



The Hedonic Stigma: *How the consumer's memory seeks shelter from hedonism in utilitarianism*

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Dissertation submitted in partial fulfilment of requirements for the International MSc in Management with specialization in Strategy and Consulting, at the Universidade Católica Portuguesa, 8th of January 2020.

Abstract

Title: The Hedonic Stigma: How the consumer's memory seeks shelter from hedonism in utilitarianism

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The distinction between hedonic and utilitarian consumption has been thoroughly studied from varying perspectives, each offering a clearer vision of this difference. In accordance with its cultural connotation it is relatively consensual that hedonism is associated with feelings of guilt and need for justification.

Separately, the complex nature of memory along with its underlying mechanisms is subject to distortion. This happens, for example, because of the impact of gist retrieval or belief harmonization. Ultimately, people may believe in whatever they want to believe by adjusting their previously acquired beliefs and perceptions of the world.

This research focuses on the linkage between memory distortion and the implications of utilitarian and hedonic consumer behavior. It is argued that negative feelings stemming from hedonic consumption will stimulate the formation of false memories that protect the self-image of the consumer. This should be more evident for people who are more prone to self-serving biases.

To investigate the hypothesis a survey was conducted, in which participants were presented with a product they had theoretically acquired, using attributes with hedonic and utilitarian variations. To assess memory, participants were then faced with several manipulated attributes and asked which ones had been learned.

The results showed that there is indeed an impact of hedonism in memory distortion: in the case of new attributes, utilitarian ones were more easily recorded than the hedonic. This demonstrated that people are more susceptible to adhering to new and false memories when they are less self-threatening.

Keywords: Hedonism; Utilitarianism; Memory Distortion; Attributes; Gist and Verbatim Retrieval; Self-Threat; Self-Affirmation; Guilt; Need for justification.

Sumário Executivo

Título: O Estigma Hedónico: *Como a memória do consumidor procura refúgio do hedonismo no utilitarismo*

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A distinção entre consumo hedónico e utilitário tem sido amplamente estudada de diferentes perspetivas, cada uma oferecendo uma imagem mais clara desta diferença. Paralelamente com a sua conotação cultural, é relativamente consensual que o hedonismo está associado a sentimentos de culpa e necessidade de justificação

Por outro lado, a natureza complexa da memória, assim como os seus mecanismos inerentes são sujeitos a distorção. Isto acontece, por exemplo, por causa do impacto de recuperação *gist* ou da harmonização de crenças. Em última análise, as pessoas podem acreditar naquilo que querem ajustando as suas já adquiridas crenças e perceções do mundo.

Esta investigação foca-se na ligação entre distorção de memória e as implicações do comportamento hedónico e utilitário. É proposto que os sentimentos negativos gerados pelo consumo hedónico vão estimular a formação de memórias falsas que protegem a autoimagem do consumidor. Isto será mais evidente para pessoas que são propensas a enviesamentos egocêntricos.

Para investigar esta hipótese um inquérito foi realizado um inquérito onde um produto que supostamente teria sido adquirido foi apresentado aos participantes usando atributos com variações hedónicas e utilitárias. Para avaliar a memória os participantes foram posteriormente inquiridos relativamente a vários atributos manipulados sobre a sua veracidade.

Os resultados mostram que, de facto, existe um impacto do hedonismo na distorção de memória: no caso dos novos atributos, os utilitários foram mais facilmente recordados do que os hedónicos. Isto demonstra que as pessoas são mais suscetíveis a aderir a novas e falsas memórias quando estas são menos ameaçadoras.

Palavras-Chave: Hedonismo; Utilitarismo; Distorção de Memória; Atributos; Recuperação de Memória *Gist* e *Verbatim*; Auto-ameaça; Auto-afirmação; Culpa; Necessidade de justificação.

Acknowledgments

“When nothing seems to help, I go and look at a stonecutter hammering away at his rock, perhaps a hundred times without as much as a crack showing in it. Yet at the hundred and first blow it will split in two, and I know it was not that last blow that did it, but all that had gone before.”

Jacob A. Riis

First, I would like to start by thanking my advisor, Professor João Pedro Niza Braga for his inspiration and guidance throughout the process of writing this dissertation.

Secondly, and since many hands have helped me hammer this rock for so many years, I would also like to thank every Professor and Educator I encountered throughout my academic and personal life for all of them helped to mold the person I am today.

Also, I would like to acknowledge everyone that helped me conduct this research by taking the time to answer the survey, which made this study possible.

To thank my wonderful, loving and supportive Family for being my backbone in everything I do and for making sure I feel at home wherever I go.

I would like to convey my most sincere appreciation to my Uncle and Godfather Ricardo for all the support and attention he gave me and for simultaneously being my father and my son during my stay in Lisbon.

I want to thank my caring, brilliant and beautiful (in that order) sweetheart Leonor for walking this entire journey with her hand held in mine, and for always taking such good care of me while being the perfect spark of motivation whenever I needed it the most.

Last but definitely not least, I would like to finish by expressing my deepest gratitude to my parents and my sister. I recognize and appreciate all the efforts you had to take so that I was given the opportunity to be where I am today, and I will be forever grateful for that. To my mother Isabel for being the most genuinely caring person that I ever met and for showing me what is truly meaningful in this life. To my sister Catarina, the person I love the most in this world, for making me so proud of her and for being supportive in everything I do. To my father Agenor, for always being my role model for what it means to be a Man and for showing me the importance of fighting for what we believe in.

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1. Introduction

From the moment we are born to the day we die we are always making decisions and, more precisely, we are always consuming, regardless of what resource or product it may be. Consumption is a complex subject that involves intellectual, cultural, social and economical dimensions, amongst others. All these aspects are considered when one decides to undertake the consumption of some product or service.

But why do we consume?

Why are we always making decisions about where to better allocate our scarce resources?

We consume because, as living and human beings, we have needs that exist in a countless number of forms and we consume in order to satisfy them. But not all needs have the same importance in our life. We can easily agree that most rational human beings would rather guarantee that they have food on the table when they are starving and water on their glass when they are thirsty before deciding to acquire an elegant 19th century Patek Phillipe. Naturally, most of the decisions we make are not that obvious and some needs are similar in terms of hierarchy of importance. To this extent, Maslow's Pyramid proposed by Abraham Maslow in 1943 was a conceptualization of how the human mind behaves considering, in this case, five different levels of needs. We first ensure that our primary and basic needs are satisfied, such as physiological needs, before we proceed to satisfying more superfluous needs like self-actualization. Nevertheless, in life we find several examples of consumers (including ourselves) that do not behave according to the proposed stability of this hierarchy. Just think about those nights when we are exhausted and still choose to go out to have coffee with a friend. We are sacrificing the physiological need to rest for the need to belong and be accepted. Or, for example, when we sacrifice our property to sustain an addiction like smoking or gambling. This already hints to the complexity of motivations and desires in consumer behavior.

A diverse number of scientific fields have debated about the density of consumer behavior, the different types of needs and the consumption pattern of each type of need. One distinction that has been thoroughly discussed is the one between utilitarian and hedonic consumption. Even though the discussion around this distinction is relatively recent, when we look at history as a whole, society and all types of cultures have been aware of this difference for hundreds of years. A good way to understand this is to have a glimpse over the fundamental ideologies of the most important religions in the world. Lust is one of the seven deadly sins in

Catholicism, one of the gates to *Naraka* in Hinduism and in Buddhism one of the four noble truths is that *dukkha* is caused by craving, desire and attachment. These visions were originally intended to guarantee the survival of the community as people were advised to save resources and prioritize indispensable and utilitarian consumption so that no one would die from hunger, thirst or any primary need. All these realities somehow indirectly explain the current meaning and perception behind the concept of hedonism. Moreover, they demonstrate some of the depreciative connotation that hedonic consumption represents in society as opposed to the general favorable perception of utilitarian consumption.

2. Literature Review

2.1. Hedonic and utilitarian consumption

The distinction between hedonic and utilitarian consumption has been the subject of scientific discussion for the past years and it has been growing ever since. Hirschman & Holbrook (1982) presented hedonic consumption as “the facets of consumer behavior that relate to the multisensory, fantasy and emotive aspects of one’s experience with products”. Nevertheless, other viewpoints were taken to understand this dimension of consumer behavior. These are conceptualizations that portray the issue in a bilateral perspective by proposing different dichotomic distinctions like utilitarian versus hedonic products (Strahilevitz & Myers, 1998), virtues versus vices (Werthenbroch, 1998) wants versus shoulds (Bazerman, Tenbrunsel, & Wade-Benzoni, 1998) and necessities versus luxuries (Kivetz & Simonson, 2002). However, the two sides are not mutually exclusive, and it is rather complex to compartmentalize an act of consumption as entirely hedonic or utilitarian. For example, one may expect that a camera is hedonic for a user that derives pleasure from taking pictures of beautiful landscapes that he visits with his family. But simultaneously, the exact same camera is a work tool and a utilitarian product for a photographer that works in the local newspaper. In fact, that photographer might even use his camera on the weekends to photograph his family as an example of yet another hedonic consumption. To that extent, a goal-based perspective may be more adequate to properly define hedonic and utilitarian consumption (Batra & Ahtola, 1991) as the emphasis shifts from the product to the consumer and his motivations that justify his choice. Be as it may, consumption goals are often hybrid in the sense that they combine hedonic and utilitarian drivers simultaneously and so it becomes complex to clearly discern hedonic from utilitarian. A single product (e.g., a smartphone or a computer) can simultaneously help its user pursue dual utilitarian and hedonic goals (Alba & Williams, 2013). Besides this, the subjective and

individual nature of pleasure and happiness underlines the ambiguousness of consumption and that is why, for example, consumers derive pleasure and happiness from activities that could be originally mistaken as mainly unpleasant, dangerous, painful or risky (C. Hopkinson & Pujari, 1999). Examples of this are skydiving, gambling or smoking and drinking. All these dimensions go hand in hand with Holbrook and Hirschman's (1982) acknowledgements “that true hedonic consumption lacks clear defining features”.

Even with these blurry boundaries the discrepancy between the hedonic and the utilitarian dimensions of goods should be explained. Thus, “hedonic goods are multisensory and provide for experiential consumption, fun, pleasure, and excitement” while utilitarian goods “are primarily instrumental and their purchase is motivated by functional product aspects (Khan, Dhar, & Wertenbroch, 2005). The terminology hints to the meanings and implications of each type of consumption. If on one side you have pleasure, fun and excitement, on the other you have functionality, instrumentality and implicit utility. This supports some researchers’ claim that luxuries are consumed primarily for hedonic pleasure while necessities are required to meet more utilitarian goals (Kivetz & Simonson, 2002; Strahilevitz & Myers, 1998). As it has been explained, especially in the case of hedonism, these meanings and implications are based in deep cultural, social and even religious beliefs.

2.2. Self-Threat, Guilt and Need for Justification

Because of its experiential form of enjoyment and pleasure, as opposed to the practical functionality of utilitarian goods (Okada, 2005), hedonic consumption is linked to a feeling of guilt that can come before, during or after the act of consuming (Kivetz & Simonson, 2002; Prelec & Loewenstein, 1998; Strahilevitz & Myers, 1998). This negative feeling of guilt combined with the difficulty to quantify its benefits is associated with an intensification of the need for justification and accountability that consumers feel (Dhar & Wertenbroch, 2000; Shafir, Simonson, & Tverskyb, 1993; Thaler, 1980). This difficulty exists because the nature of hedonic consumption is experiential, discretionary and frequently involves challenging comparisons, which makes it too abstract for consumers to accurately discriminate hedonic benefits. Accordingly, if quantifiable reasons are easier to justify (Hsee, 1996; Shafir et al., 1993) and consequently justifiable options are easier to choose (Hsee, 1996; Simonson, 1989) one should expect that utilitarian consumption carries a lighter burden in the minds of consumers and, concurrently, it should be easier for consumers to favor hedonic alternatives when the situation is prone to justification.

The feeling of guilt, the complexity of the benefits' quantification and the supplementary need for justification help to explain the existence of preference reversals in hedonic consumption (Okada, 2005). Preference reversals are a "robust phenomenon that cannot be explained by artifacts such as poor motivation, income effects, and strategic responding" (Plott & Grether, 1979). For example, Okada demonstrated that when two alternatives (one hedonic and one utilitarian) are presented separately, consumers tend to have a relative preference for the hedonic alternative. However, when the hedonic and the utilitarian alternatives are presented together, consumers prioritize the utilitarian alternative. Furthermore, Okada also proved that given the choice between paying money and expending effort in exchange for acquiring different items, consumers show a relative preference to pay in money for utilitarian purchases and in time and effort for hedonic purchases (Okada & Hoch, 2004). This occurs because consumers are motivated to sustain their decisions on credible ground of reasoning (Kunda, 1990). Nonetheless, the value of money is relatively fixed. Its arithmetical nature makes the comparison between alternatives automatic by virtue of what is more or less expensive or cheap and thus leaves little room for reasoning and discussion. On the other side, time and effort are extremely ductile in the sense that their ambiguity allows for more creativity and flexibility. Hence, when a consumer anticipates the need for justification it will be easier to justify a hedonic choice when he exchanges effort or time for it as oppose to exchanging money. Naturally, people tend to choose the method of payment that makes them the happiest (Okada & Hoch, 2004).

In line with this, research suggests that consumers are more likely to spontaneously elaborate, reflect upon and contemplate future outcomes when they must forfeit an item than when they acquire an item (Carmon & Ariely, 2000). More precisely, and according to the focus of this research, the magnitude of elaboration in the forfeiture condition will improve and emphasize the valuation of hedonic attributes (Khan et al., 2005). Firstly, because the elaboration on positive attributes accentuates the value and attractiveness of a certain choice or judgement (Tybout & Artz, 1994). The more these attributes are effortlessly imagined, the more impactful they are (Keller & McGill, 1994). Since hedonic attributes are more sensory and imagery-evoking (Macinnis & Price, 1987) and thus easier to elaborate upon, they will be favored. Secondly, in the forfeiture condition consumers are visualizing a situation where they will be worse-off and so negative thoughts will be triggered. To insure the minimization of the negative emotions, consumers are more inclined to retain the more hedonic good (Dhar & Wertenbroch, 2000).

The decision-making process for consumers involves not only purchases for themselves but also purchases for others (Baskin, Wakslak, Trope, & Novemsky, 2014). And, in line with the reasoning behind the existence of guilt and need for justification in hedonic consumption, consumers are expected to prefer utilitarian alternatives when they are choosing for themselves and hedonic alternatives when they are choosing for others. This asymmetry of preferences exists because people deciding for others feel less anticipatory guilt concerning hedonic consumption when compared to the ones choosing for themselves (Lu, Liu, & Fang, 2016). Moreover, buying a hedonic product as a gift for another person is perceived normative and so exhaustive justifications for it are not socially expectable (Kivetz & Simonson, 2002).

A great set of choices we make as consumers are sequential and with each decision we make we are influencing our self-concept, the way we perceive ourselves (Khan & Dhar, 2006). To that extent, when consumers incur in activities that enhance their self-concept through, for example, the commitment to a virtuous act, they are less prone to the negative self-attributions of hedonic consumption. Therefore, it is more likely that in the subsequent decisions the likelihood to choose the hedonic alternative will increase. This phenomenon is called the licensing effect (Khan & Dhar, 2006). On a similar viewpoint, another aspect that underlines the general perception about hedonic consumption is the fact that when a hedonic alternative is paired with a donation to charity it becomes more attractive (Strahilevitz & Myers, 1998). This is due to the psychological attenuating effect of the donation to charity on the overall need for justification and perception of guilt. When an individual, for example, donates a considerable amount of money to underprivileged families in his community he may, consequently, feel more morally entitled to indulge by acquiring the newest high end and luxurious model of a top tier automobile brand. This is also described in the self-attribution model of hedonic choice (Khan et al., 2005), when we consider the role of positive self-attributions and misattribution.

Adding on to this, the decisions consumers make are not entirely independent from their perception of themselves. In fact, the things that they consume are expressing their identity and so they become a self-extension of themselves (Ariely & Levav, 2000; Belk, 1988). This happens because we draw inferences from our hedonic and utilitarian choices about our personal character (Dahl, 2003). More precisely, individuals use material possessions and other indicators as socially recognizable symbols of the identity they want to communicate to others, something known as the symbolic self-completion theory (Wicklund & Gollwitzer, 1981). If what we own and what we are considering purchasing is, at least partially, part of what we think we are than it should be expected that hedonic consumption would be harmful for the self-

perception of each consumer and thus consumers will feel that their identity is threatened. Accordingly, consumers will act in a way to reaffirm the positive impressions they hold about themselves (Dunning, 2007). Consequently, consumer behavior changes when people's beliefs are threatened (Willer, Rogalin, Conlon, & Wojnowicz, 2013), as people start to display compensation and affirmation mechanisms, the so-called compensatory self-symbolizing. This is particularly important for individuals whose identity is important and for those that experience high levels of self-awareness. However, and considering the current scientific literature it can be claimed that the "default" psychological frame of mind for hedonic consumption is oriented towards the characteristics of the self-threatened individual. In other words, when all relatable variables are kept constant, an individual that indulges in hedonic consumption should exhibit stronger feelings of guilt and need for justification caused by the marginal self-threat.

2.3. Memory Distortion and Motivation

Memory has been studied by diverse areas of knowledge for years, and its understanding has been evolving gradually, especially in the last decades. It is one of the most impressive psychological mechanisms that humans possess, allowing us to re-experience and reuse events and information from our past that have taken place seconds, days or years ago. At first glance, this may seem like a trivial ability that has limited repercussions in our life. When looked at with profoundness, it is evident that basic elements of our existence like language, physical movement, acquisition and storage of knowledge and our own self-identity are all absolutely maintained through memory. Several schools of thought have offered relevant perspectives on the topic. From the "magic number seven" proposed by George Miller in 1956 to the "multi-store" model introduced by Shiffrin and Atkinson in 1969, different visions emphasized the complexity of memory.

Whilst memory is such a crucial tool in our life, it is not an exact reproduction of past experiences but instead an imperfect process, prone to various kinds of errors and distortions (Schacter, Guerin, & Jacques, 2011). In fact, all memory is, in essence, false to some degree (Loftus, 1996) given that it is a process of reconstruction where the past is reconstructed to form a coherent narrative (Bernstein & Loftus, 2009).

Focusing on these imperfections of memory and belief construction, people have been documented for self-serving bias (Dunning, 2007), memory distortion and even creation of false memories (Roediger & McDermott, 1995). On this topic, it is worth mentioning that memory

is stored in our brains in two forms: verbatim and gist. Verbatim traces of memory are representations of the items we empirically experience whereas gist traces are more complex and subjective in the sense that they represent interpretations of concepts that have been retrieved as encoding of items (Brainerd & Reyna, 2002). Both have significant differences, for example the fact that verbatim traces become inaccessible faster than gist traces (Brainerd & Reyna, 2002). Besides, gist retrieval bolsters false memory because meanings seem familiar as opposed to verbatim retrieval which diminishes false memory by nullifying familiar beliefs and memories. Ultimately, as Brainerd and Reyna stated, false memory is solely derived from gist traces, and false memories can be even more persistent than true ones since they arise from relatively stable gist traces. Naturally, false experience memory is also moderated by plausibility and timing of evaluation (Rajagopal & Montgomery, 2011). The former in the sense that when plausibility and similarity of meanings increases, so does the occurrence of false memory responses because gist retrieval becomes more probable. The latter because the timing of evaluation plays a critical role on the relative impact of gist and verbatim retrieval. As the distance between the event and the time of evaluation increases, the influence of gist retrieval will gradually solidify and, inversely, verbatim retrieval likelihood will diminish.

As mentioned, false memory is connected to gist retrieval which, in turn, is associated with meanings and interpretations of acquired concepts and beliefs. To this extent, memory distortions have a semantic nature since they are derived from meaning and not form. From this perspective, and on a related note, it is appropriate to explain the distinction between semantic and episodic memory, introduced by Endel Tulving in 1972. They both belong to the long-term memory and, even though they are not mutually exclusive, they still have disparities. Semantic memory refers to the mechanism in which conceptual knowledge is stored in an organized and relational manner. This knowledge includes general meanings, concepts and words that are the foundation of complex systems like language. In contrast, episodic memory is embedded in the personal experience of an individual and is autobiographical, pertaining to the temporal-spatial context of experienced episodes (Tulving, 1972). In simple terms, semantic memory is closer to the general abstract definition of knowledge, whereas episodic memory is more related to the common concept of remembering. Bearing all of this, gist retrieval is linked to semantic memory and its networks. However, verbatim does not have a similar relation since it does not rely on the same networks. Considering the relevance of memory distortion in this study, the impact of this relation is substantial.

It seems reasonable to portray memory distortions, memory loss and false memories as flaws of the memory system given their defectiveness. And while this was initially the case, there has been a growing number of researchers who have argued that these defects are actually a consequence of the operation of an adaptative process which guarantees efficient functioning of memory (Schacter et al., 2011). Related to this topic, the groundbreaking “schemata” model proposed by Bartlett in 1932 (see also Edwards & Middleton, 1986) is one of the earliest examples of research supporting this argument. In this framework it is argued that people have patterns and cognitive structures of thought and, consequently, of behavior, that organize and process information and relationships based on preestablished ideas. This mechanism simplifies the understanding of our surrounding reality. However, and in parallel with the previous argument, this simplification comes at the expense of possible distortion of information that is misinterpreted. This happens because, even though these structures are not static, they tend to be relatively stable and so people usually focus on inputs that are coherent with their current schema and, more specifically, they tend to distort new information into a more fitting and consisting form (Edwards & Middleton, 1986) that in consonance with their mental schemata.

On another matter, research has found that inclusion of new information or new stimuli affects memory in an unpredictable way, often resulting in distortion of memory sustained through reactivation and reconsolidation (Loftus, 1975; Shiffrin & Atkinson, 1969). This effect impacts not only trivial but also critical memories, accentuating its importance. Regarding the case of trivial memories, a good example is a study that was conducted where participants were shown a list of objects. Before a second list was shown, half of the participants were triggered by a reminder of the first list where all the objects were presented again. The results show that there were more intrusions of falsely recalled objects from list 2 in list 1 for the reminder condition than for the no reminder condition (Hupbach, Gomez, Hardt, & Nadel, 2007). However, the inverse did not happen meaning that only the earlier memories were affected. This proved that when people are triggered with reminders regarding previous information, they tend to create new and false memories that are incorporated because of the reactivation. On a more serious but related topic, research on false memory has focused on sexual harassment cases and their linkage with childhood memories of the alleged victims. To this regard the work of Elizabeth Loftus has been particularly influential. It is often the case that, memory that has been repressed is widely prone to very plausible and suggestive forces that operate in the blurred areas of childhood or sufficiently old memory (Loftus, 1996) and that motivate the formation of potential false memories. In this case, the development of false memories was the product of

specific counselling procedures that encouraged the inaccuracy of memory retrieval. As a result, a significant and growing number of charges have been raised against falsely accused sexual perpetrators, sometimes even within families. All things considered, it is evident that memory may not be, at least in every case, undeniably true, and so a certain dose of skepticism is advisable.

To expand on memory distortion it is imperative to look at previous examples of how it can be experimentally measured. One clear case of memory distortion is the simple but largely influential DRM paradigm (Roediger & McDermott, 1995), named after its researchers. In this example, people were orally presented a list of closely related words all referring to the same general topic. Afterwards, participants were asked to remember as much words as they could. It was repeatedly observed that people reported the memory of words that despite being related to the original topic, were not presented in the previously displayed list of words. This false memory occurred with the same frequency as it did for the correct memories of the displayed words. This example provides a good line of reasoning that this research will exploit in the methodology chapter by leveraging on the fundamental outline of the study.

Recapitulating, the distinction between hedonic and utilitarian consumption and its implicit implications, the dynamics related to hedonic consumption (namely guilt, need for justification and self-threat) and the underlying mechanisms of memory and false memory creation have all been touched upon by now.

This research directly deals with all these diverse and all-encompassing dimensions, and the object of this study is placed in the core of the confluency of all these topics. To connect them all, it is worth reinforcing that all of us, as people but also as consumers, want to preserve the positive beliefs we hold about ourselves. However, a mere decision regarding consumption requires an extensive amount of belief harmonization. “Belief harmonization occurs when a consumer is faced with the need to decide and he is forced to arrange and revise his needs and preferences into a complex network of cognitions that offers harmony and balance among all elements” (Dunning, 2007). Most of the times decisions involve contradictions and, more specifically, it is reasonable to assume that hedonic consumption raises even more challenges to the harmonization of beliefs due to all its inherent repercussions like guilt, need for justification and social condemnation. In this case, it is expectable that consumers will be forced to disengage or alter a wider set of original beliefs. In fact, sometimes consumers can go as far as to revise their input beliefs until they are consonant with their originally incongruent wish.

One way to do so is to review beliefs and decide that some of them are more (or less) plausible than what was initially perceived (Kunda & Thagard, 1996; Shultz & Lepper, 1996). Another mechanism is, for example, when a consumer cannot deny that a specific belief is plausible he can, alternatively, make considerations about its triviality concluding that it is not important and thus reject relevance (Simon, Greenberg, & Brehm, 1995).

As mentioned, consuming may be a quite moldable cognitive process that is sensitive to personal motivations. Adding to this, there is evidence that individuals tend to arrive at the conclusions they want to arrive even though their aptitude to do so is limited by the ability they have to build justifications for such conclusions (Kunda, 1990). This concept of motivated reasoning relies on the influence that every wish, desire, or preference, that concerns the outcome of a given task, has on the reasoning itself. In fact, even the simplest perceptual concepts are influenced by motivation variables (Balcetis, 2014). Reasoning is associated with two different types of goals: the accuracy goals and the directional goals (Kunda, 1990). Accuracy goals refer to the appropriate beliefs that guide to an accurate conclusion whereas directional beliefs are the ones that support the desired conclusion. Directional goals bias people's attitudes, traits and preferences and so they are the cause of motivated reasoning. These directional goals are associated with two different concepts: memory search and belief construction (Greenwald, 1980). In the former people search their memory to find beliefs and argumentation that support their desired conclusions. In the latter they use their already acquired knowledge to build new beliefs to support their conclusions. Likewise and reinforcing these behaviors, people tend to process systematically preference-inconsistent information in a biased fashion resulting in additional and more frequent counterarguments for preference-inconsistent information (Jain & Maheswaran, 2000).

3. Hypothesis Formulation

Considering the ramifications of hedonic consumption and the patterns of memory formation and recognition it is expected that the two dimensions are intertwined. In this line of reasoning, the negative and uncomfortable feelings generated by hedonic consumption will impact the accessibility of specific memories in a different way. Since individuals want to keep a positive self-image, or at least minimize the negative effect inherent to hedonism, they will tend to find it easier to recall positive memories, in this case memories that are linked to utilitarian dimensions. This will lead to memory distortions and the formation of new false memories. This phenomenon should be particularly evident between people that were self-

threatened and others that were self-affirmed. The former will feel more guilt and need for justification whereas the latter will experience a diluted feeling of guilt and weaker need for justification.

Building on the above arguments, we arrive at the main hypothesis of this research, which is:

H1: *Memory representation of a product should depend on the hedonic and utilitarian nature of the product's attributes.*

H1a: *Specifically, because when compared to utilitarian attributes, hedonic attributes may be associated with experiences of guilt, consumers' memory of products' attributes should be distorted by including more false memories (false recognition) of utilitarian attributes than of hedonic attributes.*

This effect should be particularly visible for people more prone to self-serving biases (high self-esteem, self-threat, etc).

H1b: *Therefore, consumers in self-threat conditions should be more likely to (falsely) recognize utilitarian attributes than consumers in self-affirmation conditions.*

4. Methodology

4.1. Design

This study followed a between-subjects design 2 (Self Threat versus Self-Affirmation) x 2 (Hedonic versus utilitarian) x 3 (Learned versus Inverted vs New). With this design the independent variable was the Manipulation that was randomly and evenly assigned to the participants and the dependent variables were the Attribute Variation and the Attribute Type that represented the dimensions of memory being measured.

The survey was divided into six different blocks and available in Portuguese and English: Manipulation Task (Self-Threat or Self-Affirmation), Product Presentation, Manipulation Check, Distracting Task, Recognition Task and Demographics.

4.2. Procedure

As mentioned, it is expected that people will exhibit stronger (weaker) feelings of guilt and need for justification when they are self-threatened (affirmed). Thus, the survey intends to replicate this reality by presenting hedonic and utilitarian features of the same product and then asking participants to recall some of them while presenting new ones, building on prior research by Alexander Chernev (2004). To expand on the different needs for justification and feelings of guilt two opposite treatments were performed: the self-affirmation and the self-threat conditions (Cohen, Aronson, & Steele, 2000). It is expected that respondents will exhibit

different patterns of memory recognition and formation. More specifically, the partakers in the self-threat condition are expected to display a tendency to recall more utilitarian items and form false memories regarding utilitarian attributes as opposed to the behavior that is expected from participants in the self-affirmation condition, where that difference will be attenuated or even inexistent.

Firstly, participants were evenly and randomly allocated to either the Self-Threat Manipulation Survey or the Self-Affirmation Manipulation Survey. These manipulations consisted in two opposite tasks that were meant to alter the mood and self-confidence which would later influence the behavior of the participants by displaying different response patterns.

In both surveys, the manipulation task started by asking participants to write the three most important values in their life (the following examples were given: equality, respect, justice, freedom, tolerance, honesty and courage). The second question differed between surveys in a symmetric way. In the affirmation (threat) manipulation survey participants were asked to reflect upon and describe a situation where they (did not) act according to the aforementioned values and all the feelings that were generated from it, following procedures by Sivanathan and Pettit (2010).

Following the manipulation, all participants were told to imagine they had just acquired a new smartphone. They were also informed that details about this smartphone were going to be shown, but each detail would only be visible for just a few seconds (the time of visibility of each attribute was calculated by doubling the average necessary time for a single read), following previous research (Chernev, 2004; Dhar & Wertenbroch, 2000; Lu et al., 2016). Participants were asked to read each attribute carefully since related questions were going to be asked afterwards. A total of sixteen attributes were displayed, of which eight had a utilitarian description while the other eight had a hedonic description. Attributes were randomly and automatically displayed for a few seconds and skipped once the timing was over. This specific set of questions required no physical action from the participants (example: Hedonic Attribute – “*6.5 inch screen that gives you the true cinema experience when watching your movies.*”; Utilitarian Attribute – “*256 GB internal memory so you always have your most important documents and files with you.*”). The block ended with a slider-type question where participants were asked to state their willingness-to-pay for the described smartphone (on a scale ranging from 0€ to 1500€).

The next block was designed to investigate whether the manipulation had the desired effect on the participant's by measuring some mood and personality dimensions. For that, respondents were asked to describe how they were feeling at that specific moment on a scale from "1(negative)" to "5(positive)" regarding two dimensions: *sad(1)-happy(5)* and *bad mood(1)-good mood(5)*. On the succeeding page respondents were told to evaluate dimensions of their current perception of their personality, on a 7-point Likert scale (where 1 - "*I strongly disagree*" and 7- "*I strongly agree*"). These dimensions were presented in four sentences ("*I am sympathetic*", "*I am empathetic*", "*I am warm*", "*I am helpful*"). This manipulation check followed work by previous researchers (Schnall, Roper, & Fessler, 2010).

The following set of questions was included as a distraction task where participants were offered additional information, intending to restraint the working memory accessibility of previously shown attributes, following research by Childers & Houston (1984) and Edell & Staelin (1983). Participants were randomly assigned to one of two similar distraction tasks, differing solely on their description. The distraction required the observation of several related pictures that inspired the imagination of a shopping experience (in a physical store in one condition and in an online store in the other). Participants were then faced with base rate problems where two questions regarding details visible in two different images were asked. These questions required simple numerical reasoning.

In the recognition task, respondents were separately and randomly shown a list of twenty-four attributes: eight had been shown in the presentation task (four hedonic and four utilitarian); eight were technically the same but their description was inverted to portray a symmetric change in the hedonic/utilitarian perception (four that were originally hedonic were turned into utilitarian and, likewise, four that were utilitarian were turned into hedonic. Example: "*15-hour battery life for a true all-day work tool.*" was transformed into "*15-hour battery life for the true cinema experience when watching your movies.*"); finally, while keeping the same general structure, eight new attributes were shown (four hedonic – example: "*Available in 7 colors.*" and four utilitarian – example: "*Automatic contact synchronization system.*"). When each attribute appeared, participants were simply asked to reply if the attribute had been shown before or not in the product presentation phase ("*YES, this attribute was presented earlier.*" or "*NO, this attribute was not previously shown.*"). This block ended with a question regarding the nature of the product. Participants were required to describe the smartphone in a scale of utilitarianism-hedonism, ranging from 0 to 10, where 0 would be a purely utilitarian good while 10 would express a purely hedonic good. Complementarily, and

considering the relative unusualness of the concepts addressed, a definition for each was provided to ensure that the respondents were understanding the question ("*Hedonic goods are those that involve multisensory dimensions and provide consumption of experience, fun, pleasure and excitement.*" and "*Utility goods are fundamentally instrumental and their purchase is motivated by functional aspects of the product.*", Khan et al., 2005).

The survey ended with a demographic block where respondents were asked about gender, age, nationality, education and professional situation.

4.3. Sample

After removing incomplete answers the survey had a sample of 117 observations (57 in Self-Affirmation and 60 in Self-Threat). Considering the nature of the study, a response was considered meaningful after completing the hedonic/utilitarian scale. This guaranteed that participants had been presented with all the attributes, enabling the drawing of conclusions.

Overall, the average age of the participants was 39,77 years (from 18 to 79 years) and the percentage of female respondents was higher (63% *versus* 37% males). In terms of education, approximately 40% of the sample had a bachelor's degree, 37% held a master's, 19% High School or equivalent, 3% were PhD and 1% had Elementary School. Professionally, 54% were employed, 28% were studying, while 6% were unemployed, 6% had already retired and 6% answered "*Other*". Culturally, 86% were Portuguese, 4% Italian, 3% German and the remaining were spread amongst other nationalities. There were no significant differences in the sample between the threat and affirmation conditions.

5. Results

For all the analysis the significance level used was $\alpha = 5\%$. For further statistical details please refer to Appendix II-III.

5.1. Manipulation

Given the structure of the survey, to facilitate the analysis and discussion of the findings, the first results to be presented regard the manipulation check. An independent-samples t-test was conducted to compare the scores of each personality/mood question between the respondents in the threat and in the affirmation conditions. There were no significant differences in the scores for Sad/Happy [$M_{threat_sad_happy} = 3.87, SD = 0.87$ and $M_{affirmation_sad_happy} = 3.79, SD = 0.83$; $t(114) = 0.51, p = .61$], for Good/Bad Mood [$M_{threat_good_badmood} = 4.03, SD = 0.83$ and $M_{affirmation_good_badmood} =$

3.93, $SD = 0.74$; $t(113) = 0.72$, $p = .47$], for Sympathy [$M_{threat_sympathetic} = 5.88$, $SD = 1.01$ and $M_{affirmation_sympathetic} = 5.61$, $SD = 1.01$; $t(115) = 1.38$, $p = .17$], for Empathy [$M_{threat_empathetic} = 5.70$, $SD = 1.03$ and $M_{affirmation_empathetic} = 5.61$, $SD = 1.28$; $t(115) = 0.40$, $p = .69$], for Warmness [$M_{threat_warm} = 5.47$, $SD = 1.03$ and $M_{affirmation_warm} = 5.11$, $SD = 1.24$; $t(115) = 1.72$, $p = .09$] and for Helpfulness [$M_{threat_helpful} = 6.15$, $SD = 0.80$ and $M_{affirmation_helpful} = 6.00$, $SD = 0.90$; $t(115) = 1.07$, $p = .29$].

5.2. Data Structuring

Before performing the statistical analysis it was convenient to sort the data in a proper way. Consequently, to simplify the interpretation of the data, attributes were aggregated and coded for each participant considering their function inside the survey. As described, there were three types of attributes in the recognition task, within each type there were hedonic and utilitarian variations: (1) attributes that were shown and learned in the presentation and again in the recognition phases keeping their utilitarian description (coded as LU – *Learned Utilitarian*) and their hedonic description (coded as LH); (2) technical attributes that were maintained while their utilitarian/hedonic description was inverted (coded as IU - *Inverted Utilitarian* - when they were initially described as hedonic but were turned into utilitarian in the recognition phase and coded as IH for the ones that were utilitarian and converted into hedonic); (3) new attributes displayed solely on the recognition (coded as NU – *New Utilitarian*; and NH – *New Hedonic*).

In terms of data, responses were coded for when participants answered affirmatively, meaning that they believed the attribute had been previously displayed (coded as 1) and for when participants answered negatively, meaning that they believed the attribute had not been shown (coded as 0). Put briefly, for each respondent and group the mean states the proportion of recognitions regardless of accuracy.

5.3. Recognition of Attributes

The fundamental hypothesis of this research is measured through patterns of recognition captured in the attributes. For the analysis, a one-way repeated measures ANOVA was conducted to compare scores of recognitions for the three types of attributes and their utilitarian/hedonic variation, accounting for the manipulation's impact. The means and standard deviations are presented in Table 1.

Descriptive Statistics				
	Manipulation	Mean	Std. Deviation	N
LH	Threat	0,8917	0,14087	60
	Affirmation	0,8684	0,2271	57
	Total	0,8803	0,18742	117
IH	Threat	0,5708	0,29506	60
	Affirmation	0,557	0,33078	57
	Total	0,5641	0,31169	117
NH	Threat	0,0667	0,12062	60
	Affirmation	0,0526	0,13965	57
	Total	0,0598	0,12986	117
LU	Threat	0,906944	0,1472373	60
	Affirmation	0,872807	0,1897061	57
	Total	0,890313	0,1693921	117
IU	Threat	0,5292	0,21634	60
	Affirmation	0,5658	0,20336	57
	Total	0,547	0,21002	117
NU	Threat	0,1042	0,16137	60
	Affirmation	0,0965	0,14756	57
	Total	0,1004	0,15418	117

Table 1 - Descriptive Statistics of the variables in the ANOVA

Advancing into Table 2, there were no significant differences in responses between hedonic and utilitarian attributes [$F(1, 115) < 1, p = .340$, multivariate partial eta squared = .008]. Additionally, and according to the null effect found for the manipulation check, the self-threat/self-affirmation manipulation did not lead to any significant differences in the proportion of recalled attributes [$F(1, 115) < 1, p = .52$, multivariate partial eta squared = .004]. There was, however, a main effect regarding the type of attribute recognized (learned, inverted and new) [$F(2, 114) = 918.49, p < .001$, multivariate partial eta squared = .942]. To investigate the difference a paired samples t-test was conducted, showing that the responses to any type of attribute were significantly different from the other two: [$M_L = 0.886, SD = 0.152$ and $M_I = 0.555, SD = 0.224; t(116) = 14.158, p < .001$]; [$M_L = 0.886, SD = 0.152$ and $M_N = 0.080, SD = 0.122; t(116) = 41.782, p < .001$]; [$M_I = 0.555, SD = 0.224$ and $M_N = 0.080, SD = 0.122; t(116) = 23.095, p < .001$]. The eta squared statistic (0.6, 0.9 and 0.8 respectively) indicated a large effect size. Likewise, the third-order interaction was non-significant since when the manipulation was considered together with the attribute type, no

significant effect was found [$F(2, 114) < 1, p = .698$, multivariate partial eta squared = .006]. The interaction between hedonic/utilitarian variation and the type of attribute also showed no significant differences [$F(2, 114) = 2.202, p = .115$, multivariate partial eta squared = .037] even though the relatively low p-value hints to the possible existence of differences within the different types of attributes when their utilitarian/hedonic differences are considered. Finally, the interaction between the hedonic/utilitarian variation, type of attribute and manipulation displayed no significant effect [$F(2, 114) < 1, p = .610$, multivariate partial eta squared = .009].

Multivariate Tests (a)							
Effect	F	Hyp. Df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^c
Hed Util	,919 ^b	1	115	0,340	0,008	0,919	0,158
Hed Util*Manipulation	,417 ^b	1	115	0,520	0,004	0,417	0,098
Learned Inverted New	918,490 ^b	2	114	0,000	0,942	1836,980	1,000
LIN * Manipulation	,361 ^b	2	114	0,698	0,006	0,722	0,107
Hed Util*LIN	2,202 ^b	2	114	0,115	0,037	4,404	0,442
Hed Util*LIN* Manip.	,496 ^b	2	114	0,610	0,009	0,992	0,130

a. Design: Intercept + Manipulation

Within Subjects Design: Hed_Util + L_I_N + Hed_Util * L_I_N

b. Exact statistic

c. Computed using alpha = ,05

Table 2 – One-way ANOVA with Repeated Measures

Although, the results of the interaction between type of attribute and hedonic/utilitarian variation did not show a significant effect, further analysis explored whether participants were more likely to (falsely) recall utilitarian attributes than hedonic attributes as the later should be more likely to threaten a positive self-image.

Paired Samples t-Test								
	Mean	Std. Deviation	Std. Error Mean	Lower (a)	Upper (a)	t	df	Sig. (2-tailed)
LH - LU	-0,00997	0,18799	0,01738	-0,04439	0,02445	-0,574	116	0,567
IH - IU	0,01709	0,28566	0,02641	-0,03521	0,06940	0,647	116	0,519
NH - NU	-0,04060	0,14665	0,01356	-0,06745	-0,01375	-2,994	116	0,003

a. 95% Confidence Interval of the Difference

Table 3 – Paired Samples t-test for attribute type and variation

To determine if there was a significant impact of the hedonic/utilitarian variation and the attribute type a paired samples t-test was performed. There were no differences in the proportion of recalled learned hedonic and utilitarian attributes [$M_{LH} = 0.8803, SD = 0.1874$ and $M_{LU} = 0.8903, SD = 0.1694; t(116) = -0.574, p = .567$]. Similarly, no differences were found between inverted hedonic and utilitarian [$M_{IH} = 0.5641, SD = 0.3117$ and $M_{IU} = 0.5470, SD = 0.2100; t(116) = 0.647, p = .519$]. There was, however, a statistically significant difference in the proportion of (false) recognitions of hedonic and utilitarian attributes in the group of new attributes [$M_{NH} = 0.0598, SD = 0.1299$ and $M_{NU} = 0.1004, SD = 0.1542; t(116) = -2.994, p = .003$] as figure 1 reveals. The eta squared statistic (.07) indicates a moderate effect.

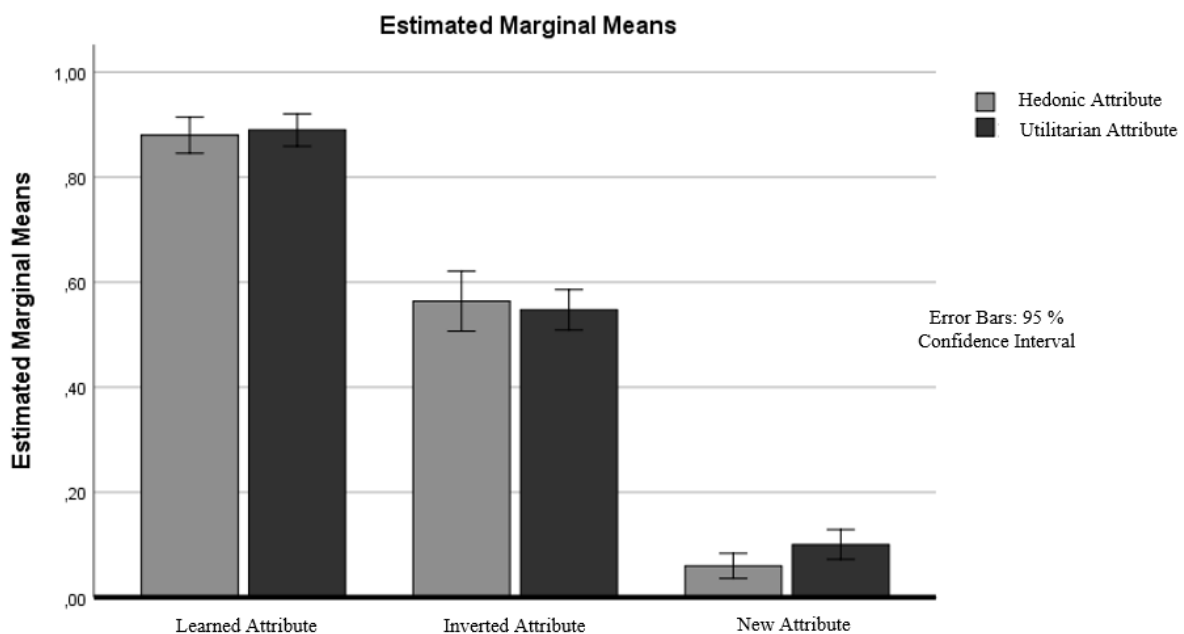


Figure 1 – Estimated Means by type of attribute and description type

5.4. Value and Perception of the product

Considering the similarity of questions and the design of the survey, the willingness-to-pay and the hedonic/utilitarian perception are presented and analyzed together. The first product related question asked for the willingness-to-pay for the smartphone. An independent-samples t-test was conducted to compare the willingness-to-pay between participants in the affirmation and the threat condition. There were no significant differences between the willingness-to-pay in each condition [$M_{threat_WTP} = 549.7, SD = 278.35$ and $M_{affirmation_WTP} = 565.61, SD = 295.10; t(115) = -0.3, p = .77$].

Finally, participants were asked to evaluate the smartphone in terms of its hedonic/utilitarian nature. The independent-samples t-test showed that there were no significant differences between the perception of the product in each of the conditions ($M_{threat_hedonic_utilitarian} = 6.05$, $SD = 2.06$ and $M_{affirmation_hedonic_utilitarian} = 5.70$, $SD = 2.40$; $t(113) = 0.85$, $p = .40$).

6. Discussion

6.1. Manipulation

This research, and consequently, the survey, were built to study the effect of feelings inherently linked with hedonic consumption on memory, namely memory distortions, motivated memory and false memory. To better grasp this paradigm, the survey was designed to capitalize on the control of the cited feelings. For that, two opposite manipulations were included (self-affirmation and self-threat). As the results show, by analyzing the manipulation check we conclude that the manipulation did not produce differences in the moods and feelings of the participants since none of the inquired dimensions (Sad/Happy; Good/Bad; Sympathetic feeling; Empathetic feeling; Warm feeling; Helpful feeling) displayed statistically significant differences between the two manipulations. To further corroborate this conclusion, it is instrumental to examine the differences in other responses to discern if the manipulation check suggested misleading conclusions. Likewise, the willingness-to-pay and the hedonic/utilitarian perception revealed no meaningful differences between the two conditions. Finally, examining the ANOVA, the same conclusion can be reached as no substantial disparities were found with any interaction involving the manipulation. Considering all these indicators, in the subsequent analysis the hypothetical impact of both manipulations will be disregarded. Consequently, and in compliance with what was previously claimed, since the manipulation did not foster the predictable mood variations, one may assume that all participants were acting in their “default” frame of mind. Relying on previous research, it is likely that respondents, regardless of the condition they were assigned to, participated in the survey with the same expected natural aversion to feelings of guilt and need for justification generated from hedonism. On top of this, even though all consumption presupposes justification, hedonic consumption is simpler to justify through utilitarian arguments. Therefore, utilitarian attributes should be more easily remembered when they are shown to participants, functioning like triggered anchors of false memory. These similarities in aversion impacted the perception and judgement about the product to the same degree and, subsequently, the memory patterns that were recorded.

6.2. Recognition of Attributes

Concerning the recognition phase, it was expected that the three types of attributes would record different patterns of response. Naturally, learned attributes would record the highest recognition rate since they triggered a true memorized item that had been previously observed. Inverted attributes should have a considerably lower rate of recognition since, despite preserving the technical nature of the attribute, they were described in a way that was diametrically opposed to the description that had been previously displayed. Finally, participants were expected to display the lowest rate of recognition in response to new attributes since they featured technicalities and descriptions that had never been mentioned before, not even partly. To that extent, the inclusion of a distraction task in the survey was useful to stimulate the psychological activity of the respondents since they were forced to deal with broader inputs of information. It was planned that through the increase in memory processing, they would not only record lower accurate memories, but also mistakenly remember similar attributes and, even more interestingly, they would declare completely new and false memories by recognizing new attributes as true memories.

When we look at the results of the analysis it is noticeable that the responses go in the predicted direction ($M_L > M_I > M_N$). The ANOVA recognized a strong main effect of the attribute type [$F(2, 114) = 918.49, p < .0005$, multivariate partial eta squared = .942] that was further investigated with the paired samples t-test, ultimately leading to conclude that all means were significantly different (the magnitude of all the eta squared statistics reflected a large effect size).

Looking at the at the variables more profoundly, in the case of learned attributes, respondents demonstrated a noteworthy accuracy of recognition ($M_L = 0.886, SD = 0.152$). Taking all responses together, almost 89% of learned attributes were recognized as such by partakers in the survey which is a substantially high rate.

In the case of inverted attributes, the rate is significantly lower ($M_I = 0.555, SD = 0.224$), but still worth highlighting, as nearly 56% of the attributes shown were recognized as learned even though they had been inverted in their hedonic/utilitarian description. To that regard, as it was discussed, verbatim traces are associated with a reinstatement of contextual features and representations that shape a vivid form of remembering and recollection (Brainerd & Reyna, 2002). Hence, it is reasonable to assume that the preservation of technical details from the antecedent product presentation phase facilitated the triggering of verbatim traces of

memory. Just by reading the same initial part of a specific description, participants were anchored to a memory that was in fact false, or at least distorted, as its hedonic/utilitarian nature had been inverted.

In terms of new attributes, and as expected, the lowest rate of recognition was recorded ($M_N = 0.080, SD = 0.122$). In this case, the attributes were entirely new and so activations of memory were more unlikely since every technical feature and description had never been seen before. Nevertheless, 8% of all the new (and false) attributes were credited as having been exhibited before by the participants. Naturally, the inherent psychological process associated with these false recognitions involves other mechanisms that are different from the previous ones. In this situation, false recognitions are in convergence with the DRM paradigm (Roediger & McDermott, 1995). Even though the attributes were new, they kept lexical relationships with the original presented attributes. In fact, in all new attributes, the hedonic and utilitarian discrepancy was still flagrant as well as the essential relatedness with the product. Interestingly enough, and fitting with the DRM paradigm, the three attributes that were more often recalled were the ones that used two words that had been used before despite being used in a completely new context (“*High security software that guarantees privacy.*” – recalled 24 times – “*DUAL-SIM system - two card capacity.*” – recalled 17 times - and “*Panoramic camera to ensure the best landscape photos of your travels.*” – recalled 19 times). The aforementioned words were “security”, “software”, “card”, “capacity”, “camera” and “photos”. When we consider that besides these three attributes, each of the remaining five new attributes (hedonic and utilitarian) was recalled on average 3 times we have a better and measurable understanding of the impact that a familiar word had on the creation of false memories ($M_{NEW_UsedWords}$ is 7.66 times higher than $M_{NEW_NewWords}$).

As discussed in the results chapter, the ANOVA revealed a non-significant interaction between the type of attribute (learned, inverted or new) and its hedonic/utilitarian nature, nevertheless the p-value statistic was considerably low ($p = .115$) and the lowest amongst non-significant interactions, which is by itself intriguing and worthy of further analysis. Besides this, the theoretical foundation of this research provides enough rationale for the deepening of the analysis of relations within this interaction, considering the original hypothesis. It is appropriate to reinstate that since the manipulation was not effective and consequently neglected, participants were acting in their “default state” which involves self-threatening sensations. Taking the previous review of literature into consideration, it should be consequential that the default-state will involve an interaction among the different types and

variations of attributes. Put differently, utilitarian attributes were expected to be more easily recalled than hedonic. However, this difference will be expressed in different magnitudes considering the type of attribute, due to the memory structures operating in each scenario. In fact, considering the timing between learning and recognition, in the case of new and inverted attributes there should be a higher relative proportion of utilitarian and falsely recalled attributes when compared to hedonic. Regarding learned attributes, this interaction should not be so significant. In both cases, the contrasts are explained by the weight that verbatim traces have on each type of attribute. In the learned attributes verbatim traces are entirely kept and thus false memory is suppressed (Brainerd & Reyna, 2002). However, in the inverted and the new attributes verbatim traces are more indistinct so memory is more prone to motivated distortion. Safe to assume that the size of this biased difference between the recognition of hedonic and utilitarian attributes will ultimately diminish to some degree for all types of attributes, as long as the delay between presentation and retrieval is sufficiently enlarged.

This particularity encouraged the formulation of a paired samples t-test which produced rather meaningful results that show that there is a statistically significant difference in responses between hedonic and utilitarian attributes that belonged to the group of new attributes [$M_{NH} = 0.0598, SD = 0.130$ and $M_{NU} = 0.1004, SD = 0.154$; $t(116) = -2.994, p = .003$]. Even though inverted attributes showed no significant difference, it can still be derived from these results that, when we solely investigate the case of new attributes, we conclude that participants were relatively more lured to adhere to new and false created memories associated with utilitarian attributes. When also considering the other groups of attributes, the first immediate thing that can be claimed from these results is that the hedonic/utilitarian variance only had a meaningful impact when attributes were new. From another perspective, in terms of memory and research outcomes, only in the absence of previously displayed details did the participants' memory display distortions consistent with theory. In the context of these type of attributes, the verbatim memory traces were almost inexistent, as it was explained before when their impact was scrutinized, and thus this type of memory was not triggered. To better understand the relevance of this it is adequate to emphasize that verbatim retrieval is credited with suppression of false memory by neutralizing meaning familiarity (Brainerd & Reyna, 2002). As a result, it is reasonable to admit that this opened more available space for the potential gist traces to occupy in the processing of information. Gist traces are associated with meaning and interpretations of concepts that have been experienced or at least encoded in their surface form. Because of this, gist retrieval promotes the formation of false memories since meanings sound

familiar and related to the lexical context that is being addressed. With this in mind, and according to what has been explained, new attributes maintained the relevance with the original product while keeping the same vocabulary structure (including the hedonic/utilitarian contrast). This facilitates gist retrieval which will ultimately promote the formation of false memories, especially when combined with the absence of verbatim sources of memory activation.

Now that the process of false memory creation has been addressed it is chronological to proceed to explore the source for the meaningful differences between recognitions in hedonic and utilitarian new attributes. It is worth remembering and underlining that the reasoning behind the design of the survey was the same for every attribute regardless of its variation and group type. This ensured that differences in the responses cannot be assigned to the wording or way of presentation of the attribute but rather to its hedonic and utilitarian dichotomy. But, if this is the case, then there should be another justification for the findings. As it has been thoroughly explained before, a variety of specific feelings and sensations stem from hedonic consumption. And although this is due to several reasons, the repercussions are usually transversal and involve an induced feeling of guilt and a need for justification. When applying this framework to the results of the survey, the difference between the recognitions of hedonic and utilitarian attributes can be deemed to be an effect of the distinctive implications of hedonism in decision making of consumers. In this case, the recognition of a hedonic attribute carried a heavier burden in the mind of the participants, when compared to the recognition of a utilitarian attribute, since it propelled guilt and the need for justification. However, and adding to this matter, this behavior was recorded in a memory task where participants were asked to recall information that had been presented to them in a condition with substantial flow of information. Consequently, the impact of memory and its patterns of recollection cannot be alienated as they also played an important role in the configuration of the responses. An extensive portion of decision-making lies in belief harmonization as decisions create divergence and trade-offs between beliefs that have been acquired in the past (Dunning, 2007). To that degree, individuals may go as far as to choose in which beliefs they will rely to guide their behavior (Kunda & Thagard, 1996; Shultz & Lepper, 1996; Simon et al., 1995). Usually individuals tend to have a good self-image that is sustainable on a relatively stable set of beliefs (e.g. the vast majority of people values frugality and looks down on luxury or vanity) and they intent to improve or at least preserve that image. To that extent and considering that participants were told that they had acquired the described smartphone (this was meant to promote the commitment and

engagement with the product) they should be less inclined to focus their acquisition on its hedonic dimension but rather on its utilitarian one so that the inherent negative feelings would be more limited and thus their self-image would be left unharmed.

In this perspective, by measuring the recognitions of new and false attributes, two distinct forces that were operating together were accounted for. On one hand, the fact that hedonism seeking behavior involves negative associations that influence the reasoning of consumers by affecting the way in which they weigh their available options. On the other hand, memory is prone to distortions that essentially occur in the gist source of retrieval that is associated with meaning, interpretations and beliefs. This leaves room for the subjective and individual essence of memory to be shaped by the motivations of the participant. The combination of both produces a motivated tendency to recall more utilitarian attributes since they are less self-threatening and thus require a simpler and smaller amount of effort regarding belief harmonization. In accordance with this the results show that, when compared to the new hedonic, the new utilitarian attributes were more often recalled as learned.

6.3. Value and Perception of the product

In terms of willingness-to-pay and hedonic/utilitarian perception, and to add on the results already presented, when we look at the responses altogether ($M_{WTP} = 557.453$, $SD = 284.266$; $M_{hedonic_utilitarian} = 5.878$, $SD = 2.233$) we see that the standard deviation shows a big variation around the mean. This suggests that consumers have evident miscellaneous conceptions about the value and the essence of the product, underlining its subjective nature.

7. Conclusion

7.1. Main Conclusions

The goal of this research was to study how memory representations of a product are affected differently by its hedonic and utilitarian nature. Keeping in mind that this is a process that merges cognition and motivation a survey was created. The survey used a product that featured a balanced number of hedonic and utilitarian attributes and the questions posed assessed the participants' memories and perceptions of the presented product. To clarify and add coherence to the analysis a manipulation was included with the purpose of expanding the conclusiveness of the results. This manipulation was designed to control for the mood and feelings of the participants through either a self-threat or a self-affirmation task. This was

expected to aggravate and attenuate, respectively, the inherent sensations of hedonic consumption.

The manipulation did not produce the desired results which means hypothesis H1b was not tested (it cannot be rejected). Nevertheless, it was still possible to extrapolate valid and meaningful conclusions from this research. The most remarkable deduction included the fact that when people are presented with entirely new information (in this case in the form of attributes of a specific product), they seem to show a motivated tendency to wrongly recall utilitarian attributes more often than hedonic attributes - this implies that hypothesis H1 and H1a are accepted. This inclination is due to, according to this research, the psychological tension that hedonic consumption imposes. Put differently, people distort the memory regarding the nature of their hedonic consumption by perceiving that consumption as more utilitarian in post consumption situations. Furthermore, this does not happen because of the need of approval from others since participants displayed distorted memories while being free from any possible outside judgement. In fact, it comes from the inevitable will to preserve a positive self-image (Dunning, 2007).

On the same level, regarding new attributes, it was observable that specific attributes that kept minimal traces of previously displayed attributes recorded extremely higher rates of false recognitions. This reveals that verbatim traces acted as catalysts for memory formation, facilitating the attachment to these specific set of attributes.

This study contributes to theory in the sense that there is relatively scarce literature related to biased processing of new information based on existing preferences and beliefs. This topic is tackled through the paired examination of distinct drivers like memory and impressions that arise from hedonism and utilitarianism. Considering the main conclusions and the later addressed limitations, it becomes interesting to build on this study in order to better understand the complex dimensions of motivated memory and their repercussions in consumer behavior.

7.2. Managerial Implications

The results and conclusions of this paper offer valuable insights in domains like consumer behavior and marketing that are part of the foundation of management.

In accordance with what was emphasized in the literature review, the pursuit and indulgence in hedonic behavior generates feelings associated with guilt and the need for justification. By acknowledging this, managers may focus on, or even introduce, utilitarian features into products that are predominately hedonic. In this way, the general perception of the

product would gradually move from hedonism to higher associations with utilitarianism. Naturally this aspect can be applied in other appropriate contexts. For example, in the case of a product where hedonism is not the only distinctive factor that explains demand, advertising campaigns and brand activation may preferentially rely more on the utilitarian nature of a product. Similarly, the negative implications of hedonic consumption can be alleviated if, for instance, the product is bundled together with a donation to charity (Strahilevitz & Myers, 1998) and thus the acquisition will not involve such a heavy psychological burden.

This research concluded that memory and hedonism are related in the sense that people tend to exhibit memory distortions associated with the effects of committing to hedonism. Time distance, by interacting with memory, also plays a role in distorting the perception of products. Furthermore, when we consider a regular decision to acquire a product we can isolate three different stages: (1) engaging with the product and gathering information that supports the decision to acquire; (2) the decision is materialized through the acquisition and commitment to the product; and (3) extension throughout the lifespan of the product. In the case of products where hedonism is the pivotal characteristic for acquisition, and thus not neglectable, consumers buy them because they seek hedonism, despite remembering them as being utilitarian or, at least, keeping some fraction of utilitarianism. Considering this, managers should try to choose a product placement that highlights experiential pleasure in the first two phases since this is what captivates consumers. However, in the third stage utilitarianism should be emphasized or, at least, the highlighting of hedonism should be dissipated. This will ideally alter, to a certain extent, the mental perception of the product and thus improve the sensations related to its usage.

Considering the main conclusion regarding motivated memory distortion, in the case of products that rely on hedonism as a source for demand, it might be strategically wise to place specific reminders or triggers of their hedonic essence that rebuild the original hedonic perception consumers had. This is relevant because there is a risk of consumers losing interest in the product since in the present they have redefined it as more utilitarian.

Lastly, the core of this research is related to the paradigm of cognitive dissonance. Cognitive dissonance, a concept introduced by Leon Festinger (1962), is a negative state that occurs whenever an individual simultaneously holds two cognitions (ideas, beliefs, opinions) which are psychologically inconsistent (Aronson, 1969). This concept has been a common place for managers and marketers in recent years for its diverse uses in management and

marketing, like organizational change or customer satisfaction (Telci, Maden, & Kantur, 2011). Making the link with this research, when a consumer acquires a highly hedonic (low utilitarian) product he will feel conflicted with himself and the consequent justification will be in dissonance with the reasoning behind the acquisition. For justification purposes the consumer will construct a biased and overly utilitarian representation of the product.

7.3. Limitations

When discussing limitations, this research can be reviewed in three fundamental topics concerning the survey: the manipulation task, the distracting task and the product and its attributes.

Nonetheless, starting with some general remarks it may be argued that while the survey had the adequate generic configuration, it was not completed in the most recommendable way. The premise behind this research was built on memory and psychological impact of certain consumption types. The design of the survey assumed that people responded in ideal conditions in which they would display high levels of concentration by taking the survey uninterruptedly. This would guarantee a more severe impact of the manipulation. Simultaneously, the interpretability of the results of the memory assessments would be deeper since fewer effects would be impacting the response. Considering the resources of the research and the platforms used to distribute the survey, it is possible that the expected conditions were not perfectly met. To account for this issue there was a highlighted note in the welcoming page of the survey asking participants to reply to the survey without any interruptions. (*“The duration of the survey will be approximately 10 minutes and it is essential that there are no interruptions during its conduct.”*). One way to mitigate this is conducting the investigation through a more laboratorial approach whereby conditions are monitored, thus improving the conclusiveness of the results. Additionally, this technique offers the opportunity to extend the flexibility of future studies (favoring the studies suggested in the subsequent *Future Research* chapter).

While examining the manipulation task, it is worth stressing that its ineffectiveness played a central role in the unfolding of this research. Nevertheless, and in accordance with the literature review, it was still possible to draw relevant conclusions.

In terms of efficiency, one issue that may have harmed the manipulation was the blurry linkage between the manipulation and the essence of what was being measured in the recognition tasks. Participants were asked to write a text about personal values and then they were inquired based on memory about a hypothetical acquisition they had made. The

connection may have been abstract in the sense that participants did not perceive the acquisition of the product as dissonant with the values they had stated. An overall analysis of the mentioned values shows that the great majority of them are related to ethical and moral dimensions. To this extent, it would be recommendable to use a more direct approach in future manipulations by choosing a decisive variable where the threat and affirmation are unmistakably associated with for example frugality, luxury or any related variable. A sound approach would be to ask participants to rank different needs according to their importance and hierarchical prioritization, following a similar reasoning of categorization to the one proposed by Maslow (1943) and have a fixed budget to allocate among those needs. This would encourage awareness about consumption (the equivalent self-threat condition). In contrast, to achieve an opposite licensing effect it would be appropriate to state that alongside the acquisition, the participant would be donating a considerable amount of money to charity and through this the participant would experience a reduction of guilt and need for justification (the equivalent self-affirmation condition). Even though there is no scientific consensus on the best way to experimentally manipulate self-affirmation and self-threat processes, with the appropriate adjustments to the relevant variables to this research, work by Dommer & Swaminathan (2013) and McQueen & Klein (2006) may serve as the suitable stimulant for future research.

Advancing into the distracting task, it would have been ideal to have had a longer and more complex task so that gist retrieval would be promoted together with false memory creation. However, and not disregarding this, reviewing what has already been discussed about the platforms and way in which this survey was distributed, it was assumed that the cost of implementing these changes would be very high since the dropout rate would severely increase. To have a glimpse of what this could potentially mean it should be stated that even the final survey that was published, between the two conditions, recorded nearly 300 unfinished responses. Nevertheless, since a change in the cognitive representation of a product is being tested, the quality of the conclusions depends upon the relative reliance on semantic memory (expressed through gist traces). For this to occur, participants should shift from working memory to semantic memory. Working memory refers to a system that stores and manipulates temporary memory traces that are necessary for complex cognitive tasks like language comprehension, learning or reasoning (Baddeley, 1992). These traces are ready to use and do not contain the target representation of the event that is being analyzed. Given the short delay between learning and recognition it is likely that some participants accessed those memory traces rather than a semantic memory trace (the actual target of the research question). So, this

methodological issue is an important limitation for the test of the hypothesis about semantic memory as it is likely that a considerable number of responses was based on working memory and not semantic memory. Future research may correct for this constraint by using insights and methodological designs of studies that use longer delays between presentation and recognition from some days to a month (Porter, McDougall, Bellhouse, Brinke, & Wilson, 2010) or lengthier and more complex distraction tasks (Braun, 1999; Fitzsimons & Shiv, 2001).

Finally, concerning the product and its attributes it is understandable that the perception of a smartphone is ever-evolving and follows the development of technology. If 20 years ago we considered a cellphone to be advanced enough by simply making calls, sending text messages and playing *Snake*, today we expect much more from a cellphone as mobile data, touchscreens, GPS tracking, touchless payment software, face recognition and hundreds of other tools became extensively disseminated. What was once considered a surrealistic luxury is now deemed a given by consumers as an indispensable utilitarian feature, and so it is complex to clearly determine what is hedonic and what is utilitarian for each user. To escape this ambiguity, when writing the attributes, the emphasis was placed more in the wording and in the evoking of sensations and less on the technicality itself.

In the same topic, words may have an unusual impact in memory when they are distinctively noticed for their meaning, context or simply graphic image. This may have an impact in the recognition rates as some verbatim traces will be much more detectable than others, facilitating a specific number of recognitions. However, these recognitions are not a product of motivated memory but of the triggering of accurate verbatim traces. So, they do not reflect the repulsion of hedonism or, in this case, of hedonic attributes. To account for this limitation in the writing of the survey a special attention was put into the words chosen so that very conspicuous words were not used.

Furthermore, concerning the inverted attributes, it cannot be ruled out that participants recognized that the attribute had been previously presented but, this time, it had an additional new sentence at the end. This may have left them unsure as to whether they should consider that attribute a new or an old one. If they were focusing on the full description, they would reject the sentence as one of the previously presented. However, if they were focused only on the recognition of the feature, they would recognize the sentence as previously learned information. The recognition rates at chance level may support such uncertainty associated to

these items. Perhaps, in upcoming studies the instructions to participants should clarify how the goal was to recall the full sentence and not only the smartphone's attribute.

To conclude, and in a more statistical approach, both the willingness-to-pay ($M_{WTP} = 557.453$, $SD = 284.266$) and the hedonic/utilitarian scale ($M_{hedonic_utilitarian} = 5.878$, $SD = 2.233$) exhibited considerably large variances when compared to the mean for the respective variable. The two results imply that the value of this product is quite volatile as well as the perception that consumers have of it. The chosen product should ideally be consensual in perceptual terms so that the difference in results mainly pertains to the manipulation and descriptions of the attributes and not to the individual beliefs of each participant. This limitation is, to a certain degree, inflexible in the sense that when hedonic and utilitarian features of the same product are bundled together in the same survey, it is natural that the value and impression of each attribute varies from subject to subject. This will ultimately lead to variations of the whole product. Nevertheless, to mitigate this issue, there were purposely no images of the presented smartphone so that the perception was based solely on the attributes and not on its visual and subjective image.

7.4. Future Research

First and foremost, the specific issue addressed in this work still has an immense potential to be covered relying in different perspectives and units of measure. Nevertheless, the main conclusion drawn from this research already points to the likelihood of the existence of a specific effect of consumption on the development of memories. More specifically, an effect with differentiated implications when the hedonic and utilitarian aspects of consumption are considered.

Since this area of consumer behavior is still fairly unaddressed much of the comments on future research concern related studies that can now be made by making small adjustments that will leverage on the limitations of the current study.

Starting with the simpler changes in the study one issue that may be altered is the product and its attributes. The line of reasoning behind the option to go for the smartphone as the centerpiece for all the survey has to do with two main factors. Firstly, the chosen product should not have obvious anticipated differences in terms of consumptions patterns. In other words, it would harm the quality of the results if the preferences and perceptions of the product displayed great variance when gender, age, nationality, education or any other important factor were taken into consideration. Secondly, the product should portray a certain level of

engagement in the acquisition and commitment to a utilization that would last for a considerable amount of time. This detail is prudent because in this experiment participants were told they had just acquired the mentioned product, meaning the decision was theirs along with the intrinsic implications of it. Moreover, what was being measured was the distortion of memory caused by the unpleasant feelings generated from hedonism and the need to justify consumption. Although these feelings are more or less transversal, one may argue that they have distinct magnitudes when different products are considered. For instance, imagine two hypothetical consumers: one of them chooses to buy a very fancy cocktail with the most exquisite blend of very luxurious drinks solely for the pleasure he will obtain when he savors the drink. The other one just acquired a high-end car of a top-tier brand that has very elegant details and which he will use in his daily commutes and to carry his family. Even though the option for the cocktail is, proportionally, much more hedonically driven than the car, it is reasonable to assume that the buyer of the car will feel guiltier and more compelled to justify his decision when compared to the buyer of the cocktail. Be as it may, the compliance with these two factors is naturally not enough and in the end the decision to opt for a specific product will always be debatable due to its subjective and situational essence. With this in mind and considering the already mentioned limitations imputable to the chosen product, future research could use different product categories or even sets of products that may account for this ambiguity.

Pertaining to this, the number of attributes may also be increased in a posterior study. Recalling the relatively high rate of accuracy in recognition of learned attributes ($M_L = 0.886, SD = 0.152$), it is reasonable to claim that partakers of the survey should be capable of processing a larger flow of information. Consequently, by adding additional attributes participants will get increasingly overwhelmed with data and thus there will be more space for the creation of imprecise memories. This expansion of false memories will be even more vulnerable to motivational biases that are strengthened by the resultant reinforcement of gist retrieval which will potentially support the hypothesis behind this research.

Another suggestion for the pathways that future research may follow is related once again to attributes but, in this case, the wording is the dimension to change. Considering that verbatim retrieval suppresses false memory by neutralizing meaning familiarity (Brainerd & Reyna, 2002) we can conclude that the absence, or at least reduction, of the verbatim traces will feed the formation of false memories. For this reason, the group of learned and inverted attributes that were displayed in the product presentation phase may be presented in the

recognition phase with the exact same technicalities and hedonic/utilitarian variations but, this time, using entirely new words even though, in practical terms, the feature is still the same. This translates into augmented difficulty for the participants as the activation of memories through verbatim retrieval will be unreachable.

On another note involving attributes, instead of using the method of recognition to assess the memory of the participants, a forthcoming analysis could apply the free recall technique. This will force the responses to be solely based on the previously acquired memory and thus not relying on any trigger coming from the survey itself which may activate memory. In this field, work from (Roediger & McDermott, 1995) may be a good illustration on how to conduct such research.

In terms of the manipulation and recalling all the comments that were already stated throughout the study, a future research should try to impose a task that is stronger and more incisive so that the participants are truly influenced by it and thus the contrast between conditions becomes more evident which will ultimately lead to more trustworthy conclusions. This may be accomplished by using, for example, a more explicit and direct manipulation that has a much closer relationship with the hedonic and utilitarian dimensions that are under study such as the feeling of guilt and the need for justification.

Finally, concerning structural changes and broader hypothesis two questions can guide future research. First, and as discussed, the default condition of consumers points to the need for justification. However, to get an all-around understanding of the underlying relationships, the inclusion of a neutral condition should be helpful in the form of comparison, particularly for the case of the default condition. Second, research has shown that verbatim traces become inaccessible quicker than gist traces (Brainerd & Reyna, 2002) and, moreover, sleep preferentially benefits gist-based and associative processes that contribute to false memories (Schacter et al., 2011). Therefore, it would be knowledgeable to separate the presentation phase from the recognition phase by enlarging their time distance to a significant extent (in this case a day or a few days). This should produce interesting results since verbatim memory will gradually vanish from the minds of participants and, oppositely, gist-based processes will be reinforced resulting in expanded memory distortions.

8. References

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9. Appendixes

9.1. Appendix I: Research Survey

Following what was mentioned before, the two conditions (self-threat and self-affirmation) maintained the exact same structure and so the example showed below refers to the Self-Affirmation Condition (English Version). The only difference between the two conditions lies in Q2 where in the Self-Threat the text should be written about a situation where the participant did not act according to the values mentioned in the previous question. Finally, it is worth recalling that participants were randomly and evenly assigned to one of the two options available in the Distracting Phase (both of them are presented next).

Self-Affirmation Group Survey

Start of Block: Welcoming Questions

Q0 Thank you very much for your participation in this investigation.

The present survey serves to collect data on consumption patterns, including information on specificities related to product types, consumption and motivations that explain consumer behavior.

Participation in the study is entirely voluntary and anonymous. All data will be used exclusively for this research.

The duration of the survey will be approximately 10 minutes and it is **essential that there are no interruptions during its conduct.**

Thanks again for your cooperation.

End of Block: Welcoming Questions

Start of Block: Self-Affirmation Task

Q1 Think about the values that are most important to you (eg equality, respect, fairness, freedom, tolerance, honesty, courage, etc.).

Write down the 3 you consider most important.

Page Break

Q2 Think of a situation where you acted according to one of the 3 values you mentioned earlier. Explain this same situation in a short text and describe very briefly the feelings that were generated during it.

End of Block: Self-Affirmation Task

Start of Block: Product Presentation

Q3 Imagine that you just bought a mobile phone whose specific details will be shown next. Please read carefully all the following attributes about which some questions will be asked.
NOTE: Each attribute will only be visible for a few seconds.

Page Break

Q4 15 hour battery life for a true all-day work tool.

Page Break

Q5 256 GB internal memory so you always have your most important documents and files with you.

Page Break

Q6 Possibility of using additional memory cards so that your favorite videos and movies are always with you.

Page Break

Q7 6.5 inch screen that gives you the true cinema experience when watching your movies.

Page Break

Q8 Intuitive software that emphasizes usability and efficiency.

Page Break

Q9 12 MP Main Camera for quality recording of the most fun moments.

Page Break

Q10 Materials guarantee quality and durability of the mobile phone.

Page Break

Q11 Weight of 200 grams so you can have fun on any trip in complete freedom.

Page Break

Q12 Made of curved reflective glass to ensure easy and ergonomic handling.

Page Break

Q13 Full induction charging (*wireless*).

Page Break

Q14 Fingerprint reader offers elegance and a sensory experience.

Page Break

Q15 Smart screen with reduced fatigue in document reading and writing mode.

Page Break

Q16 5G ensures the fastest upload and download speed of videos and video calls with your friends.

Page Break

Q17 Mobile phone designed by the best engineers ensuring greater efficiency and functionality.

Page Break

Q18 8MP Front Camera so you can take the best selfies with your friends.

Page Break

Q19 Remote location system in case of theft.

Page Break

Q20 What would be the maximum amount you would be willing to pay to purchase this mobile phone?

0 300 600 900 1200 1500



End of Block: Product Presentation

Start of Block: Manipulation Check

Q21 Please describe how you feel at the moment in the following dimensions (1="More Negative, 5="More Positive"):

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Happy
Bad mood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Good mood

Page Break

Q22 Please rate your agreement with the following statements (1="Strongly disagree, 7="Strongly agree"):

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
I am sympathetic (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am empathetic (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am warm (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am helpful (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Manipulation Check

Start of Block: Offline Reasoning – Distracting Task – Option 1

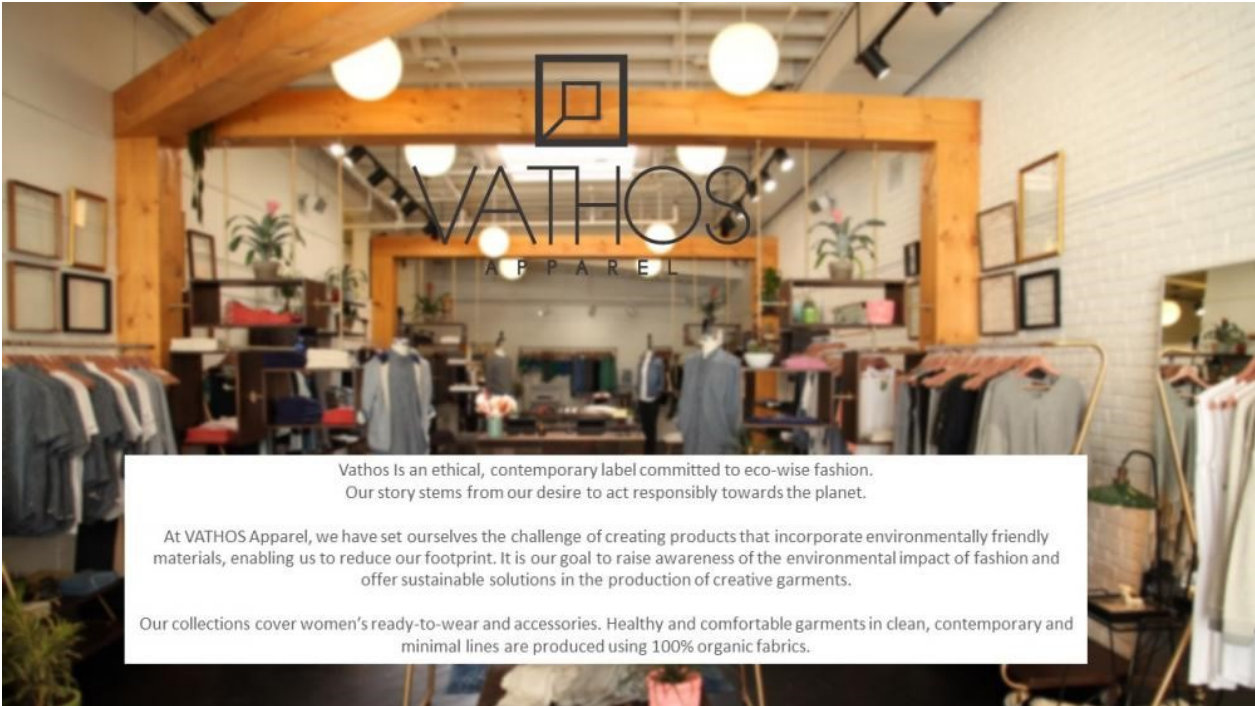
Q23 Now imagine leaving your home to shop.

You are walking down the street, seeing some stores and starting to look for some products you need to buy.

Please think for a few seconds about your favorite stores and how you usually engage in store shopping.



Q24 Now imagine that you have found this store where you are presented with the following information.



What's more likely?

- Vathos is a brand made in Greece 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- Vathos is a Fairtrade brand made in Greece 8 (8)

Page Break _____

Q25 Now imagine that you have found this store and the following information is presented to you.



Winemaker Notes
Dense purple in color with sweet crème de cassis notes intermixed with mocha, espresso bean, vanilla and graphite. This full-bodied, rich and layered estate Cabernet Sauvignon should drink well for 15-20 years. A beautifully focused, integrated and elegant expression of the region.

Critical Acclaim
Wine.com has 10% French wines and 90% Chinese wines.
You randomly checked ADAMVS Quintvs 2013.

RP 92 Robert Parker's Wine Advocate

What's more likely?

- ADAMVS is a French wine 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- ADAMVS is a Chinese wine 8 (8)

End of Block: Offline_Reasoning – Distracting Task – Option 1

Start of Block: Online Reasoning – Distracting Task – Option 2

Q26 Now imagine that you are shopping online.

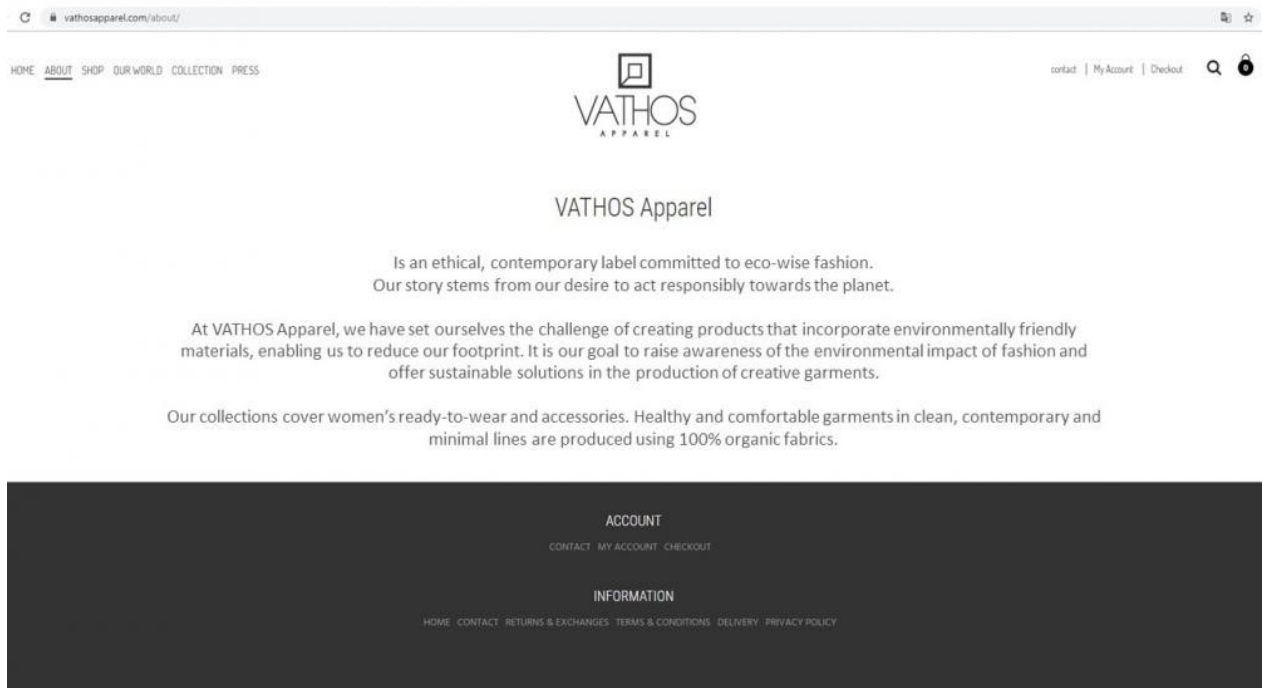
You are in the comfort of your computer or smartphone and are looking for some products you need to buy.

Please think for a few seconds about your favorite online stores and how you usually engage in online shopping .



Page Break

Q27 Now imagine that you have found this website where you are presented with the following information.



What's more likely?

- Vathos is a Greek brand 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- Vathos is a fairtrade brand of Greece 8 (8)

Page Break

Q28 Now imagine you have found this website where you are presented with the following information.

New customers: Save \$20 off your first order of \$50+. Code NOVNEW20

wine.com Find Pickup Locations Customer Care Chat Now

VARIETAL REGION FEATURED GIFTS Search Wine.com Ship to CA

My Wine

ADAMVS Quintvs 2013
Cabernet Sauvignon from Howell Mountain, Napa Valley, California

RP 92

2014 RP 95
2012 RP 94

\$

Ships today if ordered in next 4 hours

1 Add to Cart

Found a lower price?

Have you tried this? Rate it now

Add to My Wine Vintage Alert Share

Winemaker Notes
Dense purple in color with sweet crème de cassis notes intermixed with mocha, espresso bean, vanilla and graphite. This full-bodied, rich and layered estate Cabernet Sauvignon should drink well for 15-20 years. A beautifully focused, integrated and elegant expression of the region.

Critical Acclaim
Wine.com has 10% French wines and 90% Chinese wines.
You randomly checked ADAMVS Quintvs 2013.

RP 92 Robert Parker's Wine Advocate

What's more likely?

- ADAMVS is a French wine 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- ADAMVS is a Chinese wine 8 (8)

End of Block: Online Reasoning – Distracting Task – Option 2

Start of Block: Recognition Task

Q29 Remember now the phone you bought earlier and try to remember the attributes that characterized it. Following will be attributes, **select only those that have been presented previously.**

Page Break

Q30 Remote location system in case of theft.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q31 8MP Front Camera so you can take the best selfies with your friends.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q32 256 GB internal memory so you always have your most important documents and files with you.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q33 12MP main camera for quality recording of the most fun moments.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q34 Intuitive software that emphasizes usability and efficiency.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q35 Weight of 200 gr so you can have fun on any trip in complete freedom.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q36 5G ensures the fastest upload and download speed of videos and video calls with your friends.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q37 Smart screen with reduced fatigue in document reading and writing mode.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q38 15 hour battery life for the true cinema experience when watching your movies.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q39 Materials guarantee elegance and innovation of the mobile phone.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q40 Mobile phone designed by the best designers ensuring greater aesthetics and elegance.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q41 Made of curved reflective glass to ensure a slim, solid and futuristic design.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q42 Possibility of using additional memory cards so that your essential files and documents are always with you.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q43 6.5 inch screen ensures the true experience of reading efficiency and presentation of key documents.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q44 Fingerprint reader that delivers speed and a security experience.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q45 Full charge in 45 minutes.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q46 High security software that guarantees privacy.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q47 Digital tape measure to help in daily work tasks.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q48 DUAL-SIM system (two card capacity).

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q49 Automatic contact synchronization system.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q50 Panoramic camera to ensure the best landscape photos of your travels.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q51 Available in 7 colors.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q52 Folding screen with 16 million colors.

YES, this attribute was presented earlier. (1)

NO, this attribute was not previously displayed. (2)

Page Break

Q53 Indented frames to ensure uninterrupted viewing.

- YES, this attribute was presented earlier. (1)
- NO, this attribute was not previously displayed. (2)

Page Break

Q54 Given the description made how would you describe the mobile phone on a utilitarian-hedonic scale (see definition below)? Where 0 would be an entirely utilitarian good and 10 would be an entirely hedonic good.

"Hedonic goods are those that involve multisensory dimensions and provide consumption of experience, fun, pleasure and excitement." "Utility goods are fundamentally instrumental and their purchase is motivated by functional aspects of the product." (Khan, Dhar, & Wertenbroch, 2005)



End of Block: Recognition Task

Start of Block: Demographics

Q55 Gender

- Male (1)
- Female (2)
- Other (3)

Q56 Age _____

Q57 What's your nationality?

▼ Afghanistan (1) ... Zimbabwe (1357)

Q58 Educational Background

- Primary Education (1)
- High School or equivalent (2)
- Bachelor's degree (3)
- Master's degree (4)
- PhD (5)

Q59 Professional situation

- Employed (1)
- Unemployed (2)
- Student (3)
- Retired (4)
- Other (5)

End of Block: Demographics

End of Survey

9.2. Appendix II – Sample Descriptive

Manipulation Attribution		
	Frequency	Percentage (%)
Self-Affirmation	57	48,7
Self-Threat	60	51,3
Total	117	100,0

Table 4 - Study Sample: Manipulation Attribution

Gender		
	Frequency	Percentage (%)
Female	74	63,2
Male	43	36,8
Total	117	100,0

Table 5 - Study Sample: Gender Distribution

Age		
	Frequency	Percentage (%)
18-29	55	47
30-39	2	1,7
40-49	17	14,5
50-59	33	28,2
60-69	5	4,3
70-79	5	4,3
Total	117	100,0

Table 6 - Study Sample: Age Distribution

Country of Origin		
	Frequency	Percentage (%)
Portugal	101	86,3
Italy	6	5,1
Germany	4	3,5
Other	6	5,1
Total	117	100,0

Table 7 - Study Sample: Country of Origin Distribution

Educational Background		
	Frequency	Percentage (%)
Elementary School	1	0,9
High School or Equivalent	22	18,8
Bachelor's Degree	47	40,2
Master's Degree	43	36,7
PhD	4	3,4
Total	117	100,0

Table 8 - Study Sample: Educational Background Distribution

Professional Situation		
	Frequency	Percentage (%)
Employed	63	53,8
Student	33	28,2
Unemployed	7	6
Retired	7	6
Other	7	6
Total	117	100,0

Table 9 - Study Sample: Professional Situation Distribution

9.3. Appendix III – Statistical Analysis – SPSS Output

Manipulation Check Analysis

Group Statistics					
Variable Check	Manipulation	N	Mean	Std. Deviation	Std. Error Mean
Sad_Happy	Threat	60	3,8667	0,87269	0,11266
	Affirmation	56	3,7857	0,82494	0,11024
Good_Bad	Threat	59	4,0339	0,82975	0,10802
	Affirmation	56	3,9286	0,73502	0,09822
Sympathetic	Threat	60	5,8833	1,00998	0,13039
	Affirmation	57	5,6140	1,09796	0,14543
Empathetic	Threat	60	5,7000	1,03006	0,13298
	Affirmation	57	5,6140	1,27831	0,16932
Warm	Threat	60	5,4667	1,03280	0,13333
	Affirmation	57	5,1053	1,23468	0,16354
Helpful	Threat	60	6,1500	0,79883	0,10313
	Affirmation	57	5,9825	0,89625	0,11871

Table 10 - Group Statistics of the Manipulation Check by assigned condition

Independent Samples Test										
		Levene's Test Eq. of Var.		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	95% CI	
									Lower	Upper
Sad_Happy	E. V. ass.	0,094	0,760	0,513	114	0,609	0,0810	0,1579	-0,2319	0,3938
	E. V. not ass.	-	-	0,514	113,980	0,609	0,0810	0,1576	-0,2313	0,3932
Good_Bad	E. V. ass.	0,051	0,822	0,719	113	0,474	0,1053	0,1465	-0,1849	0,3955
	E. V. not ass.	-	-	0,721	112,475	0,472	0,1053	0,1460	-0,1839	0,3946
Sympathetic	E. V. ass.	0,908	0,343	1,382	115	0,170	0,2693	0,1949	-0,1168	0,6554
	E. V. not ass.	-	-	1,379	112,945	0,171	0,2693	0,1953	-0,1177	0,6563
Empathetic	E. V. ass.	1,380	0,242	0,401	115	0,689	0,0860	0,2141	-0,3382	0,5101
	E. V. not ass.	-	-	0,399	107,552	0,690	0,0860	0,2153	-0,3408	0,5127
Warm	E. V. ass.	1,394	0,240	1,721	115	0,088	0,3614	0,2100	-0,0546	0,7775
	E. V. not ass.	-	-	1,713	109,338	0,090	0,3614	0,2110	-0,0568	0,7796
Helpful	E. V. ass.	0,035	0,853	1,069	115	0,287	0,1675	0,1568	-0,1430	0,4781
	E. V. not ass.	-	-	1,065	111,919	0,289	0,1675	0,1573	-0,1440	0,4791

Table 11 - Independent Samples t-Test for the Manipulation Check by assigned condition

Attribute Type Analysis

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
Learned	0,88553	117	0,151852	0,014039
Inverted	0,55495	117	0,224365	0,020743
New	0,08013	117	0,122234	0,011301

Table 12 - Paired Samples Statistics t-test for the attribute type

Paired Samples Correlations			
	N	Correlation	Sig.
L & I	117	0,141	0,129
L & N	117	-0,147	0,113
I & N	117	0,289	0,002

Table 13 - Paired Samples Correlations for Attribute Type

Paired Samples Test								
	Mean	Std. Deviation	Std. Error Mean	Lower (a)	Upper (a)	t	df	Sig. (2-tailed)
L-I	0,33059	0,25257	0,02335	0,28434	0,37683	14,158	116	0,000
L-N	0,80540	0,20850	0,01928	0,76722	0,84358	41,782	116	0,000
I-N	0,47482	0,22238	0,02056	0,43410	0,51554	23,095	116	0,000

a. 95% Confidence Interval of the Difference

Table 14 - Paired Samples t-Test for the attribute type

Attribute Type and Attribute Variation Interaction

Paired Samples Correlations			
	N	Correlation	Sig.
IH & IU	117	0,456	0,000
NH & NU	117	0,478	0,000
LH & LU	117	0,449	0,000

Table 15 - Paired Samples Correlations for attribute type and variation

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
IH	0,5641	117	0,31169	0,02882
IU	0,5470	117	0,21002	0,01942
NH	0,0598	117	0,12986	0,01201
NU	0,1004	117	0,15418	0,01425
LH	0,8803	117	0,18742	0,01733
LU	0,89031	117	0,16939	0,01566

Table 16 - Paired Samples Statistics for attribute type and variation

One-way ANOVA with repeated measures

Mauchly's Test of Sphericity ^a							
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon ^b		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Hed_Util	1,000	0,000	0		1,000	1,000	1,000
LIN	0,944	6,624	2	0,036	0,947	0,970	0,500
Hed_Util * LIN	0,880	14,617	2	0,001	0,893	0,914	0,500

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + Manipulation

Within Subjects Design: hed_util + L_I_N + hed_util * L_I_N

b. May be used to adjust the degrees of freedom for the averaged tests of significance.

Table 17 - Mauchly's Test of Sphericity for the ANOVA

Tests of Within-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
Hed_Util	0,023	1	0,023	0,919	0,340	0,008	0,919	0,158
Hed_Util * Manip.	0,010	1	0,010	0,417	0,520	0,004	0,417	0,098
Error(hed_util)	2,830	115	0,025	-	-	-	-	-
LIN	76,600	2	38,300	729,831	0,000	0,864	1459,662	1,000
L_I_N * Manipulation	0,047	2	0,024	0,450	0,638	0,004	0,899	0,123
Error(LIN)	12,070	230	0,052	-	-	-	-	-
Hed_Util * LIN	0,096	2	0,048	2,130	0,121	0,018	4,261	0,434
Hed_Util * LIN * Manip.	0,029	2	0,015	0,652	0,522	0,006	1,303	0,159
Error(Hed_Util*LIN)	5,160	230	0,022	-	-	-	-	-

a. Computed using alpha = ,05

Table 18 - Tests of Within-Subjects Effects for the ANOVA

Tests of Within-Subjects Contrasts

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^a	
Hed_Util	Linear	0,023	1	0,023	0,919	0,340	0,008	0,919	0,158
Hed_Util * Manip.	Linear	0,010	1	0,010	0,417	0,520	0,004	0,417	0,098
Error(Hed_Util)	Linear	2,830	115	0,025	-	-	-	-	-
L_I_N	Linear	75,764	1	75,764	1731,559	0,000	0,938	1731,559	1,000
L_I_N * Manipulation	Linear	0,009	1	0,009	0,213	0,646	0,002	0,213	0,074
Error(L_I_N)	Linear	5,032	115	0,044	-	-	-	-	-
hed_util * L_I_N	Linear	0,028	1	0,028	1,880	0,173	0,016	1,880	0,275
Hed_Util * L_I_N*Manip.	Linear	0,002	1	0,002	0,147	0,702	0,001	0,147	0,067
Error(Hed_Util*L_I_N)	Linear	1,701	115	0,015	-	-	-	-	-

a. Computed using alpha = ,05

Table 19 - Test of Within-Subjects Contrasts for the ANOVA

Tests of Between-Subjects Effects								
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
Intercept	180,247	1	180,247	2485,367	0,000	0,956	2485,367	1,000
Manipulation	0,015	1	0,015	0,213	0,645	0,002	0,213	0,074
Error	8,340	115	0,073	-	-	-	-	-

a. Computed using alpha = ,05

Table 20 - Tests of Between-Subjects Effects in the ANOVA

Value and Perception Analysis

Group Statistics					
Source	Manipulation	N	Mean	Std. Deviation	Std. Error Mean
WTP	Threat	60	549,7000	278,34921	35,93473
	Affirmation	57	565,6140	295,07346	39,08343

Table 21 - Group Statistics for the willingness-to-pay by assigned condition

Independent Samples Test										
Levene's Test Eq. of Var.		t-test for Equality of Means								
	F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	95% CI		
								Lower	Upper	
WTP	E. V. ass.	0,204	0,652	-0,300	115	0,765	-15,9140	53,0126	-120,9218	89,0937
	E. V. not ass.	-	-	-0,300	113,627	0,765	-15,9140	53,0926	-121,0937	89,2656

Table 22 - Independent Samples t-Test for the WTP by assigned condition

Group Statistics					
Source	Manipulation	N	Mean	Std. Deviation	Std. Error Mean
Hedonic/Utilitarian	Threat	59	6,0508	2,06301	0,26858
	Affirmation	56	5,6964	2,40393	0,32124

Table 23 - Group Statistics for the hedonic/utilitarian scale by assigned condition

Independent Samples Test									
Levene's Test Eq. of Var.			t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Dif.	Std. Error Dif.	95% CI	
								Lower	Upper
E. V. ass.	2,149	0,145	0,850	113	0,397	0,35442	0,41706	-0,47184	1,18068
Hed/Util E. V. not ass.	-	-	0,846	108,495	0,399	0,35442	0,41872	-0,47552	1,18436

Table 24 - Independent Samples t-Test for the hedonic/utilitarian scale by assigned condition