contribui com novos *insights* sobre a maneira como funciona a memória dos consumidores dentro de um supermercado, tendo como principal objectivo perceber o porquê da maioria dos consumidores já se ter esquecido de comprar produtos que necessitava e ainda assim continuar a não usar listas de compras.

ACKNOWLEDGEMENTS

The achievement of this Master's Thesis was an extremely important step of my life, flanked by my academic and professional life. Its completion was only possible thanks to the direct and indirect collaboration and contribution of several people, which I would like to express all my gratitude, particularly:

To my mentor Prof. Daniel Fernandes, for giving me the great and privileged opportunity to work with him in one of his studies, for sharing with me his knowledge and expertise, and for the constant support.

To my father and mother for everything, since giving me the change to study in the best schools and guaranteeing everything that is in their power to my success, to all the support and love given. A special thanks to my father for always making me believe in myself, even when I did not, and always giving me incentive and help to be better.

To all my friends and family, naming Céu, Catarina, Sofia, Francisca, Sónia, Luísa and Fátima, for spreading my studies, answering the questionnaires and being always present. Giving me this way the opportunity to reach the number of answers needed to support my study.

And finally to Martim, for all the support and motivation given, especially in this phase of my life.

TABLE OF CONTENTS

ABSTRACT (EN).....	ii
ABSTRACT (PT).....	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS.....	v
1. INTRODUCTION TO THE PROBLEM	1
1.1. Introduction	1
1.2. Thesis Relevance	3
1.3. Problem Statement	3
1.4. Research Questions.....	3
1.5. Thesis Structure.....	4
2. LITERATURE REVIEW	5
2.1. Consumers' Memory.....	5
2.1.1. Memory complexity	5
2.1.2. Stimulus Based vs Memory Based Choices	6
2.1.3. Memory Failures	8
2.1.4. Metamemory.....	9
2.2. Memory Aids.....	9
2.2.1. Internal Memory Aids.....	9
2.2.2. External Memory Aids	10
2.3. Shopping Lists.....	10
2.3.1. Planning process.....	10
2.3.2. Factors that influence shopping lists' content	11
2.3.2.1. Financial incentives	12
2.3.2.2. Need-based incentives	12
2.3.2.3. Schema-based advantages.....	13
2.3.2.4. Other factors	13
2.3.3. Effects of using shopping lists	14
2.4. Familiar vs Unfamiliar Products	14
2.5. Conceptual Framework	15
3. EMPIRICAL STUDIES.....	18
3.1. Pre-test: Product Familiarity	18

3.1.1.	Research Method	18
3.1.2.	Data Collection and Analysis	19
3.2.	Study 1: (Naive) Theories about Memory	19
3.2.1.	Research Method	20
3.2.2.	Data collection and Analysis.....	20
3.3.	Study 2: Recall versus Recognition.....	22
3.3.1.	Research Method	22
3.3.2.	Data Collection and Analysis	23
4.	MAIN CONCLUSION.....	25
4.1.	Conclusions	25
4.2.	Limitations of the Study	27
4.3.	Future Research	27
	REFERENCES	28
	Book references:	30
	Web references:.....	31
	APPENDICES	32
	Appendix 1: Pre-test results	32
	Appendix 2: Study 2 – Online Questionnaire	34
	Appendix 3: Study 2 – Questions and Results.....	39
	Appendix 4: Study 2 – Data analysis	43
	Appendix 5: Study 3 – Data analysis	44

1. INTRODUCTION TO THE PROBLEM

1.1. Introduction

The level of information that our mind receives is becoming higher every day. Over the last years, with the technological development all kinds of information became easier to be released, as well as reached by everyone. According to *The World Bank*, the number of internet worldwide users increased 152,48% between 2012 and 2004 (101,26% in Portugal). This data clearly shows the importance internet, one of the most important vehicles to spread and receive information, acquire in our lives. Nowadays we can go to the internet and be connected to the all world through our smart phones, computers, lpads, even watches. In this now “small world” our mind is progressively submitted to a daily big amount of information.

Human brain is the most complex organ of our body. It is able to capture an immense amount of the information that surround us, filter that information and store what is relevant for the person. Recall and Recognition are two important ways of memory retrieval, which means ways of reaching the stored information we have available in our minds (Bartlett, 1932; Fernandes, 2013). Memory retrieval, or recall, is based on no cues, this is remember something just by thinking about it. While stimulus retrieval, or recognition, defines the memory retrieval which involves remembering something by identifying related information. This is a perfect system however, with our increasingly stressed and speedy lifestyle, as well as the increased levels of information our mind filters every day, memory retrieval can fail. Forgetfulness is becoming a factor people should have to take into account in their daily lives.

Our thoughts work *faster than a bird and slower than sound* (Zimmer, 2009). Their speed is the cause of intelligence and fast reaction time, but can also be responsible for the lack of quality and effectiveness of some thoughts, impairing our (minds) performance (Zimmer, 2009). The countless amounts of data our minds store can engender an overload of information, which may jeopardize our memories (Izquierdo, 2004). This makes the task of remembering some specific information on a specific moment sometimes a hard mission. Gollwitzer and Sheeran (2006) stated “holding a strong goal intention does not guarantee goal achievement”. So in order to prevent

forgetfulness situations there are several reminders people can use. One way of doing so is using Internal or External Memory Aids. Shopping Lists are an example of a well known external memory aid, which aims to help consumers to remember all the products they need while shopping at the supermarket.

The purpose of this thesis is to combine all these themes and try to find the reason why some consumers do not use shopping lists (Rickard, 1995) even though the presence of forgetfulness is present in their lives. It also studies if there is any correlation between the product's familiarity (Familiar vs. Unfamiliar) and the way we remember them (Recall vs. Recognition).

1.2. Thesis Relevance

A lot of studies were already done about human brain and memory, as well as the tricks brands use to stand out their products in a supermarket shelf and easily remain in consumers' memory. Only a very small percentage studied the typical supermarket consumer profile and the usual content of shopping lists. This thesis stands out as it joins all these themes and tries to understand why consumers do not use shopping lists even though the presence of forgetfulness is present in their daily lives. It also studies how the familiarity of products can be related with the way we remember them.

1.3. Problem Statement

The aim of this thesis is to extend the literature on consumers' memory. Providing a better understanding on why consumers continue to not use shopping lists even though the presence of forgetfulness is present, everything in a supermarket context.

1.4. Research Questions

The research questions we aspire to achieve answers with this thesis are the following:

Research Question 1 - *Why do not all consumers use shopping lists, even though the positive probability of memory retrieval failure is known?*

Research Question 2 - *Do products' familiarity affect our memory about them?*

Research Question 3 - *Do the time spent and/or the shopping strategy chosen (recall vs. recognition) influence what consumers think they can remember (memory predictions) and what they actually do remember (memory performance), regarding familiar and unfamiliar products?*

1.5. Thesis Structure

This thesis is structured in 4 chapters:

Introduction to the Problem.

In this first chapter is presented a brief introduction to the main theme that is going to be studied - consumers' memory. Introduction is then followed by the definition of thesis relevance, problem statement and research questions.

Literature Review.

Composed by a literature review on consumers' memory, memory aids, products' familiarity and relevant topics related to shopping lists. It is also possible to find in this chapter a Conceptual Framework, consisting in a theoretical structure that exposes our assumptions.

Empirical Studies.

Chapter that contains all the information regarding the studies made, from the way it was conducted to their results' analysis.

And Conclusions.

In the final chapter are presented some conclusions, as well as, the limitations of the study and future research directions.

2. LITERATURE REVIEW

2.1. Consumers' Memory

Go to a specific place with a specific task to do and once there, the idea that was on your mind simply vanish. Or call to someone and forget the subject to talk about. Or even forget to buy some product when going to the supermarket. Most probably these types of situations have already occurred to you, even more than once.

So why do these situations happen? Why do we sometimes forget information that is actually important for us to remember in a particular moment?

2.1.1. Memory complexity

People's mind, or the human brain, is a very complex part of the human body. The sensory system collects information, the motor system reacts to the information received, and the memory storage's it (Mastin, 2010). In our daily life our mind is submitted to an enormous amount of information. Especially nowadays where, with the new technologies and the relevance publicity has gain within the last years, the stimuli received is increasing more and more every day. This large amount of information received is filtered, being only a small percentage of it storage in our memory. Memories can be subdivided in three categories (*Atkinson-Shiffrin theory*): sensory memory, short-term memory and long-term memory (Craik and Lockhart, 1972). Sensory memory is the shortest type of memory (Miller, 1956; Broadbent, 1958), as it involves the perception of the information that surrounds us, automatically deciding what is relevant to be remembered in the future and what is not. This prompt action that occurs in fractions of a second is what makes us able to immediately react and create judgments on the information received but not yet consciously processed (Coltheart, 1980). As it is the case of situations when consumers are shopping in supermarkets and see an advertising poster about a promotion, their sensory memory will perceive the information and still unconsciously deliberate if is worth to pay attention or not. Despite a significant part of the information received is not consciously processed, the other part is, producing a short or a long memory. In a first phase appears the short-term memory, where the information received by the sensory memory is simultaneously processed and storage in our memory for a limited period of

time (Brown, 1958; Peterson and Peterson, 1959), enabling us to recall in average 7 items from memory in a maximum time period of one minute (Miller, 1956). Following the example described above, now imagine that the consumer is attracted by the promotion, where are listed several products with 50% discount; he tries to memorize the list of products and go to her partner that is on other corridor of the supermarket, in order to ask if some of that products were a planned purchase. The products he was actually able to remember when reached her partner forms a short-term memory. The last stage information received can reach is a long-term memory, as consumers can storage the information received for an infinite period of time (Shiffrin and Atkinson, 1969). The creation of long-term memories can occur through the constant rehearsal of the information received or by some motivational factor associated with it (Anderson, 1983). To finalize the example, suppose one week later the consumer needs to go to the same supermarket buy something, and remembers that the product he need was on the promotion discount list of last week, that memory do already represents a long-term memory.

2.1.2. Stimulus Based vs Memory Based Choices

Consumers' decision making can be based under stimuli or memory conditions (Lynch and Srull, 1982). Stimulus-based situations is the term used to define situations in which consumers' choices are made by having into consideration the stimuli received in a certain moment, and surrounded by a certain environment (Sanbonmatsu and Fazio, 1990). In the supermarket experience, a stimulus-based choice takes place when consumers' recognize their planned purchases by walking through roughly every corridor of the supermarket, trying this way to recognize and evoke the products they needed to buy, by looking to them (Fernandes, 2013). At the contrary, a memory-based situation occurs when consumers remember by recalling information they have stored in their memory, independently from the environment they are surrounded for (Rottenstreich, Sood and Brenner, 2007). A memory-based situation happens when consumers' recall the product they need to buy, remembering at the entrance of the supermarket the list of planned purchases and go straight to the shelf of the products in mind (Fernandes, 2013).

After Lynch and Srull, at 1982, other articles about ways of thinking have appeared as Chaiken and Trope in 1999, Epstein in 1994, Peters and Slovic in 2000, Sloman in 1996 and Stanovich and West in 2008. One of the most recent articles (Kahneman and Frederick, 2001) have identified two families of cognitive operations, which have been linked with memory-based and stimulus-based choices. System 1, name given to the cognitive operation based on autonomous, effortless, associative and intuitive decision making, give us in high speed a solution to problems whose content are related with affective, causal propensities, concrete and prototypes issues (Kahneman and Frederick, 2001). This first type of cognitive operations is tendentiously reflected by memory-based choices, as this group of choices implies being made in a relatively depleted processing capacity context. Memory-based, as well as System 1, decisions are based on recalling a considerable set of information, a task which involves remember a series of existing information in our memory, select what in certain moment is relevant, analyze it and finally make a decision, requiring this way a high level of exertion of our mental resources (Rottenstreich, Sood and Brenner, 2007). On the other hand, System 2 is a cognitive operation used in situations that require a more attentive and rational solution such as neutral, statistical, abstract or set content, needing therefore a more controlled, effortful, deductive, slow, self-aware and rule applicant process (Kahneman and Frederick, 2001). Process by which stimulus-based choice is more reflected, once in the contrary case of memory-based decisions “there is no need to recall the relevant options and no need to maintain them in working memory; thus the task of identifying a favorite occurs in a context of relatively plentiful mental resources” (Rottenstreich, Sood and Brenner, 2007, p.462).

“Much theorizing asserts that controlled, system 2 processing is easily impeded by cognitive load but that automatic, affective, system 1 processing is unaffected by cognitive load (Drolet *et al.*, 2005; Schriffin and Schneider 1977). That is system 1 is able to operate whether or not cognitive resources are strained, whereas system 2 is more likely to operate only when cognitive resources are plentiful. As a result, system 1 may tend to guide memory-based choices, whereas system 2 may tend to guide stimulus-based choices.” (Rottenstreich, Sood and Brenner, 2007, p.462).

2.1.3. Memory Failures

Remembering information that is stored in our memory is a process that can occasionally fail. According to the author Elizabeth Loftus, forgetfulness can ensue due to four reasons: (a) Retrieval Failure (parallel term with *Blocking and Transience* in the article “The Seven Sins of Memory” of Schacter), when the process of retrieving stored memories fails. Our memory is very complex, and inside that complexity remembering a specific topic of information when we actually need to use it can sometimes be a difficult task. Situations related with retrieval failure are the so called 'tip of the tongue' experiences (see Brown, 1991 for a review of the tip of the tongue experience), in which people try to remember something that they feel they know but it, but it does not come to their mind (*Principles of Psychology* by William James, 1890). This occurs when the process of accessing long-term memories stored in our minds fail, which is somehow explained by the decay theory. Decay theory states that in general memories will fade over time, especially if unused (see Brown, 1958 for a review on decay theory). (b) Interference (parallel term with *Misattribution* in the article “The Seven Sins of Memory” of Schacter), that occurs when some memories interfere with other memories. In other words, the theory of interference defends that during the process of acquiring new knowledge some old memories can be affected, especially through two different types of interference. Proactive interference, that occurs when an old memory hinders the remembrance of a new memory. And retroactive interference, that happens when the new information received overrides an old memory, normally about a related subject. (c) Failure to Store (parallel term with *Absent-Mindedness* in the article “The Seven Sins of Memory” of Schacter) is a different case of forgetfulness as it does not involve the actual failure of reaching a memory, but the non-creation of a long-term memory. Encoding failures, situations when the information perceived is not stored in our memory and consequently not turned into a long-term memory, occur due to factors such as the lack of attention and focus on some specific topic, or the lack of motivation to remember it (Reason and Mycielska, 1982). (d) Motivated Forgetting (parallel term with *Persistence* in the article “The Seven Sins of Memory” of Schacter), also differentiates itself from the other

reasons of forgetfulness as it retracts situations where memories exist against our will. These memories normally involve traumatic connotation episodes.

2.1.4. Metamemory

Despite the existent and known positive probability about memory failures, the confidence we have in our memory performance is in general very high (Alba and Hutchinson, 2000; Wood and Lynch, 2002). Several marketing studies have demonstrated peoples' self reliance regarding what they can memorize (Billeter, Kalra, and Loewenstein, 2011; Chan, Sengupta, and Mukhopadhyay, 2013; Gershoff and Johar, 2006; West, 1996; Wood and Lynch, 2002). Metamemory is the term used to designate the knowledge we have about our own memory, since what we believe we know, to the process we think it is easier for us to learn, in other words, is the "knowing about knowing" (Koriat, 1993).

2.2. Memory Aids

Our minds store a countless amount of information. This makes the task of remembering a specific memory on a specific moment sometimes a hard mission. The existence of memory aids derived from the need people have to end these lacks of memory or memory failures.

Gollwitzer and Sheeran (2006) stated "holding a strong goal intention does not guarantee goal achievement". A person may have several intentions in their mind at the same time, some of them with more relevance than others. In order not to forget any of these intentions, it is important to learn how to defend ourselves from these lacks of memory. One way of doing so is using internal or external memory aids (Harris, 1980). For example, use shopping lists when going to a supermarket in order not to forget to buy all planned purchases.

2.2.1. Internal Memory Aids

Memory Aids are divided in two different groups, Internal Memory Aids and External Memory Aids. The main objective of both groups is the same: help us not to forget our

intentions. The difference between the two types of memory aids derives from the devices that consumers arrange not to forget.

Internal Memory Aids are the ones that we create in our mind as mnemonics. Techniques used in order to facilitate the remembrance of a specific topic of information in the future, as for example, remembering a meaningful word or words, that can be easily connected with the subject we want to remember in the future.

2.2.2. External Memory Aids

External Memory Aids, as the name states is the group of memory aids that are external to us. Are the ones more commonly used by us, due to their tangibility and lower probability of failing. One of the most popular external memory aids is the reminder note, a tangible support that we write when the intentions are generated, in order to diminish the probability of future memory retrieval failure and achieve our goal.

Shopping lists enter in this group of memory aids.

2.3. Shopping Lists

Goal intentions do not guarantee goal achievements (Gollwitzer and Sheeran, 2006), so in order to achieve our goals we need to go beyond intentions. One way of doing so is using memory aids. Shopping Lists are an example of an external memory aid, which aims to help consumers to remember the products they need once in the supermarket. As Susan Spiggle (1987) defines “shopping lists represent the codified purchase intentions of consumers”. Represents also a pre-shopping planning, which normally influences the number of items purchased and reduce the amount of money spent, due a decreasing the impulse purchases (Thomas and Garland, 1993).

2.3.1. Planning process

Between the stages of intentions and goal achievements it is possible to identify a third stage: the planning process, constituted by four phases of the action model. The *model of action phases* suggested by Gollwitzer and Heckhausen (1986,1987) states that we pass for four phases to reach behavior: a Predecisional phase where we set

intentions having into account our preferences (motivational component); a Preactional phase where we consciously plan the steps we need to do to achieve our intentions (volitional component); a Actional phase where we actually and consciously put those plans into action (volitional component); and finally a Postactional phase where we overview and evaluate the result of our actions (motivational component). Portraying the grocery shopping experience the *model of action phases* can be represented by the following phases: Predecisional – think what products are lacking at home that we need to buy; Preactional – think how not to forget to buy those products; Actional – write down a list of the products missing; Postactional – see if all products were bought.

It is possible to adapt the *model of action phases* for the study of grocery shopping, however to a better analysis of the grocery shopping experience, Block and Morwitz (1999) customized the model, with the purpose of focusing more attention on the way processes are conducted, as it was a topic not well developed in the previous studies. The new adjusted model is based only on the two volitional phases of the *model of action*: Preactional and Actional. In the first phase consumers generate an intention of buying certain products. Some consumers do also write a list of the products needed, an external memory aid used in order not to forget to purchase any product. In the second phase consumers have a direct contact with the products and do the actual purchases of the products needed (that may be written on a shopping list), or products chosen at that moment or even bought by impulse.

2.3.2. Factors that influence shopping lists' content

A Shopping list is an external memory aid where consumers write down the products they need to buy in the supermarket. There are several factors that may influence the content of those shopping list. Lists can vary conform several aspects, as the confidence consumers have on their ability to remember the products they need to buy, the type of products that may be for a usual or occasionally need, the supermarket chosen to buy the products, the time consumers have to spend on the supermarket and the day of the week they go purchasing. Everything may influence consumers' propensity to memorize the planned products and therefore the shopping lists' content.

The main goal of using a “products to buy” list is so customers’ tendency to forget to purchase some planned product decreases. The creation of a shopping list as well as the purchase of the items written on the external memory aid, are more easily achieved when influenced by some factors. Block and Morwitz (1999) have identified four factors that have a strong impact when it comes to the content of shopping lists.

2.3.2.1. Financial incentives

Financial incentives are a factor that influences shopping list’s content as it can be responsible for *cost savings* (or in a broader way, regarding the use of external memory aids, a *premium on accurate remembering* as Intons-Peterson and Fournier denominate, 1986).

An example of a financial incentive is saving costs through the use of coupons (Block and Morwitz, 1999). Normally the use of coupons involves a planned purchase (Kahn and Schmittlein, 1992), reason why, a shopping list becomes highly appropriate when consumers detain coupons of the items they need to buy. In the case of coupons, the use of shopping lists may also be higher due to their short validity, because if consumers forget to buy the product they need and have coupons for, discounts may be lost.

2.3.2.2. Need-based incentives

In every home exist a ‘must have’ group of products, name we are going to give to a certain group of products that are used on a daily basis or nearly always in a home, such as fruit, bread, onions, shampoo and toothpaste. Because of the regular use, the absence or in a previous stage the lower number of units detain at home of some product of this group is almost automatically identified. Furthermore, a regular usage implies a regular need, meaning that the absence of some of these products would be negatively felt. The need to have a minimum quantity of these products at home so they never run out when are needed is a need-based incentive.

A need-based incentive is a strong influence when it comes to the content of shopping lists. The importance of having those types of products at home pressure the consumers to create ways to not forget to buy the products, like the external memory aids: shopping lists.

2.3.2.3. Schema-based advantages

Habitual scenarios, usual routes, daily activities, unconsciously all of these experiences provide us knowledge. When going to the supermarket, all of these repeated experiences provide consumers knowledge that unconsciously will help them on how to search for usual planned purchases. This enables consumers to decrease the time spend and the effort cost of doing their shopping (Putrevu and Ratchford, 1997, defined as *information capital* the information consumers detain on the “market basket attributes and prices obtained through past shopping experiences” which tend to decrease the consumers search level). Stimulus received in past experiences assembles cognitive structures, named *schemas* (Abelson, 1976, 1981; Fiske & Linville, 1980).

In every home exists a group of products that we routinely use (e.g. bread, milk). Linked with the regular use comes the routine purchase of the products. This routinely purchase makes customers, subconsciously, create a regular itinerary when they go to the habitual supermarket. Schema-based advantages appear from this knowledge consumers’ gain of the supermarket (e.g. store layout and products location) by repetitive shopping experiences in one specific establishment (Park, Iyer and Smith, 1989). Reason why this effect is greater in fill-in trips, when usually consumers’ planned purchases are largely composed by familiar products (definition reported in section 2.4), rather than in major trips, when planned purchases start to include several unfamiliar products (definition reported in section 2.4). Furthermore, due to the typical change on consumers’ routine during holiday periods schema-based effect is lower, as customers may make their purchases in unusual supermarkets and buy products for different purposes (Block and Morwitz, 1999).

2.3.2.4. Other factors

Additionally, there are some other factors that can influence the tendency of using an external memory aid, as well as, delineate an external memory aid user profile. Block and Morwitz (1999) named three factors: price, gender and age.

Price appears due to the positive correlation that exists between prices and the planning of the purchases. This means, the more expensive products are, the greater is the likelihood of consumers plan their purchases, when compared with less expensive

products. The probability of external memory aid use is also greater when consumers are female, as women use more often external memory aids than men (Wall street journal, Narisetti 1997). On the contrary the external memory aid utilization is lower for consumers that fit in the young and older age stages, what can be justified by the fact that middle age consumers normally have more household members to support, and in order to decrease the percentage of forgotten products they use memory aids such as shopping lists.

2.3.3. Effects of using shopping lists

Studies about the effects of using shopping lists were already done (Thomas and Garland, 1993, 2004; Block and Morwitz, 1999). The main findings of those studies about the effects of using shopping lists were the following: Shopping lists use decreases the likelihood of forgetting to buy some planned purchases, as it should be all written on the list; The probability of buying unplanned purchases decrease (or impulse purchases), once consumers go straight to place where the products they need are disposed, or are focused on finding some specific product; And consequently the total amount of purchased items as well as the amount of money spent in the supermarket trip also decrease, due to factors such as the decrease of impulse purchases (Thomas and Garland, 1993).

2.4. Familiar vs Unfamiliar Products

In every home exists a group of products that are indispensable. Those are the products consumers use almost every day such as bread, milk, apples, rice and shampoo. These are the familiar products, which by its high level of familiarity and usage by consumers generally appears in the planned purchases list. On the contrary, unfamiliar products are those that consumers sporadically use, such as sparkling water or mussels. In this products category exist items that consumers only use for special occasions making them, even when really needed, normally hard to recall when going to the supermarket due to the low use (Fernandes, 2013).

2.5. Conceptual Framework

In this thesis we will study if there is any correlation between the products' familiarity (Familiar vs. Unfamiliar) and the way we remember them (Recall vs. Recognition), advocating for that two hypotheses.

Ho (familiar | recall)

Our first hypothesis advocates the existence of a correlation between familiar products and memory-based information retrieval (recall). Familiar products are products used by us in a daily basis, due to that and other factors, such as schema-based advantages (subject reported above), it is expected the easy remembrance of those products by consumers while shopping in a supermarket. What increases the probability of consumers recall the products needed in the entrance of the supermarket and go directly to their exact location.

Ho (unfamiliar | recognition)

Following the same line of thought, we have built a second hypothesis. Hypothesis now based on stimuli-based information retrieval (recognition) and its probable correlation with the unfamiliar products. The judgment behind this hypothesis appear from the fact that unfamiliar products, being products not used daily, are somehow more distant and hard for consumers to recall while shopping in the supermarket. For this reason we defend that unfamiliar products are more presumable to take place in situations involving recognition. In other words, unfamiliar planned purchases are more likely to be remembered by scrolling through all the aisles of the supermarket, since the non-familiarity products stand out more easily among the familiar ones, as they are products that we are not accustomed to see/use everyday days.

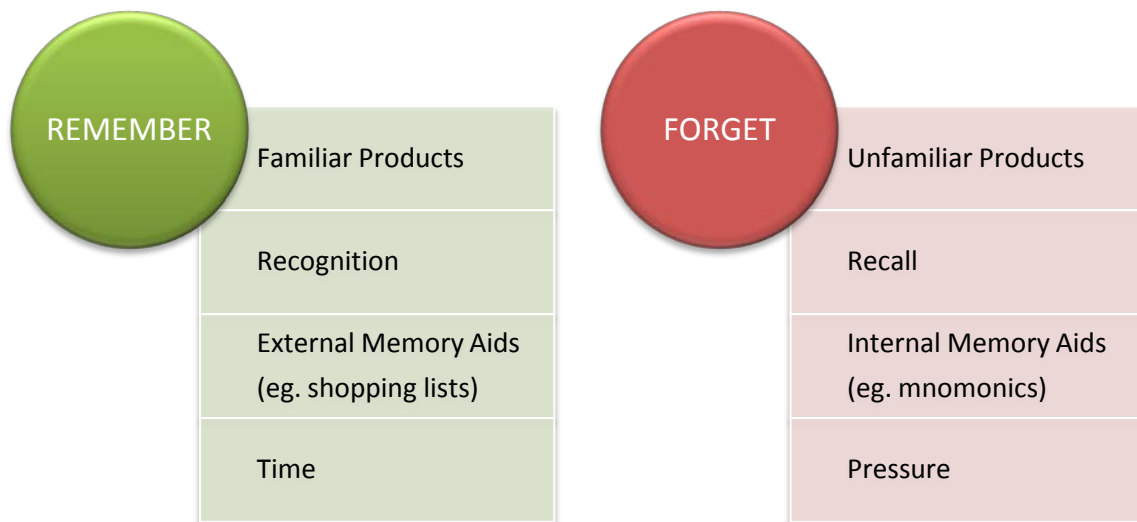


Fig.1 – Summary of previous research

Furthermore, we also believe that memory performance in situations of memory-based (recall) and stimulus-based (recognition) information retrieval tends to have no variation in the case of familiar products. For unfamiliar products, on the contrary, it is predictable that recognition will be more effective than recall. It is expected for this to happen due to the different relation we end up building with the varied products. The constant presence of familiar products in our daily lives, as well as their regular purchase, makes this type of products the easiest ones to be remembered while grocery shopping. What justifies the expected insignificant variation of memory performance when a person decides to recall the planned familiar purchase or recognize it. In contrast, unfamiliar products are not used by us in a regular basis. For that reason, those are products with high probability of not being recalled while doing the grocery shopping. Recognition on the other hand, seems to us a way of memory retrieval less likely to fail. As a group of products we do not need constantly, is therefore expected that, in the eyes of consumers, it stands out from the other products they use every day. Unfamiliar products' recognition becomes then a situation more likely to occur.

This study will therefore attempt to prove the influence products' familiarity (familiar or unfamiliar products) has on consumers' memory. Appearing as a moderator the purchasing strategy, or searching strategy, chosen (recall or recognition). On the other hand it is expected that Memory Predictions will not be influenced by products' familiarity. The high confidence consumers have on their memory performance (Alba and Hutchinson, 2000; Wood and Lynch, 2002), whether the products faced are familiar or unfamiliar, makes it a stable variant, represented on average by the number 7 (out of 10), number of items consumers tend to think they will keep in mind given a 10 product list to remember (Miller, 1956). Fact that may be responsible for the high percentage of consumers that do not use shopping lists even though the probability of forgetting to buy some planned purchase is present.

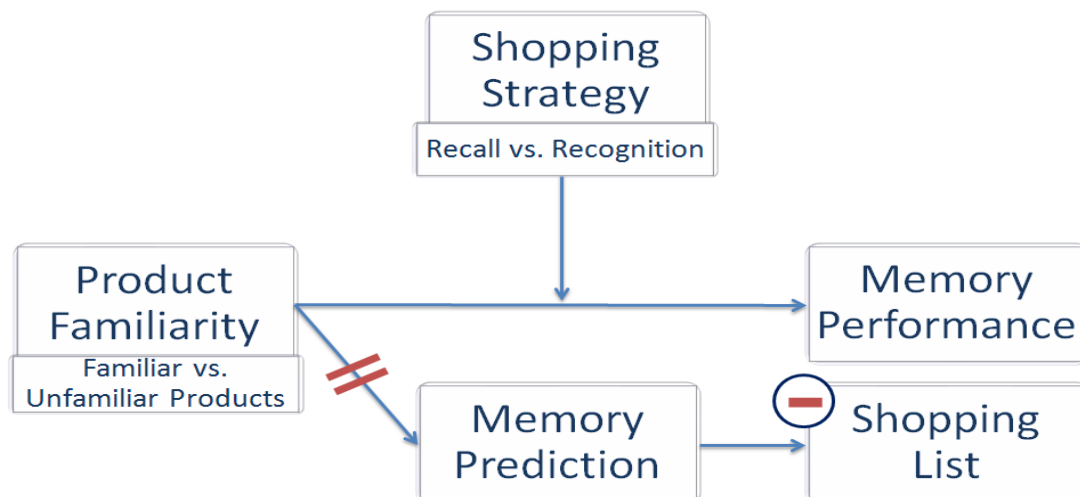


Fig.2 – Conceptual Framework

3. EMPIRICAL STUDIES

This paper has as main purpose analyze and test consumers' memory performance and memory predictions in a scenario of shopping experience in a supermarket. Based on this end one pre-test and two posterior tests were made. Following it is possible to find the detailed research methods as well as the data collection and analysis of each test.

It is relevant to state that, we were careful to comply with the minimum requirements in the preparation of studies 1 and 2 [eg. the number of observations obtain for each cell was higher than 20, respecting the *guidelines for authors* given by Simonson, Nelson and Simonsohn (2011), which affirm "Authors must collect at least 20 observations per cell or else provide a compelling cost-of-data-collection justification" (Simmons *et al.*, 2011, p.4)]. We were also careful to conduct a pre-test of product familiarity described below.

3.1. Pre-test: Product Familiarity

In a first stage, it was elaborated a pre-test on products' familiarity. The main purpose of this pre-test was to select a group of familiar products and other of unfamiliar products, in order to use them to conduct the two following studies.

3.1.1. Research Method

The aim of this test was within all the products available on supermarkets, identify a group of ten familiar products and a group of ten unfamiliar products. In this sense it was selected a group of forty products sold in a Portuguese supermarket chain, being twenty products potentially familiars and other twenty potentially unfamiliar products. The forty products list, where the products were listed randomly, was subsequently shown to eleven consumers. It was asked for them to indicate which of the products they felt that were familiar and which were unfamiliar, stating that: a *familiar product represents an item used in a daily basis, being usual to buy them in almost every trip to the supermarket*; and a *unfamiliar product represents those products that on the contrary are used just occasionally, being their purchase something infrequent*. Through *Excel* was calculated the percentage of familiarity or unfamiliarity of the forty

items (Data available in Appendix 1). And through SPSS analyzed the congruence of the data collected.

3.1.2. Data Collection and Analysis

Our goal was to identify products that really were view as familiar or unfamiliar by a group of customers. The results exposed in Appendix 1 made us chose the following list of products, which were posteriorly used in the other studies:

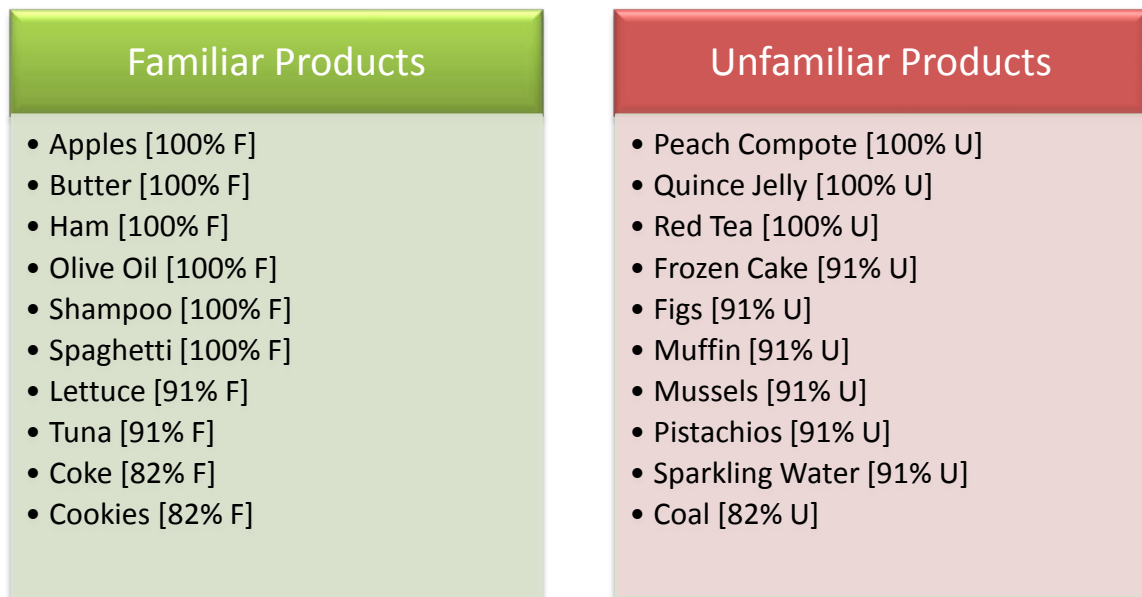


Fig.3 – List of chosen products

The data was also analyzed through SPSS, confirming our findings with an almost perfect match between our results and the perfect classification ($K=0,873$, with an Asymp. Std. Error of 0,33). In a sample of 220 answers, only 14 observations were different from the correct classification.

3.2. Study 1: (Naive) Theories about Memory

“Study 1” examines people’s naive theories about their memory. Participants engaged in a thought experiment. Specifically we asked them to report their beliefs about how familiar vs. unfamiliar items and focused vs. broad-based search might affect their ability to remember the items they need to buy. Our goal was to test whether they do not know that unfamiliar items are especially likely to be forgotten under a focused search strategy or do not use this knowledge to make memory predictions.

3.2.1. Research Method

Participants and Design. One-hundred and four individuals were interviewed about their beliefs of their memory for grocery items at the supermarket.

Procedure. Participants answered an online survey spread through e-mail to people with high probabilities of being a regular shopper. They were asked to report a few questions about their grocery shopping behavior and hypothetical questions of how they would behave in certain situations.

3.2.2. Data collection and Analysis

Respondents (Mage = 39.1; 75% female) on average go 1.98 times/per week to the supermarket for groceries, on average spend 35 minutes at the store per visit and buy 21.3 products each time, of which 5 are unfamiliar. In terms of shopping list use, 15.4% of respondents always use a shopping list and 13.5% never uses it. Thus, there is not only a strong individual variation on the decision to use a shopping list, but also within shopping trips as most consumers have not a rule to always or never use a list. Most respondents say they sometimes forget to buy something (63.5%), some say they most often forget to buy something (37.5%) and only 2.9% say they never forget. Hence, forgetting to buy seems to be a problem for most of our respondents.

This study purpose is to find out whether participants know that they are more likely to forget unfamiliar items. Thus, we asked them to indicate which items they can more easily remember when shopping (a. familiar items; b. unfamiliar items; c. both equally). About 71% indicate that they can more easily remember familiar items and only 9.6% report that they can more easily remember unfamiliar items.

Another empirical question we have is whether consumers know that they are especially likely to forget unfamiliar items when using a focused search strategy. Hence, we asked consumers to indicate when they are more likely to remember unfamiliar and familiar items: a. when searching for the product in most aisles in the supermarket hoping to remember what one needs to buy; b. when trying to remember the product before entering the supermarket and going straight to its aisle; c. not particularly at those situations. Option A describes a broad-based search strategy and option B describes a focused search strategy. More respondents indicate that they are most likely to remember unfamiliar products when using a broad-based search

strategy (58.7%) than using a focused search strategy (15.4%), but fewer respondents report that they are most likely to remember familiar products when using a broad-based search strategy (16.3%) than when using a focused search strategy (39.4%). These results indicate that participants know that they are more likely to remember unfamiliar items when using a broad-based search strategy and familiar items when using focused search strategy.

We also asked participants to imagine they had to buy 10 items in the grocery store and to indicate how many items they would remember to buy and the likelihood of using a shopping list (a. high; b. low; c. not sure, it depends on the type of products). As we can see in appendix 4, about 23% of respondents answered the likelihood of using a shopping list was high and 20% answered the likelihood of using a shopping list was low. We find that those who indicated the likelihood of using a list as low predicted they would remember more items ($M = 9.38$) than those who indicated the likelihood of using a list as high [$M = 6.96$; $F(1, 101) = 26.93$, $p < .01$] and those who indicated it depends on the type of products [$M = 7.92$; $F(1, 101) = 13.63$, $p < .01$]. Those who indicated a high likelihood of using a list predicted they would remember fewer items than those who indicated it depends on the type of products [$F(1, 101) = 6.40$, $p = .01$].

Finally, we asked participants to provide the following information about their last shopping trip: 1) whether they were shopping more unfamiliar or familiar items; 2) whether they most used a focused or a broad-based search strategy; and 3) whether they used a shopping list. We conducted a logistic regression to examine the effect of type of item and of search strategy on the decision to use a shopping list. We find that people are as likely to use a shopping list when shopping for familiar (53% used a list) than when shopping for unfamiliar items (42% used a list; $p = .36$). We also find that they are as likely to use a shopping list when shopping using a focused search strategy (46% used a list) than when using broad-based search strategy (35% used a list; $p = .45$). In addition, those factors do not interact to predict the use of a shopping list ($p = .66$).

These results create a puzzle. People seem to be aware that they are more likely to forget unfamiliar than familiar items. They are also aware that unfamiliar items are especially likely to be forgotten when using a focused search strategy. And the more

items shoppers think they will forget, the more likely they are to use a shopping list. However, they are as likely to use a list when shopping for unfamiliar items as when shopping for familiar ones. This leaves one alternative: even though consumers have full knowledge of the conditions in which they are likely to forget, they do not use this knowledge to predict their memory. People think that items will remain in their memory forever (Koriat et al., 2004). Therefore, they cannot avoid the failure of being overconfident in their memory despite knowing that memory is more fallible under certain conditions.

3.3. Study 2: Recall versus Recognition

“Study 2” measures participants memory using recall or recognition tasks, testing this way the generality of the effects uncovered when search strategy are externally suggested rather than entirely self-set. It is expect overconfidence in memory for unfamiliar items in recall tasks as memory decays faster for unfamiliar than for familiar items. In recognition tasks, we expect no overconfidence, and perhaps under confidence in memory, as participants may be able to spot a few more items than they anticipate.

3.3.1. Research Method

Participants and Design. Eighty-three undergraduates at a major West European university participated in the study in return for credits in a marketing class. The design of the study was a 2 (familiar items vs. unfamiliar items) x 2 (recognition vs. recall).

Procedure. Participants were exposed to a list of 10 items. For about half of participants, the items were familiar (Lettuce, Apples, Olive Oil, Butter, Coke, Ham, Spaghetti, Cookies, Tuna, and Shampoo). For the other half, the items were unfamiliar (Red tea, Mussels, Figs, Muffin, Quince jelly, Peach compote, Pistachios, Frozen cake, Sparkling water, and Coal). After being exposed to the items, participants answered the question of “how many of the 10 products shown on the previous screen you think you will remember and be able to type (identify on a list of 100 items) 5 minutes from now?” After participants indicated the number of products they think they would remember, a time interval of 5 minutes followed. Next, their memory was tested. Half

of participants were asked to type down the products they could remember. The other half were asked to identify the products on a list of 100 products. After the memory task, participants were thanked and debriefed.

3.3.2. Data Collection and Analysis

We analyzed the data using a repeated-measures ANOVA (see appendix 5). The number of items participants correctly remembered (memory performance) and the number of items they predicted they would remember (memory predictions) were entered as within-subjects measures. The type of items (familiar vs. unfamiliar) and type of task (recall vs. recognition) were entered as between-participants factors. We found a three-way interaction ($F(1, 79) = 13.71, p < .001$, figure 4). For memory predictions, participants thought they would be able to remember better the familiar products in a recognition task ($M_{\text{fam}} = 7.65$ vs. $M_{\text{unfam}} = 5.95$; $F(1, 79) = 7.16, p < .01$) but not in a recall task ($M_{\text{fam}} = 6.47$ vs. $M_{\text{unfam}} = 6.47$; $F(1, 79) = 0, p = 1$). For memory performance, participants could equally remember the familiar and the unfamiliar products in a recognition task ($M_{\text{fam}} = 8.69$ vs. $M_{\text{unfam}} = 8.72$; $F(1, 79) = 0, p = .96$) but not in a recall task ($M_{\text{fam}} = 7.21$ vs. $M_{\text{unfam}} = 5.47$; $F(1, 79) = 7.88, p < .01$).

As predicted, memory performance suffers more when searching for unfamiliar items than for familiar ones, and using recall tasks than recognition tasks. However, memory predictions do not anticipate this pattern. As a result, participants were overconfident in recall tasks when predicting their memory for unfamiliar items [$F(1, 79) = 4.21, p < .05$] but not for familiar items [$F(1, 79) = 2.29, p = .14$]. In recognition tasks, participants were under confident in their memory for both unfamiliar [$F(1, 79) = 37.48, p < .001$] and familiar items [$F(1, 79) = 5.55, p = .02$].

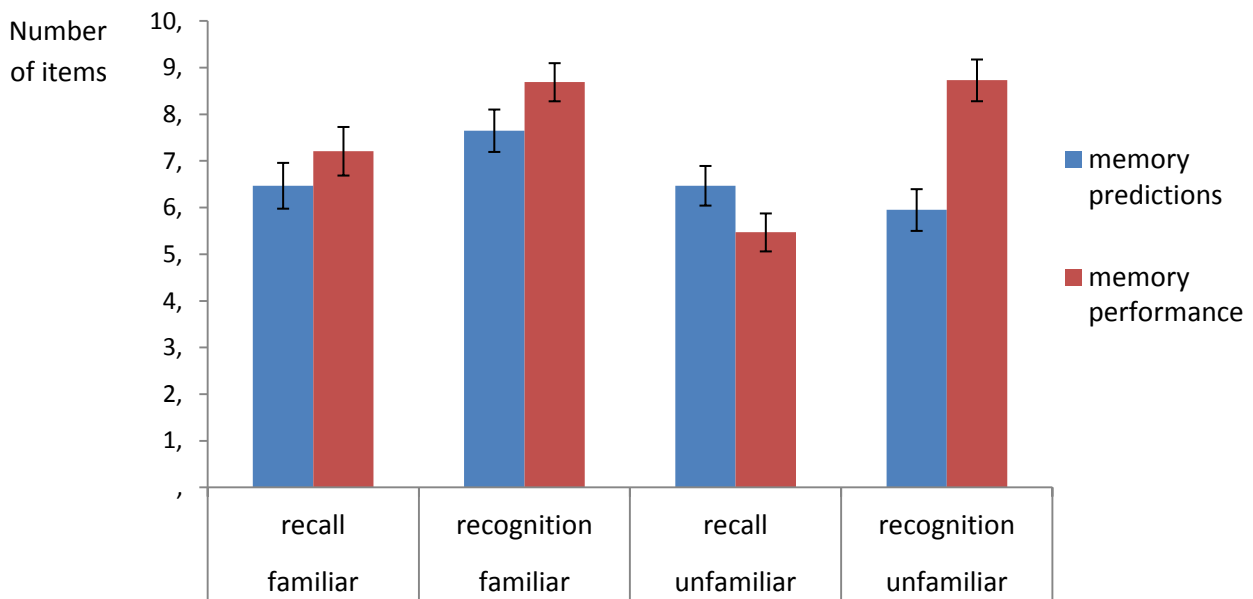


Fig.4 – “Study 2” results. Memory predictions and performance as a function of type of items and of task

These results suggest that the overconfidence in memory is indeed caused by an impaired capacity to recall unfamiliar items after a time interval. As only in pure recall tasks, the effect of familiarity on memory is strong enough to cause overconfidence in memory.

4. MAIN CONCLUSION

4.1. Conclusions

“The trip to the grocery store is one of the most basic elements of consumer behavior” (Bawa and Ghosh, 1999, p.149). Some of its characteristics, however, have changed over time. The most relevant change is the time people spend in supermarkets. Consumers of nowadays, with their increasingly speedy lifestyle, have less time to dispose in the task of grocery shopping (Narisetti, 1997). Time pressure, along with factors such as the high and growing level of information that our minds receive every day, makes consumers start to exchange accuracy by speed (Swensson 1972). Appearing as an immediate consequence the high propensity consumers have to forget to buy some planned purchase (Park, Iyer and Smith, 1989). We determine that even though forgetfulness is present in consumers’ lives (only 3% of “Study 1” respondents, affirmed have never forgotten to buy a planned purchase while grocery shopping), the majority of people continue to not use shopping list every time they go to the supermarket (only 15% of “Study 1” respondents actually use shopping lists every time they go grocery shopping). Our results also showed that even though consumers have full knowledge of the conditions in which they are likely to forget, they do not use that knowledge to predict their memory performance, as people think that items will remain in their memory forever (Koriat et al. 2004). Thus, they cannot avoid the failure of being overconfident about their memory, despite knowing that memory is more fallible under certain conditions.

Regarding our hypotheses, both were confirmed, as products’ familiarity affects on how we remember them. For memory-based information retrieval (recall), familiar products are the ones that register a higher memory performance, due to consumers’ constant need and consequential regular purchase of this type of products. Whereas in situations of stimulus-based information retrieval (recognition), unfamiliar products register a slightly higher performance than familiar products, what can be justified by the fact that unfamiliar products, being products we do not actually purchase and need regularly, stand out in the shelves from the others more easily.

Furthermore, the time spent in supermarkets and the shopping strategy chosen by consumers (recall vs. recognition) do influence what consumers think they can remember (memory predictions) and what they actually do remember (memory performance). Memory predictions are not significantly influenced by time and strategy chosen, with values registering a low variance between strategies and type of products. In contrast, memory performance registers in some cases significant and different variations between strategies and also between types of products. Regarding the strategy chosen by consumers, recognition is for both familiar and unfamiliar products, the strategy where customers achieve a higher memory performance, when compared with recall strategy. Having into account the type of products' familiarity, familiar products register a memory performance above memory predictions using either recall or recognition strategies; unfamiliar products, on the other hand, register higher memory predictions than memory performance when using memory-based memory retrieval (recall strategy), and memory predictions are significantly lower than memory performance in situations of stimulus-based memory retrieval (recognition strategy).

These results reinforce the following aspects: familiar products' memories are more vivid in our minds, reason why memory performance is higher for familiar products when using memory-based memory retrieval; the emphasize the power stimulus-based memory retrieval have on memory performance; and finally, support that the variations registered between memory performance and memory retrieval appear from the incorrect Judgments of Learning (JOLs) made by us, as people predict their future memory performance not having into account past experiences, but from what they remember in the moment (Koriat, Bjork, Sheffer and Bar, 2004).

Consumers tend to forget some planned purchases when going grocery shopping (97% of "Study 1" participants' state that they have already forgotten to buy a planned purchase). This study shows why, providing new and important information for all super and hyper markets, such as relevant inputs to take into consideration when positioning familiar and unfamiliar products.

4.2. Limitations of the Study

Despite the limitation every online survey and questionnaire may have regarding the accuracy of responses, this study has one major limitation, that is based on the lack of a study conducted in the field (supermarkets), in order to confirm the results collected through the online survey and the questionnaires made in the Laboratory of Experimental Research in Economics and Management, of Católica Lisbon School of Business and Economics.

4.3. Future Research

In accordance with the limitations of the study described above, a future step on this research would be to do a field study in order to verify the ability to replicate the results in other context.

REFERENCES

- Abelson, Robert P. (1976), *Script processing in attitude formation and decision making*. Carroll, John S. (Ed); Payne, John W. (Ed), (1976). *Cognition and social behavior*. ,Oxford, England: Lawrence Erlbaum, xiii, pp. 290.
- Abelson, Robert P. (1981), *Psychological status of the script concept*, *American Psychologist*, Vol.36, No.7, pp.715-729.
- Alba, Joseph W. and J. Wesley Hutchinson (2000), *Knowledge calibration: What consumers know and what they think they know*, *Journal of Consumer Research*, Vol.27, No.2, pp.123-156.
- Anderson, John R. (1983), *A spreading activation theory of memory*, *Journal of Verbal Learning and Verbal Behavior*, Vol.22, No.3, pp.261-295.
- Bartlett, F. C. (1932), *Remembering*, London: CambridgeUniversity Press.
- Bawa, Kapil and Avijit Ghosh (1999), *A Model of household grocery shopping behavior*, *Marketing Letter*, Vol.10, No.2, pp.149-160.
- Billeter, Darron, Ajay Kalra and George Loewenstein (2011), *Underpredicting learning after initial experience with a product*, *Journal of Consumer Research*, Vol.37, No.5, pp.723-736.
- Block, Lauren G. and Vicki G. Morwitz (1999), *Shopping lists as an external memory aid for grocery shopping: Influences on list writing and list fulfillment*, *Journal of Consumer Psychology*, Vol.8, No.4, pp.343-375.
- Broadbent, D. E. (1958), *Perception and communication*, New York: Oxford University Press.
- Brown, Alan S. (1991), *A review of the tip-of-the-tongue experience*, *Psychological Bulletin*, Vol.109, No.2, pp.204-223
- Brown, John (1958), *Some tests of the decay theory of immediate memory*, *Quarterly Journal of Experimental Psychology*, Vol.10, No.1, pp.12-21.
- Chan, E., J. Sengupta, and A. Mukhopadhyay (2013), *The antecedents of anticipatory purchase: Reconciling the two routes to optimism*, *Journal of Consumer Psychology*, Vol.23, No.1, pp.90-105.
- Coltheart, Max (1980), *Iconic memory and visible persistence*, *Journal of Perception & Psychophysics*, Vol.27, No.3, pp.183-228.
- Craik, Fergus I. M., and Robert S. Lockhart (1972), *Levels of processing: A framework for memory research*, Vol.11, No.6, pp.671-684
- Drolet, Aimee, Dale Griffin, Mary Frances Luce and Itamar Simonson (2005), *The influence of cognitive load on consumer choice processes*, working paper, Anderson School, University of California, Los Angeles, CA 90095.
- Epstein, Seymour (1994), *Integration of the cognitive and the psychodynamic unconscious*, *American Psychologist*, Vol.49, No.8, pp.709-724.
- Fernandes, Daniel Von Der Heyde (2013), *The Functions and Dysfunctions of Memory Aids*, ERIM PhD Series in Research in Management.
- Fiske, S. T., and P. W. Linville (1980), *What does the schema concept buy us?*, *Personality and Social Psychology*, Vol.6, No.4, pp.543-557.
- Gershoff, A. D., and G. V. Johar (2006), *Do you know me? Consumer calibration of friend's knowledge*, *Journal of Consumer Research*, Vol.32, pp.496-503.
- Gollwitzer, Peter M. and Paschal Sheeran (2006), *Implementation intentions and goal achievement: A meta-analysis of effects and processes*, *Advances in Experimental Social Psychology*, Vol.38, pp.69-119.

- Harris, Douglas H. (1958), *The effect of display width in merchandising soap*, Journal of Applied Psychology, Vol.42, pp.283-289.
- Harris, John E. (1980), *Memory aids people use: Two interview studies*, Journal of Memory & Cognition, Vol.8, No.1, pp.31-38
- Heckhausen, H., and P. M. Gollwitzer (1986), *Information processing before and after the formation of an intent*. In F. Klix and H. Hagendorf (Eds.), *In memoriam Hermann Ebbinghaus: Symposium on the structure and function of human memory*, pp.1071-1082. Amsterdam: Elsevier/North-Holland.
- Heckhausen, H., and P. M. Gollwitzer (1987), *Thought contents and cognitive functioning in motivational versus volitional states of mind*, Motivation and Emotion, Vol.11, pp.101-120.
- Holbrook, Morris B. and Elizabeth C. Hirschman (1982), *The experiential aspects of consumption: Consumer fantasies, feelings, and fun*, The Journal of Consumer Research, Vol.9, No.2, pp.132-140.
- Intons-Peterson, Margaret J., and Joanne Fournier (1986), *External and internal memory aids: When and how often do we use them?*, Journal of Experimental Psychology: General, Vol.115, No.3, pp.267-280.
- Izquierdo, Ivan (2004), *A arte de esquecer: Cérebro, memória e esquecimento*, Rio de Janeiro: Vieira & Lent.
- Kahn, Barbara E., and David C. Schmittlein (1992), *The relationship between purchases made on promotion and shopping trip behavior*, Journal of Retailing, Vol.68, No.3, pp.294-315.
- Kahneman, Daniel and Shane Frederick (2001), *Representativeness revisited: Attribute substitution in intuitive judgment*, New York: Cambridge University Press, 2002.
- Koriat, Asher (1993), *How do we know that we know? The accessibility model of the feeling of knowing*, Psychology Review, Vol.100, No.4, pp.609-639
- Koriat, Asher, Robert A. Bjork, Limor Sheffer and Sarah K. Bar (2004), *Predicting One's Own Forgetting: The Role of Experience-Based and Theory-Based Processes*, Journal of Experimental Psychology, Vol.133, No.4, pp.643-656.
- Loftus, Elizabeth F. (1993), *The reality of repressed memories*, American Psychologist, Vol.48, No.5, pp.518-537
- Lynch, John G. and Thomas K. Srull (1982), *Memory and attentional factors in consumer choice: Concepts and research methods*, Journal of Consumer Research Vol.9, No.1, pp.18-37.
- McClure, Peter J. and E. James West (1969), *Sales effects of a new counter Display*, Journal of Advertising Research, Vol.9, pp.29-34.
- McEnally, Martha R. and Jon M. Hawes (1984), *The market for generic brand grocery products: A review and extension*, Journal of Marketing, Vol.48, No.1, pp.75-83.
- Miller, George A. (1956), *The magical number seven, plus or minus two: Some limits on our capacity for processing information*, Psychological Review, Vol.63, No.2, pp.81-97.
- Narisetti, R. (1997), P&G, seeing shoppers were being confused, overhauls marketing. *Wall Street J.* January 15 A1, A8.
- Park, C. W., E. S. Iyer and D. C. Smith (1989), *The effects of situational factors on in-store grocery shopping behavior: The role of store environment and time available for shopping*, Journal of Consumer Research, Vol.15, No.4, pp.422-433.
- Peters, E., and P. Slovic (2000), *The springs of action: Affective and analytical information processing in choice*, Personality and Social Psychology Bulletin, Vol.26, pp.1465-1475.
- Peterson, Lloyd and Margaret Jean Peterson (1959), *Short-term retention of individual verbal items*, Journal of Experimental Psychology, Vol.58, No.3, pp.193-198.

- Putrevu, Sanjay and Brian T. Ratchford (1997), *A model of search behavior with an application to grocery shopping*, Journal of Retailing, Vol.73, No.4, pp.463-486.
- Rickard, L. (1995), *Shopping lists tell just half the real story*, Advertising Age, Vol. 66, No.2
- Rottenstreich, Yuval, Sanjay Sood and Lyle Brenner* (2007), *Feeling and Thinking in Memory-Based versus Stimulus-Based Choices*, Journal of Consumer Research, Vol.33, No.4, pp.461-469.
- Sanbonmatsu, David M. and Russell H. Fazio (1990), *The role of attitudes in memory-based decision making*, Journal of Personality and Social Psychology, Vol.59, No.4, pp.614-622.
- Schacter, Daniel L. (1999), *The seven sins of memory: Insights from psychology and cognitive neuroscience*, American Psychologist, Vol.54, No.3, pp.182-203
- Shiffrin, R. M. and R. C. Atkinson (1969), *Storage and retrieval processes in long-term memory*, Psychological Review, Vol.76, No.2, pp.179-193.
- Shiffrin, R. M., and W. Schneider (1977), *Controlled and automatic human information processing: Perceptual learning, automatic attending, and a general theory*, Psychological Review, Vol.84, pp.127-190.
- Simonson, Joseph P., Leif D. Nelson and Uri Simonsohn (2011), *False-positive psychology undisclosed flexibility in data collection and analysis allows presenting anything as significant*, Vol.22, No.11, pp.1359-1366.
- Slooman, Steven A. (1996), *The empirical case for two systems of reasoning*, Psychological Bulletin, Vol.119, No.1, pp.3-22.
- Spiggle, Susan (1987), *Grocery shopping lists: What do consumers write?*, Advances in Consumer Research, Vol.14, pp.241-245.
- Stanovich, Keith E. and Richard F. West (2008), *On the relative independence of thinking biases and cognitive ability*, Journal of Personality and Social Psychology, Vol.94, No.4, pp.672-695.
- Swensson, R. G. (1972), *The elusive tradeoff: Speed vs accuracy in visual discrimination tasks*, Perception and Psychology, Vol.12, pp.16-32.
- Thomas, Art and Ron Garland (1993), *Supermarket shopping lists: Their effect on consumer expenditure*, International Journal of Retail & Distribution Management, Vol.21, No.2.
- Thomas, Art and Ron Garland (2004), *Grocery shopping: list and non-list usage*, Marketing Intelligence & Planning, Vol.22, No.6, pp.623-635.
- West, P. M. (1996), *Predicting preferences: An examination of agent learning*, Journal of Consumer Research, Vol.23, pp.68-80.
- Wood, Stacy L. and Jr. John G. Lynch (2002), *Prior knowledge and complacency in new product learning*, Journal of Consumer Research, Vol.29, No.3, pp.416-426.
- Yalch, Richard F. and Eric R. Spangenberg (2000), *The effects of music in a retail setting on real and perceived shopping times*, Journal of Business Research, Vol.49, No.2, pp.139-147.
- Zimmer, Carl (2009), *The Brain: What Is the Speed of Thought?*, Discovery Magazine

Book references:

- Chaiken, S., and Y. Trope (1999), *Dual-process theories in social psychology*, The Guilford Press, A Division of Guilford Publications, Inc.
- Dunlosky, John, and Robert A. Bjork (2008), *Handbook of Metamemory and Memory*, Psychology Press, Taylor and Francis Group
- James, William (1890), *The principles of psychology*, New York: Holt

Kahneman, Daniel (2011), *Thinking Fast and Slow*, Penguin Books, New York

Reason, J. T. and Klara Mycielska (1982), *Absent-minded?: The psychology of mental lapses and everyday errors*, Prentice-Hall (Englewood Cliffs, N.J.)

Web references:

Mastin, Luke (2010), The Human Memory – <http://www.human-memory.net/brain.html>

World Bank Group - <http://www.worldbank.org/>

<http://data.worldbank.org/indicator/IT.NET.USER.P2/countries?display=graph>

<http://data.worldbank.org/indicator/IT.NET.USER.P2/countries/PT?display=graph>

APPENDICES

Appendix 1: Pre-test results


												%		#	
	1	2	3	4	5	6	7	8	9	10	11	F	U	F	U
FAMILIAR PRODUCTS															
Apples	F	F	F	F	F	F	F	F	F	F	F	1	0	11	0
Butter	F	F	F	F	F	F	F	F	F	F	F	1	0	11	0
Ham	F	F	F	F	F	F	F	F	F	F	F	1	0	11	0
Olive oil	F	F	F	F	F	F	F	F	F	F	F	1	0	11	0
Rice	F	F	F	F	F	F	F	F	F	F	F	1	0	11	0
Shampoo	F	F	F	F	F	F	F	F	F	F	F	1	0	11	0
Spaghetti	F	F	F	F	F	F	F	F	F	F	F	1	0	11	0
Toothpaste	F	F	F	F	F	F	F	F	F	F	F	1	0	11	0
Lettuce	F	F	U	F	F	F	F	F	F	F	F	0,91	0,09	10	1
Napkins	F	F	F	F	F	F	F	F	U	F	F	0,91	0,09	10	1
Tuna	F	F	F	U	F	F	F	F	F	F	F	0,91	0,09	10	1
Coke	F	F	F	U	F	F	F	U	F	F	F	0,82	0,18	9	2
Cookies	F	F	F	F	F	F	F	U	U	F	F	0,82	0,18	9	2
Yoghurt	F	F	U	F	F	F	U	F	F	F	F	0,82	0,18	9	2
Cereals	F	U	F	F	F	F	U	F	F	F	U	0,73	0,27	8	3
Chips	F	F	F	U	F	F	F	U	U	F	U	0,64	0,36	7	4
Chocolate ice-cream	F	F	F	U	F	F	U	U	U	F	F	0,64	0,36	7	4
Croissant	F	F	F	U	F	F	U	U	U	U	U	0,45	0,55	5	6
Pizzas	F	U	F	U	F	U	U	U	U	F	U	0,36	0,64	4	7
Black tea	F	U	U	F	F	U	U	U	U	U	U	0,27	0,73	3	8

CHOSEN: Apples; Butter; Ham; Olive Oil; Shampoo; Spaghetti; Lettuce; Tuna; Coke; Cookies.

												%		#	
	1	2	3	4	5	6	7	8	9	10	11	F	U	F	U
UNFAMILIAR PRODUCTS															
Peach compote	U	U	U	U	U	U	U	U	U	U	U	0	1	0	11
Quince jelly	U	U	U	U	U	U	U	U	U	U	U	0	1	0	11
Red tea	U	U	U	U	U	U	U	U	U	U	U	0	1	0	11
Figs	U	U	U	U	U	F	U	U	U	U	U	0,09	0,91	1	10
Frozen cakes	U	U	U	U	U	U	U	U	U	F	U	0,09	0,91	1	10
Muffin	U	U	U	U	F	U	U	U	U	U	U	0,09	0,91	1	10
Mussels	U	U	U	U	F	U	U	U	U	U	U	0,09	0,91	1	10
Pistachios	F	U	U	U	U	U	U	U	U	U	U	0,09	0,91	1	10
Sparkling water	U	U	U	U	U	F	U	U	U	U	U	0,09	0,91	1	10
Basil	U	U	U	U	F	U	U	U	U	U	F	0,18	0,82	2	9
Coal	F	U	U	U	U	F	U	U	U	U	U	0,18	0,82	2	9
Lard	F	U	U	F	F	U	U	U	U	U	U	0,27	0,73	3	8
Balsamic vinager	U	U	U	U	F	F	U	F	U	U	F	0,36	0,64	4	7
Creamed spinach	F	U	U	F	U	U	F	U	U	U	F	0,36	0,64	4	7
Cannelloni	F	F	F	U	F	U	U	U	U	U	F	0,45	0,55	5	6
Brown sugar	F	F	U	F	F	F	U	U	U	U	F	0,55	0,45	6	5
Coriander	F	U	U	F	F	F	U	U	U	F	F	0,55	0,45	6	5
Toothpicks	F	U	F	F	F	F	U	U	U	U	F	0,55	0,45	6	5
Cottage cheese	F	F	U	F	F	F	F	U	U	U	F	0,64	0,36	7	4
Cotton	F	F	F	F	F	F	U	U	U	F	F	0,73	0,27	8	3

CHOSEN: Peach Compote; Quince Jelly; Red Tea; Figs; Frozen Cakes; Muffin; Mussels; Pistachios; Sparkling Water; Coal.

Appendix 2: Study 2 – Online Questionnaire



Sou aluna de mestrado da Católica Lisbon School of Business and Economics e encontro-me a elaborar um estudo com o apoio do professor Daniel Fernandes, onde para uma melhor análise do comportamento do consumidor em supermercados, precisamos da sua ajuda. Este questionário não lhe levará mais de 5 minutos.
Muito obrigada!

Quantas vezes por semana costuma ir ao supermercado?

Em média, quanto tempo demora em cada ida ao supermercado? [minutos]

Em média quantos produtos costuma comprar em cada ida ao supermercado?

Costuma compra produtos por impulso (comparativamente com os produtos que realmente precisava de comprar)?

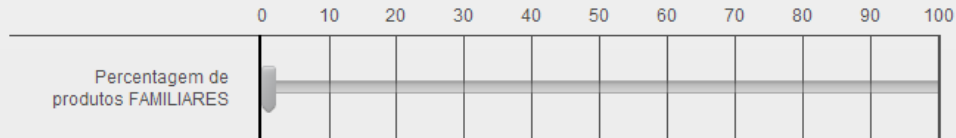
- Nunca compro produtos por impulso.
- De vez em quando compro produtos por impulso.
- A maioria das vezes compro produtos por impulso.
- Acabo sempre por comprar algum produto por impulso.

Para as próximas perguntas tenha em consideração as seguintes definições.

- FAMILIARES: produtos que lida com bastante frequência, sendo por isso usual consumi-los ou utilizá-los diariamente. Ex: alface, arroz, maçãs.

- NÃO FAMILIARES: produtos que lida com pouca frequência, sendo por isso pouco usual consumi-los ou utilizá-los diariamente. Ex: geleia de marmelo, espumante, figos.

Tendo em conta as descrições acima consegue precisar a percentagem de produtos familiares que normalmente compra quando vai ao supermercado (comparativamente com os produtos não familiares)?



Quais tem mais facilidade em recordar-se?

- Familiares
- Não Familiares
- Ambos

Sente que é mais provável lembrar-se de produtos FAMILIARES em quais das seguintes situações:

- Percorrendo todos os corredores do supermercado. Pois se vir o produto que preciso lembro-me.
- Na entrada do supermercado recordar que produtos preciso e ir directamente ao seu local de exposição.
- Uma mistura de ambas as respostas descritas acima.

Sente que é mais provável lembrar-se de produtos NÃO FAMILIARES em quais das seguintes situações:

- Percorrendo todos os corredores do supermercado. Pois se vir o produto que preciso lembro-me.
- Na entrada do supermercado recordar que produtos preciso e ir directamente ao seu local de exposição.
- Uma mistura de ambas as respostas descritas acima.

Tendo em conta o número total de vezes que vai ao supermercado durante a semana, quantas vezes é que já lhe aconteceu esquecer-se de comprar algum produto que pretendia comprar?

- Nunca me esqueço de nenhum produto.
- Normalmente não me esqueço, porém esporadicamente acontece.
- A maioria das vezes esqueço-me de algum produto.
- Esqueço-me sempre de algum produto.

Costuma usar lista de compras (tendo em conta o número total de idas ao supermercado)?

- Uso sempre.
- Uso na maioria das vezes.
- Só uso de vez em quando.
- Nunca uso.

Imagine que precisa de comprar 10 produtos no supermercado. Quantos desses itens estima conseguir lembrar-se de comprar sem a utilização de uma lista de compras?

	1	2	3	4	5	6	7	8	9	10
Número de itens que estima conseguir lembrar-se	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

No mesmo caso de precisar de comprar 10 produtos no supermercado, qual seria a probabilidade de usar uma lista de compras?

- Elevada. Não me posso esquecer de nada.
- Depende do tipo de produtos que preciso de comprar.
- Baixa. Devo-me lembrar de tudo.

Indique em que ocasião/ões é mais provável levar lista de compras para o supermercado:

- Quando não quer passar muito tempo no supermercado.
- Quando não tem pressa.
- Quando precisa comprar produtos maioritariamente familiares.
- Quando precisa comprar produtos maioritariamente não familiares.
- Nenhuma das opções acima.

>>

Por fim, por favor relembre a sua última ida ao supermercado.

Foi há quantos dias atrás?

Esqueceu-se de comprar algum produto que pretendia?

- Sim
- Não

Se sim, esquece-se de comprar produtos familiares, não familiares ou ambos?

- Familiares
- Não familiares
- Ambos

Antes de chegar ao supermercado tinha como objectivo comprar maioritariamente produtos familiares (produtos que usa quotidianamente) ou não familiares (produtos que usa com pouca frequência)?

- Familiares
- Não Familiares

Quanto tempo esteve no supermercado (sem contar com o tempo perdido no processo de pagamento)?

Qual foi a sua estratégia de compra:

- percorrer os corredores do supermercado tentando lembrar-se dos produtos que precisava
- ir directamente aos produtos que pretendia
- uma mistura de ambas

Usou lista de compras?

- Sim. Mas parcial (escrevi apenas os produtos que era menos provável lembrar-me).
- Sim. Completa.
- Não



Género

Feminino

Masculino

Idade

Agregado familiar (número de pessoas que moram consigo)

Muito obrigada pela sua ajuda!

Appendix 3: Study 2 – Questions and Results

1. Quantas vezes por semana costuma ir ao supermercado?

Média	2
Máx.	7
Min.	0
#	104

2. Em média, quanto tempo demora em cada ida ao supermercado? [minutos]

Média	35
Máx.	120
Min.	2
#	104

3. Em média quantos produtos costuma comprar em cada ida ao supermercado?

Média	21
Máx.	200
Min.	2
#	104

$p(\text{minutos}; \# \text{produtos}) = 0,663$
 correlação em % = 44%

$p(\text{idas}; \# \text{produtos}) = -0,248$
 correlação em % = 6%

4. Costuma compra produtos por impulso (comparativamente com os produtos que realmente precisava de comprar)?

	#	%
-Nunca compro produtos por impulso	12	12%
- De vez em quando compro produtos por impulso	81	78%
-A maioria das vezes compro produtos por impulso	4	4%
-Acabo sempre por comprar produtos por impulso	7	7%
	104	100%

5. Consegue precisar a percentagem de produtos familiares que normalmente compra quando vai ao supermercado (comparativamente com os produtos não familiares)?

- % média de produtos Familiares	76%
- % média de produtos Não Familiares	24%

Para as próximas perguntas tenha em consideração as seguintes definições.

- FAMILIARES: produtos que lida com bastante frequência, sendo por isso usual consumi-los ou utilizá-los diariamente. Ex: alface, arroz, maçãs.

- NÃO FAMILIARES: produtos que lida com pouca frequência, sendo por isso pouco usual consumi-los ou utilizá-los diariamente. Ex: geleia de marmelo, espumante, figos.

6. Quais tem mais facilidade em recordar-se?

	#	%
- Familiares	74	71%
- Não familiares	10	10%
- Ambos	20	19%
	<hr/>	
	104	100%

7. Sente que é mais provável lembrar-se de produtos FAMILIARES em quais das seguintes situações:

	#	%
- Recognition	17	16%
- Recall	41	39%
- Both	46	44%
	<hr/>	
	104	100%

8. Sente que é mais provável lembrar-se de produtos NÃO FAMILIARES em quais das seguintes situações:

	#	%
- Recognition	61	59%
- Recall	16	15%
- Both	27	26%
	<hr/>	
	104	100%

9. Tendo em conta o número total de vezes que vai ao supermercado durante a semana, quantas vezes é que já lhe aconteceu esquecer-se de comprar algum produto que pretendia comprar?

	#	%
- Nunca me esqueço de nenhum produto	3	3%
- Normalmente não me esqueço, mas esporadicamente acontece.	66	63%
- A maioria das vezes esqueço-me de algum produto.	31	30%
- Esqueço-me sempre	4	4%
	<hr/>	
	104	100%

10. Costuma usar lista de compras (tendo em conta o número total de idas ao supermercado)?

	#	%
- Uso sempre	16	15%
- Uso na maioria das vezes	39	38%
- Só uso de vez em quando	35	34%
- Nunca uso	14	13%
	<hr/>	
	104	100%

11. Imagine que precisa de comprar 10 produtos no supermercado. Quantos desses itens estima conseguir lembrar-se de comprar sem a utilização de uma lista de compras?

Média	8
Máx.	10
Min.	1
#	104

12. No mesmo caso de precisar de comprar 10 produtos no supermercado, qual seria a probabilidade de usar uma lista de compras?

	#	%
- Elevada	24	23%
- Depende	59	57%
- Baixa	21	20%
	<hr/> 104	<hr/> 100%

13. Indique em que ocasião/ões é mais provável levar lista de compras para o supermercado:

	#	%
- Sem tempo	46	39%
- Com tempo	4	3%
- Maioritariamente familiares	17	15%
- Maioritariamente não familiares	34	29%
- Nenhuma	16	14%
	<hr/> 117	<hr/> 100%

Relembre a sua última ida ao supermercado

14. Foi há quantos dias atrás?

Média	4
Máx.	35
Min.	0
#	104

15. Esqueceu-se de comprar algum produto que pretendia?

	#	%
- Sim	24	23%
- Não	80	77%
	<hr/> 104	<hr/> 100%

16. Se sim, esquece-se de comprar produtos familiares, não familiares ou ambos?

	#	%
- Familiares	11	42%
- Não Familiares	9	35%
- Ambos	6	23%
	<hr/> 26	<hr/> 100%

17. Antes de chegar ao supermercado tinha como objectivo comprar maioritariamente produtos familiares (produtos que usa quotidianamente) ou não familiares (produtos que usa com pouca frequência)?

	#	%
- Familiares	89	86%
- Não Familiares	15	14%
	<hr/> 104	<hr/> 100%

18. Quanto tempo esteve no supermercado (sem contar com o tempo perdido no processo de pagamento)?

Média	22
Máx.	120
Min.	3
#	104

19. Qual foi a sua estratégia de compra:

	#	%
- Recognition	8	8%
- Recall	78	75%
- Both	18	17%
	<hr/> 104	<hr/> 100%

20. Usou lista de compras?

	#	%
- Parcial	15	14%
- Completa	30	29%
- Não	59	57%
	<hr/> 104	<hr/> 100%

21. Género F: 78 M: 26

22. Idade 39

23. Agregado familiar 3

Appendix 4: Study 2 – Data analysis

Univariate Analysis of Variance

Between-Subjects Factors

		N
	Baixa	21
LISTA	depende dos produtos	59
	elevada	24

Descriptive Statistics

Dependent Variable: JOL

LISTA	Mean	Std. Deviation	N
baixa	9,381	,7400	21
depende dos produtos	7,915	1,7448	59
elevada	6,958	1,6011	24
Total	7,990	1,7432	104

Tests of Between-Subjects Effects

Dependent Variable: JOL

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	66,503 ^a	2	33,252	13,625	,000
Intercept	5537,567	1	5537,567	2269,062	,000
LISTA	66,503	2	33,252	13,625	,000
Error	246,487	101	2,440		
Total	6953,000	104			
Corrected Total	312,990	103			

a. R Squared = ,212 (Adjusted R Squared = ,197)

Dependent Variable: JOL

Source	Sum of Squares	df	Mean Square	F	Sig.
Contrast	65,734	1	65,734	26,935	,000
Error	246,487	101	2,440		

Dependent Variable: JOL

Source	Sum of Squares	df	Mean Square	F	Sig.
Contrast	15,622	1	15,622	6,401	,013
Error	246,487	101	2,440		

Dependent Variable: JOL

Source	Sum of Squares	df	Mean Square	F	Sig.
Contrast	33,271	1	33,271	13,633	,000
Error	246,487	101	2,440		

Appendix 5: Study 3 – Data analysis

The GLM Procedure

Class Level Information

Class	Levels	Values
Recogn	2	0 = recognition 1 = recall
Q521	2	0 = unfamiliar 1 = familiar

Number of Observations Read 83

Number of Observations Used 83

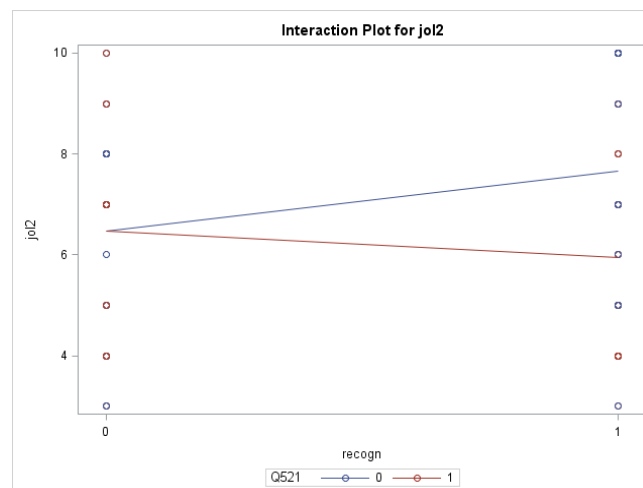
The GLM Procedure

Dependent Variable: jol2 (memory predictions)

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	34.9085959	11.6361986	2.57	0.0601
Error	79	357.6456210	4.5271598		
Corrected Total	82	392.5542169			

R-Square 0.088927 **Coeff Var** 31.93492 **Root MSE** 2.127712 **jol2 Mean** 6.662651

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Recogn	1	2.23868540	2.23868540	0.49	0.4840
Q521	1	14.84038247	14.84038247	3.28	0.0740
recogn*Q521	1	14.84038247	14.84038247	3.28	0.0740



The GLM Procedure

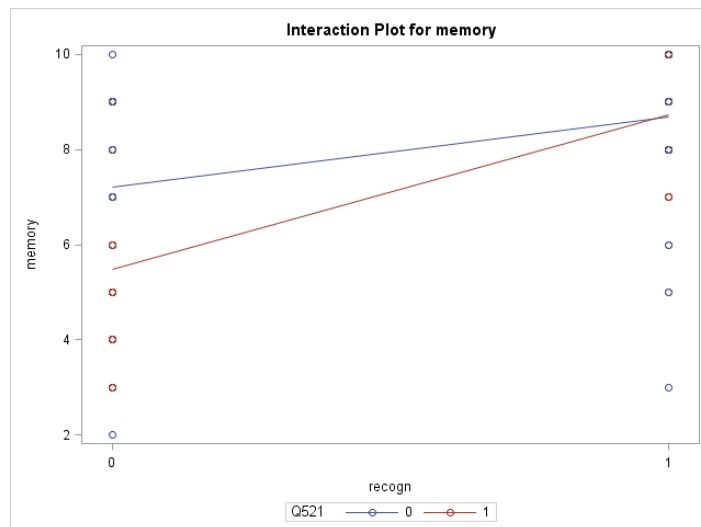
Dependent Variable: memory (memory performance)

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	144.2937483	48.0979161	13.23	<.0001
Error	79	287.1279384	3.6345309		
Corrected Total	82	431.4216867			

R-Square	Coeff Var	Root MSE	memory Mean
0.334461	24.99761	1.906445	7.626506

Source	DF	Type I SS	Mean Square	F Value	Pr > F
recogn	1	115.6246107	115.6246107	31.81	<.0001
Q521	1	12.5644766	12.5644766	3.46	0.0667
recogn*Q521	1	16.1046610	16.1046610	4.43	0.0385

Source	DF	Type III SS	Mean Square	F Value	Pr > F
recogn	1	115.6327528	115.6327528	31.82	<.0001
Q521	1	14.9734345	14.9734345	4.12	0.0458
recogn*Q521	1	16.1046610	16.1046610	4.43	0.0385



The GLM Procedure
 Repeated Measures Analysis of Variance
 Tests of Hypotheses for Between Subjects Effects

Source	DF	Type III SS	Mean Square	F Value	Pr > F
recogn	1	75.0250123	75.0250123	12.70	0.0006
Q521	1	29.8136685	29.8136685	5.05	0.0274
recogn*Q521	1	0.0129186	0.0129186	0.00	0.9628
Error	79	466.5213751	5.9053339		

The GLM Procedure
 Repeated Measures Analysis of Variance
 Univariate Tests of Hypotheses for Within Subject Effects

Source	DF	Type III SS	Mean Square	F Value	Pr > F
r	1	32.5036300	32.5036300	14.41	0.0003
r*recogn	1	42.8464259	42.8464259	18.99	<.0001
r*Q521	1	0.0001484	0.0001484	0.00	0.9935
r*recogn*Q521	1	30.9321249	30.9321249	13.71	0.0004
Error(r)	79	178.2521843	2.2563568		

The GLM Procedure

Level of recogn	Level of Q521	N	jol2		memory	
			Mean	Std Dev	Mean	Std Dev
0	0	19	6.47368421	2.14394292	7.21052632	2.27495903
0	1	19	6.47368421	1.95415287	5.47368421	1.95415287
1	0	23	7.65217391	2.18691762	8.69565217	1.96410476
1	1	22	5.95454545	2.19256911	8.72727273	1.38639025

The GLM Procedure

Dependent Variable: jol2

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
effect	1	32.40584102	32.40584102	7.16	0.0091
effect	1	0.00000000	0.00000000	0.00	1.0000
effect	1	14.45052850	14.45052850	3.19	0.0778
effect	1	2.74763683	2.74763683	0.61	0.4383

The GLM Procedure

Dependent Variable: memory

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
effect	1	0.0112429	0.0112429	0.00	0.9558
effect	1	28.6578947	28.6578947	7.88	0.0063
effect	1	22.9487305	22.9487305	6.31	0.0140
effect	1	107.9239118	107.9239118	29.69	<.0001