A train of thought in product experientiality:

Working memory, distraction, and inconsistencies in cue order effects

Tobias Offergeld [a], Luis F. Martinez [a,1], & Aristides I. Ferreira [b]

[a] *Nova School of Business and Economics, Universidade Nova de Lisboa*

Campus de Carcavelos, Rua da Holanda 1, 2775-405 Carcavelos, Portugal

[b] *Business Research Unit, ISCTE – Instituto Universitário de Lisboa*

Av. das Forças Armadas, 1649-026 Lisboa, Portugal

[1] Corresponding author. *E-mail address*: luis.martinez@novasbe.pt. (Luis F. Martinez).

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Abstract

The sequence of informational cues and the level of distraction have an impact on the judgment of a product's quality and preference. Two quasi-experimental studies (N_{total} = 340) investigate the influence of the force behind the processing of these cues – working memory (WM). Previous research found that, in the presence of a distractor, high WM individuals are more able to recall the initial cue, and thus derive their product judgment from the initial strong cue. Study 1 contradicts these findings and raises important methodological questions regarding the conceptualization of strong and weak cues. Specifically, commonly accepted strong cues (e.g., product reputation) might not influence consumers as expected. Additionally, in a sequence of product evaluation with high vs. low degree of experientiality, study 2 reveals that consumers tend to show a primacy effect that is stronger for higher levels of WM capacity. Moreover, in a sequence of assessing low vs. high degree of experientiality products, consumers reveal stronger recency effects, thus showing that WM reinforces this recency effect. Our findings have important implications for marketers by suggesting that consumers with high WMC are more able to process complex stimuli and retrieve previously presented information on a product quality. These consumers also have a higher tendency to retrieve more information from product scenarios with a high degree of experientiality.

Keywords: cue order effects; working memory capacity; dual-task interference; product evaluation; brand trust; experientiality.

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1. Introduction

"You never get a second chance to make a first impression". These words, which have been widely attributed to Oscar Wilde, imply the disproportionate influence the first encounter with a person has on the overall perception of that person. This commonly accepted wisdom also applies to brands and products in the marketplace (Biswas & Biswas, 2004). Before consumers reach a final buying decision, they come across various pieces of information or cues that shape their product judgment (Basuroy et al., 2006). Previous research by Biswas et al. (2009) demonstrated that in an ordinary shopping scenario in which there are two informational cues that differ in their strength of signaling a favorable product quality, a cue sequence in which the stronger cue is presented first (strong–weak) will result in a more favorable evaluation of the product relative to a cue sequence in which the weaker cue is displayed first (weak–strong). This so-called *primacy effect* is applicable in situations in which consumers are not distracted (Pandelaere et al., 2010). If (and when) distracted, however, consumers will evaluate a product's quality higher following a weak–strong cue sequence, in contrast to a strong–weak cue order, thus exhibiting a so-called *recency effect* (Biswas et al., 2009). Despite the pertinence of the theme, previous studies failed to methodologically define what a strong cue is. We are strongly convinced that this clarification is crucial for inferring primacy effect conclusions. Therefore, we suggest that instead of strong cues based on subjective attributes (e.g., reputation, warranty), researchers and marketers may consider the approach of experientiality based on the richness of sensorial experiences (e.g., visual, auditive, tactile). Accordingly, in the past various other studies (e.g., Carlson et al., 2006; Gürhan-Canli, 2003) have found consistent primacy effects involving low experiential products in other contexts.

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While these studies investigate effects in low experiential contexts (e.g., reading a written piece of information in a magazine), consumers in the marketplace sample products before making a purchase decision (e.g., Brakus et al., 2009; Wadhwa et al., 2008), and have access, for instance, to movie clips or TV ads (Childers et al., 2001). With companies' annual spending in digital, OTT and TV advertising exceeding five billion dollars, and with advertorial content becoming increasingly customizable to consumers (McKinsey, 2016), it also becomes more and more crucial to understand all possible moderators of consumers' product evaluation process in a sequence of products with low and high degree of experientiality. In an increasingly digital world, a plethora of stimuli and distractors also play a key role in shaping consumers' preferences (e.g., smartphones and social media). According to dual-processing judgment and decision making theories (e.g., Pacini & Epstein, 1999) consumers tend to use – alternatively or simultaneously – two systems when evaluating different alternatives: (1) rational (i.e., an inferential/analytical system which operates by strict rules of reasoning, relatively affect-free); and (2) experiential/intuitive (i.e., an automatic system that is intimately associated with affect). Hence, consumers constantly and automatically perceive the characteristics of environmental stimuli by using their five senses (i.e., vision, hearing, taste, smell, and touch). Moreover, the experientiality degree is higher when consumers perceive marketing stimuli more vividly (Biswas et al., 2011).

Biswas et al. (2011) introduced the notion of varying degrees of visual and auditory experientiality, and examined order effects in the evaluation of product sequences with moderate experientiality (i.e., listening to an audio clip) and with high experientiality (i.e., watching a movie clip). Their findings showed that consumers evaluate most favorably the product encountered sequentially last, in a series of products with high degree of experientiality under low distraction – as well as, even though slightly less so, under high distraction (Biswas et al., 2011).

In addition to the degree of experientiality and the presence or absence of distraction, prior work has assumed individuals' working memory capacity (WMC) – a theoretical framework that

refers to the processes responsible for the temporary storage and manipulation of information – to play a crucial role in eliciting order effects (Biswas et al., 2009; Cowan et al., 2005; Feng et al., 2017; Kemp & Grace, 2016). However, the effort to investigate the precise impact of differences in individuals' WMC on cue order effects has been scarce (Biswas et al., 2010). Moreover, to our knowledge, no studies have addressed the relationship between WMC and the perception of product quality. Accordingly, we propose two studies that seek to shed some light on these phenomena. In a first study, we aim to test the variability around the strong cue effect and provide evidences suggesting that WMC is related with perceptions of product quality and that this relationship may be moderated by the presence of distractors. In a second study, we aim to understand how WMC explains primacy and recency effects considering scenarios with different degrees of experientiality.

From a theoretical perspective this research has important implications, as it discusses Biswas et al.'s (2009; 2011) findings on cue-sequence order effects and the methodological options for strong and weak cues, as well as on different degrees of experientiality on product evaluations. More importantly, it adds a supplementary variable, in the form of individuals' WMC, to the order effects that accounts for individual differences in information processing and consequent capacity to judge a product quality. From a managerial perspective, it elucidates the function of distraction in the consumer product judgment process, and suggests where to adequately position informational and experiential cues to achieve a superior perception of a target product. Moreover, by employing distraction techniques, managers can seek to target their products to segments of consumers with different WMC and hamper consumers in recalling attributes (i.e., different levels of experientiality) of competing brands and products they might have encountered earlier (Biswas et al., 2011).

1.1 Cue Sequence and Product Judgments

Consumers generally evaluate the quality of a product based on a range of intrinsic and extrinsic informational cues that they associate with the product. Whereas intrinsic cues comprise the physical attributes of the product (Richardson et al., 1994), extrinsic cues relate to the

consumer's perception of price, store, brand reputation or warranty (Monroe & Dodds, 1988). The present research attends to how consumers draw inferences about a target product's quality based upon the cues they encounter in the marketplace. Hence, the focus of the first study lies on extrinsic cues, specifically on brand reputation and warranty. Previous research has shown that both cues are well suited for the purpose of the first study, as consumers infer product quality based on these (Dawar & Parker, 1994; Jain et al., 2007). More importantly, Biswas et al. (2009) demonstrated that both cues signal quality with differing strength, which is crucial in eliciting any effect of the relation between stronger and weaker cues.

Biswas et al. (2009) scrutinized the importance of the cue sequence on final product judgments. Research until that point had produced diverse findings as to whether the order in which cues are presented matter. A number of proposed models purported an indifference of the cue order in a sequence (Lopes, 1985). Others maintained that the order of cues in a sequence affected the consumers overall perception (Carlson et al., 2006; Hogarth & Einhorn, 1992; Richter & Kruglanski, 1998). The latter stream of research discovered a primacy effect and a recency effect, which put more weight on the first cue or the last cue of a sequence, respectively, in judging a product's overall quality.

When two cues that differ in strength were sequentially presented, the primacy effect was evident in the subsequent product judgment. In other words, a strong–weak cue sequence elicited a more favorable product quality evaluation relative to a weak–strong sequence. This was firstly based on the notion that the first cue is generally highly indicative and serves as a stronger indicator of product quality compared to other cues that consumers come across down the line (Biswas & Biswas, 2004). Furthermore, other research (Carlson et al., 2006) suggests that a strong initial cue establishes a favorable initial perception, to which consumers will adhere in their assessment of ensuing cues. Correspondingly, a weaker first cue may form a relatively adverse first impression, which is then likely to prevail during the evaluation of the subsequent cues (Carlson et al., 2006).

A further argument related to the previous is that of anchoring (Biswas et al., 2009). The cognitive bias refers to the tendency to rely heavily on the first piece of information available in decision making and product evaluation. From then on, the following analysis is realized with regard to the anchored reference value (i.e., the first information made available) and subsequent pieces of information are less persuasive (Kahneman, 2003; Tversky & Kahneman, 1974).

However, it is key to consider that in the actual marketplace consumers are often distracted in their shopping process (Nowlis & Shiv, 2005). The distractions might occur in a variety of forms such as advertisements of competitor products, distinct price offers, or the consumer's personal behavior (e.g., talking on the phone or listening to music while shopping). In the current study, we seek to cast some light on the existent literature, arguing that the impact of distractors may differ according to the consumers cognitive individual differences. One of the most important cognitive variable affecting attention processes and information manipulation and retention is WM (Baddeley, 2003).

1.2 Working Memory (WM)

Baddeley and Hitch (1974) introduced WM as a "limited-capacity system that holds and manipulates information" (p. 56), responsible for the storage and processing of information in memory (Corbin et al., 2010). It can be best thought of as a temporary storage system (Baddeley, 2003). WM is assumed to be crucial for a variety of cognitive activities as language comprehension, learning, problem solving and reasoning (Baddeley, 1992; Bailey et al., 2008). Strong correlations between the capacity of WM and the constructs such as problem solving and reasoning skills have indicated that subjects with higher WMC perform better in these areas (Corbin et al., 2010).

An important aspect of WM as a temporary storage system is the finding that the amount of information that can be kept active at any given time is limited, and information can get lost (Park et al., 2007; Turner & Engle, 1989). The underlying assumption is that processes and structures compete for a shared limited capacity (Baddeley & Hitch, 1974). Accordingly, a task with high

processing requirements should decrease the overall amount of additional information that can be maintained (Daneman & Carpenter, 1980). One way this would transpire is if a more challenging process demands more attention and therefore displaces existing additional information, or if that process consumed a larger portion of the capacity otherwise available for storage (Daneman & Carpenter, 1980). The WM literature suggests that WM consists of three primary functions (e.g., simultaneous storage and transformation of information, coordination, and supervision) and that each construct may be assessed by individual tests that are aggregated in terms of content (Ferreira et al., 2011; Oberauer et al., 2000; see Table 1). Therefore, in the current study we will compute the mean score of three WM tests into a single factor of verbal WMC.

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1.3 WM and Distraction

Challenging mental processes include distraction from manifold sources. The form of distraction on WM itself can vary and ranges from auditory distraction (Banbury et al., 2001), to proactive interference (Kane & Engle, 2000), and concurrent-task distractors (e.g., riddles) (Marsh et al., 2005). Based on the theory of Conway and Engle (1994), and Posavac et al. (2004), who asserted that distracting consumers during the completion of parallel tasks reduces the capacity of WM and drifts attention away from the primary task, Biswas et al. (2009) conducted their cue sequence study with an additional distractor in form of a riddle that had to be solved simultaneously. Their results indicated that the loaded WM decreases the influence of cues that were observed earlier in a cue sequence, and hence prompts individuals to rely more on cues they come across later. Accordingly, they showed that the primacy effect, actuated by the initial sequential cue in a situation without any distraction, subsides and gives way to a recency effect once the consumer is distracted (Biswas et al., 2009). This notion would advise one to place the stronger cue last, instead of first, in order to elicit a more favorable product evaluation (Biswas et al., 2009). These

phenomena are considerably relevant in a marketing context, as consumers are nowadays exposed to an increasingly number of stimuli and distractors (e.g., pop-up ads in social media).

Previous research had raised the question of the precise influence of WMC on primacy and recency effects (Biswas et al., 2009; Biswas et al., 2010). In order to extend their findings, we will add the variable of WMC to our studies, and test it in three separate WM tasks that are in line with a functional categorization of WM by Oberauer et al. (2000).

Individuals' WMC can give hints about their abilities in cognitive processes, such as reading comprehension and reasoning skills (Corbin et al., 2010). Subjects with high WMC are adept at keeping a larger amount of information active for a longer period of time, relative to individuals with low WMC. The WM literature has recurrently provided empirical evidence suggesting that individuals with high WMC are more prone to record long sequences of words, pay more attention to the processing component of the tasks, and are more able to suppress distractors and to shift the attentional focus of attention to relevant information (Conway et al., 2005). Previous research also suggests that increasing the cognitive load (i.e., by adding a distractor) reduces the capacity to retrieve information from memory (Barrouillet et al., 2011). Demands of a concurrent task (i.e., distractors) deter the adoption of rehearsal and refreshing of information retrieval from memory (Loaiza & Halse, 2019). Thus, one would expect that participants with high WMC are more able to overcome the suppressive effect of concurrent tasks and therefore are more efficient in remembering the first cue in a cue sequence and evaluate the target product's quality based on both cues. In contrast, participants with low WMC are likely to be only capable of remembering and judging the product's quality based on the final cue. Furthermore, participants with high WMC are less prone to be influenced by the distractor riddle. Hence, we formulate the following hypotheses:

H1: The distractor can moderate the impact of WMC on primacy effects, such that:

H1a: When a distractor is available, relative to consumers with low WMC, consumers with high WMC are more likely to exhibit primacy effects.

H1b: When a distractor is not available, this effect is not prominent.

Concerning the specific influence of the three separate functional WM categories, it would be interesting to investigate whether either one of them is a particularly strong indicator for the processing of information and the subsequent product evaluation in the cue sequence. The ability to *supervise* and inhibit irrelevant information, for instance, might be more critical in the shopping scenario task with a distractor than the coordination function. However, Oberauer et al. (2003) found that all three functional categories are highly correlated and simultaneously active in the majority of mental operations. While simultaneous storage and processing have to be coordinated with each other in a dual-task combination, which requires some form of supervisory function, the construct coordination demands the storage of elements in order to construct new relations among them (Baddeley, 1996; Oberauer et al., 2003). Due to the intricate interrelation of those three functional WM categories, we will not put forth a hypothesis concerning the influence of each of them.

Consumers judge product quality taking into account both intrinsic and extrinsic cues. In our previous hypothesis, and in line with a previous study (Biswas et al., 2009), we assumed that reputation is perceived as a strong cue whereas warranty is perceived as a weak cue. However, in the current study, we also aim to understand the role of WMC in dealing with distractors in product evaluation and, therefore, to develop a second hypothesis where there is no "universal rule" for strong and weak cues. In fact, Nenycz-Thiel and Romaniuk (2016) suggest intrinsic cues come from the internal experience with the product (e.g., smell, flavor, taste) whereas extrinsic cues are external attributes (e.g., brand name, reputation, price, shape). The literature shows that individuals with high WMC have more capacity to distinguish between relevant and non-relevant information (Rumpf et al., 2015). Therefore, individuals with high WMC would be more prone to process complex stimuli and also to consider other environmental factors related to brand information. These findings may suggest that consumers with high WMC typically process more (and more complex) information

when they are evaluating product's characteristics (i.e., perceived quality). Alternatively, consumers with low WMC are not capable of processing large amounts of information. Thus, they render their decisions based on intuitive and less complex decision processes (Pacini & Epstein, 1999) when evaluating product quality.

Our theory proposes that WMC and perceived product quality are intrinsically correlated. Accordingly, we hypothesize that consumers with high WMC are more able to deal with distractors due to the capacity to retain more rich information and subsequent discernment of the stimuli (Barrouillet et al., 2011). For example, a recent study (Nelson & Redden, 2017) shows that high WMC consumers satiate faster as they have the capacity to more deeply encode (i.e., they perceive they have consumed that stimuli more times). In other words, their study shows that, due to their capacity to process and encode information, consumers with high WMC are more prone to create a sense that they had consumed the product or were exposed to these stimuli in the past. Therefore, the impact of novelty will be lower for those consumers. Taking into account that WMC is highly correlated with general intelligence (Colom et al., 2004) and that these individuals are better able to process more complex stimuli (e.g., riddles) and suppress distractors (Loaiza & Halse, 2019), we expect that participants with high WMC will be better able to retrieve information from memory and to overcome the effects of distractive elements (Barrouillet et al., 2011) and thus exhibit a more favorable perception of quality towards a specific product. Hence, we hypothesize the following:

H2: Distractive elements moderate the impact of WMC levels on perceived product quality, such that:

H2a: When distractive elements are available, relative to consumers with low WMC, consumers with high WMC may exhibit a more favorable perceived product quality.

H2b: When distractive elements are not available, this effect is not prominent.

1.4 Different Degree of Product Experientiality

In contrast to the evaluation of low experiential products in our first study, which mostly depends on informational elements, the assessment of experiential products relies more heavily on sensory reactions to the product (Biswas et al., 2010). The sampling of experiential products involves affective and sensory elements that arise in an automated manner (Pacini & Epstein, 1999); for instance, when tasting wine, the affective component is associated with the emotion experienced, such as relaxation or pleasure, while the sensory component contains the experienced smell or aroma (Nowlis & Shiv, 2005). Informational components of the product experience should be less influential than the emotional ones, and are associated with controlled processes, such as informational thoughts about quality or origin of the wine (Nowlis & Shiv, 2005; Shiv & Nowlis, 2004). Shiv and Nowlis (2004) also provided support to the idea that distraction moderates the impact with which the informational and affective component serve as constituents for product perception. When distracted, individuals' affective component is predisposed to serve as dominant input for the experience of the sampled product and the subsequent preference for the same. If subjects are not distracted, both the informational and affective component are likely to serve as inputs to the perception of the sampled product (Shiv & Nowlis, 2004).

As expounded in the context of study 1, in a sequential order of products with low degree of experientiality, a primacy effect can be expected, if consumers are not distracted. If distracted, consumers tend to show recency effects. In turn, in a sequence of products with high degree of experientiality, recency effects emerge when consumers are not distracted; these recency effects are attenuated in a scenario in which consumers are distracted (Biswas et al., 2010; Biswas et al., 2011).

One factor that also plays a critical role in the emergence of the order effects of evaluating products with high degree of experientialism is WMC. Consumers encode and rely on recalling critical sensory experiences from their short-term WM to make product judgments (e.g., Neath, 1993; Li & Epley, 2006; Biswas et al., 2010). When retrieving aspects of the experiential products,

the distinctiveness of the products in memory is linked to the desirable aspects of the products (Biswas et al., 2010; Sergent et al., 2013). With an increasing amount of experiential sensory stimulus entering the WM, memory traces of the earlier encountered stimuli should fade (e.g., Howard & Kahana, 1999), which would enhance the difficulty to recall the initially experienced product (Cowley, 2007).

Prior studies have assumed a role of WMC in product evaluation scenarios with high experientiality (e.g., Biswas et al., 2014) and tested it by actively manipulating participants memory enhancement, by inducing beliefs about improved memory performance (e.g., Biswas et al., 2010; Lachman et al., 1992). Consumers with high WMC, when presented high experientiality scenarios, tend to capture the stimuli in more detail and retain the information for further decision making processes (Biswas et al., 2014). In other words, in scenarios with high degree of experientiality, WMC reinforces both: (1) the capacity to buffer potential distractors and to retain initial information (primacy effect); and (2) the capacity to retain information from the latest cue (recency effect).

From a practical perspective, marketing managers can often influence the serial position, as well as the degree of experientiality of product and service advertisements. If, for instance, a company decides to activate a banner ad on frequently visited websites or social platforms, among others they have the choice between creating a sliding banner ad, which features a copy (low degree of experientiality) promoting a product, but which expands and shows audiovisual content (high degree of experientiality) once consumers slide over the ad. Vice versa, digital marketers commonly employ rich media banners (e.g. floating ads), which appear uninitiated, superimposed over a user-requested page and automatically play audiovisual product content. After clicking the video, the user is lead to a separate page on which more detailed product-related information appear in text form.

Based on the level of distraction in a product evaluation scenario, and, as we propose, an individual's WMC, either product order sequence (low degree of experientiality – high degree of

experientiality vs. high degree of experientiality – low degree of experientiality) would be a more or a less advisable tactic to elicit a positive or preferential judgment of a product. Furthermore, considering that nowadays it is easier than ever to gather personal data of consumers (e.g., education, profession or age), it could also be increasingly feasible to assess an individual's WMC based on these data.

To test the influence of individuals' WMC as a moderator in a product evaluation scenario with two equally desirable products that differ in their degree of experientiality, with distractor in the middle of the sequence, we will use newspaper extracts of a luxury car model as low degree experientiality product, and a video clip of a different luxury car model as high degree of experientiality product. Based on the above line of argument, we put forth the following hypotheses:

H3: WMC and the sequence of experientiality interact to affect the degree of a primacy and recency effect. Specifically:

H3a: In a sequence of evaluating products with high vs. low degree of experientiality, higher levels of WMC will show a stronger primacy effect than consumers with lower WMC;

H3b: In a sequence of evaluating products with a low vs. high degree of experientiality, higher levels of WMC will show a stronger recency effect than consumers with lower WMC.

As depicted in Figure 1, we conducted two separate studies to test all our predictions.

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2. Study 1

2.1 Participants

Previous studies revealed WM variability across university students, suggesting that 40% to 70% students had a medium level of WM, almost 24% had excellent, while 17% students scored poorly in the WM score tests (e.g., Ishak et al., 2012). Therefore, 215 students from two accredited

European Business Schools participated in the experiment. Ten participants had to be excluded from the final sample due to incompleteness of answers. Consequently, the final sample consisted of 205 individuals (M_{age} = 22.6; SD = 2.94; 62% female), including Portuguese (n = 130; M_{age} = 22.0; SD = 3.27), German (n = 30; M_{age} = 24.3; SD = 1.67) and English (n = 45; M_{age} = 22.9; SD = 1.97) students. All participants spoke English proficiently. Their proficiency (B2 of Common European Framework) was ensured by the admission standards of the universities.All participants spoke English proficiently. Their proficiency (B2 of Common European Framework) was ensured by the admission standards of the universities.

2.2 Procedures and Materials

The study employed a two cue sequence: strong–weak versus weak–strong and a distractor, which resulted in a total of two groups. The groups differed in their positioning of the stronger and weaker cue, and in the absence or presence of the distractor riddle. In order to be able to conduct the experiment with several participants simultaneously, we prepared a Portuguese and an English version of the three WM tasks in PowerPoint. The respective PowerPoint version was projected onto a screen at the front of the room. Participants were provided with a booklet, in which they were instructed to note their responses.

Following the presentation and performance evaluation for the three WM tasks, participants read the hypothetical scenario in which they were prompted to imagine they were shopping for a wristwatch at the mall. In line with previous studies (Biswas et al. 2009; Gürhan-Canli, 2003), each cue was displayed on a separate page. Participants in the distractor condition received an additional separate sheet of paper containing the riddle, which had the purpose of crowding their WM. We randomized the allocation of scenario conditions, and ensured that all groups were of equal size. Since it was of vital importance that participants attended to the product scenario, as well as to the riddle distractor, in their native tongue or a language that they were proficient in, we had the four versions of the original scenario (in English) of Biswas et al. (2009) translated into Portuguese and

German. The objective of this was to avoid any form of foreign language effect, which might have distorted participants' perception of the target product's quality (Costa et al., 2014; Keysar et al., 2012). Anyway, the participants' proficient level of English was considered sufficient to avert any unintended effects.

Participants in the weak–strong condition first read about the brand's good reputation and then on the following page that the watch had a good warranty. The procedure for participants in the strong–weak condition was identical, except that they encountered the warranty cue first, and brand reputation cue second. Thereafter, they judged the product's quality, and performed a number of manipulation check questions. Participants in the two distractor conditions were clearly instructed to consider the riddle before attending to the product scenario, then to complete the wristwatch scenario whilst thinking about a solution to the riddle, to finally return to the same and solve it. A paragraph on each page of the booklet stressed the importance of finding a solution to the riddle at the end of the study. The riddle that was adopted was similar to those employed in Marsh et al. (2005). As part of the manipulation check questions, participants marked whether they knew had known the riddle before, and found that the riddle was a novelty for everybody. Participants went through the questionnaire booklet simultaneously but at their own pace. However, in order to avoid a significant bias in thinking time, we included a note for participants mentioning: *'If you cannot solve the riddle after two minutes, please move on to the questions'*. One hundred and three participants attempted to solve the riddle (as they were assigned to one of the two distractor conditions), and thirty one (30.1%) have succeeded in the task.

It is worth noting that we used a fictitious brand name – Daniel Steiger – for the target product in order to avoid any preconceptions during the quality assessment. Furthermore, to signal the favorable quality of the product, the adjective 'good' (good warranty) was employed, rather than numbers (e.g., 3 years). This, too, served to prevent individual subjective differences in the appraisal

of numbers, as some participants might consider a 3-year warranty more attractive than others (Biswas et al., 2009).

2.3 Instruments

All WM tasks are in line with Oberauer et al. (2000). According to his segmentation of prominent WM tasks, each task tested one of the delineated functional categories of WM. Each task was introduced with two demonstration sets, and three consecutive practice trials. Next, participants were presented with the twelve relevant trials for analysis. We followed the same scoring procedures of previous studies (e.g., Ferreira et al., 2011), and therefore we assigned three points for every correct item, two points if one information unit was missed, one point if two information units were missed, and zero if three or more information units were missed. Moreover, concerning the list length for each task (i.e., the maximum units of information to memorize), we took into consideration the memory limitations as well as the characteristics of previous tests already published (e.g., Ferreira et al., 2011). Therefore, we adopted a list length ranged from two to eight units of information.

The first WM task was a modified backward digit span, which aimed at tapping participants' capacity for simultaneous storage and transformation. A series of digits was presented successively and had to be remembered and reproduced in descending order. Digits were presented sequentially for 1000 ms each on the screen. After the last digit, two question marks appeared, which signaled participants to note down their response. After everyone had recorded their response, we manually activated the next set of digits. The list length of digits ranged from two to eight. A maximum score of three for each of the twelve items / sequences could be achieved, for digits that were recalled correctly and in the right position. This amounted to a maximum of 36 points. After the final trial, participants were informed that the task had ended, and were given the instructions for the second WM task.

The second WM task explored participants' WMC in the coordination construct. In the alpha span task a series of words was presented sequentially, one word every second. Once the sequence had finished, participants had to recall the first letters of the words in alphabetical order. The trials' list lengths varied between two and eight word items. The demand profile of the alpha span is certainly similar to the backward digit span, although it does demand more of the coordination component. The score for the second WM task was computed analogous to the first task.

The third WM task was a numerical version of switching, designed according to Allport et al. (1994). Participants had to observe a display with a randomly arranged number of digits, and alternate between scanning the digits shown and counting the number of total digits in the display. Participants were asked to mark down both types of results on their sheets. The displays with the array of digits were illustrated for 5000 ms. Scores were computed based on the number of correctly recalled digits, and correct number of overall ciphers, yet again adding up to a total of 36.

To evaluate the dependent variable, *perceived quality*, two seven-point items were used in line with Dodds et al. (1991). The final score of perceived quality was generated by taking the average of the two items, (1) expected quality (1= very low quality, 7= very high quality), and (2) expected reliability (1= not at all reliable, 7= highly reliable). Eventually, as an additional measure for participants' proclivity for warranty and general security, they responded to the question whether *'generally speaking, people can be trusted or that one cannot be too careful in dealing with people'*, adopted from Sun (2011), and indicated their perception of the target product's trustfulness, reliance, and honesty (1= not trustful at all, 7= very trustful) (Hur et al., 2014). A general *trust score* item was computed based on the average of those three dependent variables.

Controls: Since there are evidences of individual differences in WM abilities in healthy adults (Morais et al., 2018), we controlled for the variable gender. There is also evidence that the importance of reputation varies across cultures (Dawar & Parker, 1994), thus we opted to control for

the ratio where we measured the individual difference between the reputation and warranty preferences ($\Delta_{\text{reputation} - \text{warranty}}$) and also the country of origin of the participants.

2.4 Measurement Validity

We performed Confirmatory Factorial Analysis through the AMOS for SPSS to test if the three WM tasks should be aggregated at a higher aggregated single-factor measure. Therefore, we found that a latent variable aggregating the three WM tasks presented perfect fit indices, $\chi^2(0) = .00$, CFI = 1.00, TLI = 1.00, and significant standardized regression weights ranging between .45 and .59. Moreover, we computed Rasch analysis with the Winsteps program to confirm the unidimensionality of the three WM tasks within a higher-order single construct. This analysis allowed us to understand whether the WM tasks used in studies 1 and 2 fit the model by revealing infit standardized mean squares lower than 1.4 and outfit standardized mean-squares lower than 2.0, as suggested in the literature (Bond & Fox, 2007). None of the WM tasks showed an infit/outfit higher than 2.0. Accordingly, we considered the Item Separation Reliability, which also revealed good values – study 1 = .96; study 2 = .96 (Fox & Jones, 1998).

2.5 Results and Discussion

The first manipulation check question asked participants to recall the sequence in which they read about the cues. No participant failed this manipulation check question. The dependent variable, labeled perceived quality, was found to be reliable ($\alpha = .75$).

To test our first hypothesis, we conducted our analysis using IBM SPSS Statistics 24.0 and the macro PROCESS for SPSS developed by Hayes (2013). We used a three-way moderation with a 2 × 2 design (sequence *vs.* distractor *vs.* working memory) (PROCESS Model 3) taking into account 1000 bootstrap estimates (95% bias-corrected CI) and specific levels of the moderator WMC (low = -1 *SD*, high = + 1 *SD*). Previously we had obtained two distinct groups with low WMC (-1 *SD*; *N* = 40, *M* = 16.10, *SD* = 2.47) and high WMC (+1 *SD*; *N* = 36, *M* = 31.19, *SD* = .13). Product perceived quality was included as a dependent variable and the cue sequence (brand

reputation or warranty explaining a cue – strong and weak sequence), the distractor (absence or inclusion) as well the WM performance (high or low) as predictors of quality (Biswas et al., 2009). In order to avoid potential undesirable external effects, we controlled for the variables gender, a ratio warranty/reputation and country of origin. All the control variables revealed non-significant values ($p > .05$) with the dependent variable perceived quality. Following a suggestion from an anonymous reviewer, we re-run the analysis with and without control variables and found similar findings. Regarding our hypotheses testing (with control variables), results suggest a three-way moderation effect for the WMC (composite score considering the three functional categories: *storage and transformation*, *coordination*, and *supervision*), $F_{(1,46)} = 5.76$, $p = .02$.

As illustrated in Table 2 and Figure 2, in the presence of a distractor, participants with low WMC (-1*SD*) evaluated the quality of the wristwatch in a similar way then when they saw the weaker cue (warranty) first ($M = 5.48$) as well when they saw the stronger cue (reputation) in the first position ($M = 5.48$). Results show that under high WMC (+1*SD*) consumers judged the quality of the wristwatch to be lower when they saw the stronger cue (i.e., reputation) in the first place of the sequence (reputation vs. warranty; $M = 4.68$) instead of last position (warranty vs. reputation or weak–strong sequence; $M = 5.40$). Against our hypothesis, results show that consumers with high WMC did not reduce the effect of the distractor allowing them to describe a lower quality of the wristwatch ($M = 4.68$) when compared with the same situation but with participants with lower WMC ($M = 5.48$).

--- INSERT TABLE 2 AND FIGURE 2 ABOUT HERE ---

To test our second hypothesis, we used SPSS Process Model 1 to run a two-way moderation with 2 × 2 design (distractor *vs.* working memory). Again, 1000 bootstrap estimates (95% bias-corrected CI) and the same specific levels of the moderator WMC (low = -1 *SD*, high = + 1 *SD*) were considered. Product perceived quality was included as a dependent variable and the distractor (absence or inclusion) as well the WMC (high or low) were considered as predictors of wristwatch

quality. The two-way moderation suggested a significant interaction $F_{(1,70)} = 5.03$, $p = .03$. Figure 3 shows that in the absence of a distractor, participants with low WMC (-1*SD*) evaluated a higher quality of the wristwatch ($M = 5.58$) when compared with participants with high WMC (+1SD, $M = 4.81$). Also as expected in Hypothesis 2, the presence of the distractor (i.e., riddle) changed the perception of quality and both participants (with high and low WMC) presented quite similar scores of perceived quality ($M = 5.45$ and $M = 5.24$, respectively). As expected, the high demands attributed to the distractor and an increased overload of information required for decision making contributed to an increased perceived quality for high WMC participants and a decreased perception of quality for low WMC participants.

--- INSERT FIGURE 3 ABOUT HERE ---

Concerning hypothesis 1, our findings are not in line with previous research (Biswas et al., 2009), as we did not empirically demonstrate the role of WM in overcoming the distractor effect. In fact, the study conducted by Biswas et al. (2009) was conceived with the assumption that reputation was a strong cue whereas warranty represented a weak cue. In the current study, we asked participants to rate in a scale from 1 to 7 (1 – not important at all; 7 – extremely important) how important is reputation and warranty to judge the quality of the described wristwatch. Surprisingly, we found that among the 205 participants, 44.4% rated a higher score on warranty than on reputation, 31.7% on reputation (compared to warranty) and 23.9% attributed the same score of importance for both reputation and warranty. These findings suggest that we cannot infer that reputation is a strong cue for all the people. Then, we tried to test H1 considering the 65 participants who rated higher scores on reputation than on warranty (thus suggesting that reputation is the stronger cue for these individuals). However, the three-way interaction model did not run due to the reduced number of cases per condition.

Accordingly, the findings should be replicated considering a stronger cue rather than the one used in this study (reputation or warranty). In fact, previous studies showed that listing brand in the

first place, then price and physical appearance, was found to be more relevant than reputation as a signal of product quality (Dawar & Parker, 1994). Thus, similarly to Biswas et al. (2011) we manipulated the degree of experientiality for study 2, which may be considered a stronger (and more consensual) cue than reputation.

3. Study 2

3.1 Participants

One hundred and thirty five students (M_{age} = 20.5; *SD* = 2.82, 61% female) from one accredited Portuguese Marketing School participated in the experiment.

3.2 Procedures and Materials

The study employed a 2 (degree of experientiality sequence: low–high versus high–low) × 2 (brand: Jaguar versus Range Rover) between-subjects design, which resulted in a total of four groups. The groups differed in their positioning of the stronger (video ad) and weaker cue (newspaper ad), and in the order each brand was presented (so as to counterbalance the brand effect). Allegedly, the brands would represent equally desirable products. As all participants were Portuguese, all stimuli were conducted in Portuguese.

The WM tasks were exactly the same as in study 1. Similarly, we included a composite score with all the three WM tasks. As mentioned before, Item Response Theory (Rasch models) with participants in Study 2 also confirms the unidimensionality of the three WM tasks within a single factor WM construct.

Subsequent to the final WM task, participants had to watch a video ad on a specific car and read a newspaper ad about an alternative (second) car. Both cars shared the same technical characteristics. The order (ad/news) changed for participant condition. Next, they had to rate their preference towards the first and the second car, and assess both their quality and reputation. The measures for quality and reputation were the same as in study 1. The cars used in the institutional video ads were from two premium brands (Jaguar and Range Rover), from the same category

(electric SUV), and manufactured in the same country (UK), to avoid undesirable country effects (Ferreira & Ribeiro, 2017). The newspaper ads mentioned real data on the vehicles retrieved from a specialized car magazine. In order to standardize the news item (to be perceived as more credible), and to assure the same number of characters, we used an online platform tool (e.g., https://newspaper.jaguarpaw.co.uk) to transform the text retrieved form their institutional websites into newspaper layout (see Appendix).

Similarly to study 1, we wanted to test the role of WM to overcome the recency effect attributed to the distractor which is mentioned in previous studies (Biswas et al., 2009; Biswas et al., 2010). Accordingly, a distractor was used in all (four) conditions. The distractor consisted in finding six hidden words (read; novel; book; story; words; page) in a cartoon picture (see Appendix). Participants had three minutes to complete this task.

To evaluate the dependent variable, *preference for the first sequential car*, two seven-point item scale were used (1= very low preference, 7= very high preference). The items include *'What is your level of preference for the first car?'* and *'What is your level of preference for the second car?'*. An index was obtained from the difference between the two items, meaning that a high score on this difference represents a higher preference for the first car.

3.3 Manipulation Check

We controlled for the cars' preferences and thus did a manipulation check by asking 32 university students (M_{age} = 21.34; *SD* = 1.23; 62% female) and found absence of significant differences regarding the two cars preference (p = .26). Findings revealed absence of preference (p = .22) for the newspaper ad with the info from Jaguar (M = 3.80, *SD* = 1.49) and Range Rover (M = 4.29, *SD* = 1.80). The same absence of preference (p = .07) was found for the difference between video ad from Jaguar (M = 5.13, *SD* = 1.51) and Range Rover (M = 5.77, *SD* = 1.14). In order to check the degree of experientiality, we found significant differences (p < .01) for Jaguar in terms of preferences for the video ad (M = 5.13, *SD* = 1.51) in contrast with the newspaper (M = 3.80, *SD* =

1.49). Also, significant differences ($p < .01$) were also found for the Range Rover considering the preferences for the video ad ($M = 5.77$, $SD = 1.14$) in contrast with the newspaper ($M = 4.29$, $SD = 1.80$).

3.4 Results and Discussion

In study 2, WMC was examined as a simple moderator of the relationship between evaluation scenarios of products with low and high degree of experientiality and the preference for the first car instead of the second (*primacy effect*). The overall model was significant ($F_{(3,130)} = 12.23$, $p < .01$, $R^2 = .22$). Consistent with H3, there was a significant interaction effect between the degree of product experientiality sequences and the first car preference. Specifically, findings show that the negative association between the degree of experientiality and the preference for the first car increases in magnitude from low ($b = -1.31$, $p = .003$) to moderate ($b = -2.25$, $p < .01$) to high ($b = -3.20$, $p < .001$) levels of WMC. As shown in Table 3 and Figure 4, consumers with low WMC (-1SD; $M = 1.79$) have a preference for the first sequential car in sequences that start with the high degree of experientiality product first ($M = .06$), instead of the sequence that samples the product with low degree of experientiality first ($M = -1.25$, $t = -2.17$, $p < .05$). On the opposite, results show that consumers with high WMC (+1*SD*; $M = 2.56$) tend to increase the preference for the first sequential car when they saw the product with high degree of experientiality in the first place of the sequence (high *vs*. low degree of experientiality; $M = 1.05$), instead of the more recent position (low *vs.* high degree of experientiality; $M = -2.14$; $t = -5.54$, $p < .01$). Findings suggest a higher primacy effect for participants with high WMC, suggesting that WMC potentiates the effect of the high degree of experientiality product scenarios and attenuates the primacy effect for the product evaluation scenario with low degree of experientiality *vs.* high degree of experientiality sequences (H3).

--- INSERT TABLE 3 AND FIGURE 4 ABOUT HERE ---

In conclusion, our findings expand previous studies (e.g., Biswas et al., 2011) that when evaluating a sequence of products with very low degree of experientiality (e.g., newspaper printed format), primacy effects were observed. Our study contributes by showing that consumers with high WMC reverse the primacy effect observed in their study. In fact, consumers that first watched the video ad (high vs. low degree of experientiality) tend to show a primacy effect, which is stronger for individuals with higher levels of WMC. On the opposite, for consumers that first read the newspaper ad (low vs. high degree of experientiality), stronger recency effects were observed for high WMC individuals, thus showing that WM also reinforces this recency effect.

4. General discussion

Early studies suggested the unimportance of the cue order in a sequence (e.g., Lopes, 1985), whereas more recent research posited that the order of cues in a sequence affected the consumers overall perception on the *primacy effect* and *recency effect* (Carlson et al., 2006; Hogarth & Einhorn, 1992; Richter & Kruglanski, 1998). Thus, our study shed some light on this pertinent issue in the decision making and marketing literature. Biswas et al. (2009) have consolidated the theories of how multiple cues affect the judgment of a target product, and extended existing research on how the order of cues that differ in strength influence consumers' perception of that target product. Moreover, previous research had focused on the influence of WMC on *primacy* and *recency effects* (Biswas et al., 2009; Biswas et al., 2010). Despite this evidence, there is still potential to further explore the force of WMC in processing these cues. Consumers generally consider various cues before they make up their mind about a product, and base disproportionate importance in their judgment on the first cue they are able to recall. Biswas et al. (2009) asserted that in a marketplace scenario, while when consumers are not distracted the stronger cue should be placed before the weaker cue, when distracted, consumers should come across the stronger cue last. However, there are considerable differences in WMC between individuals that affect the amount of information that can be actively maintained. Consequently, the first cue that can be recalled differs from consumer to

consumer, with and without distraction. In that respect, Biswas et al.'s (2009) suggested cue order would be challenged in its unconditional applicability, and an approach would have to be found that accounts for the individual differences in WMC of consumers.

With regard to order effects, the results of this research tend to contradict Biswas et al.'s (2009) findings to a large degree. Our study demonstrates that, in a situation with concurrent distractors, high WMC consumers evaluate a target product less favorably following a strong–weak cue sequence relative to a weak–strong cue sequence, thus not exhibiting a *primacy effect*. In fact, the primacy effect was slightly observed for the situation with no distractors. This absence of replication may be attributed to the fact that Biswas et al. (2009) study was based on the assumption that reputation was a strong cue. In our study, only 31.7% of participants rate reputation as more important than warranty. Moreover, 23.9% did not differentiate the relative importance (strong vs. weak) between reputation and warranty. Regarding the transferability of these findings, we are strongly convinced that, at present, it is not possible to infer 'universal' strong cues, as these could be significantly influenced by the cultural context of consumers and their profiles. Accordingly, it is recommended that future studies incorporate a pre-test and manipulation check to attest the effectiveness of strong and weak cues.

Also, our study found that distractive elements moderate the impact of WMC levels on the perception of quality towards a specific product. Participants with low WMC revealed a favorable perception of product quality. The introduction of distractive elements diminished the favorable perception of low WMC participants and increased a favorable perception of high WMC participants. This indicates the participants' ability to control their attentional focus and to retain the early information before the distractor (Cowan et al., 2005). These findings shed some light in the literature by studying the relationship between stimuli presentation and interconnection with WMC and perception of product quality.

In order to increase convergent validity for our first study, we developed a second study to test a stronger cue based on a product evaluation with high versus low degrees of experientiality (e.g., see a movie vs. read a newspaper). Results from our second showed that WM surpasses the distractor effect allowing consumers to increase the preference for the first product option (primacy effect). Also, the primacy effect converts to a recency effect when consumers are distracted, to the extent that the target product's quality is judged higher when the stronger cue (high experientiality sequence presented last) is presented last instead of first. This evidence reinforces the role of WM in product evaluation scenarios with high experientiality (e.g., Biswas et al., 2014) for both situations (e.g., at the beginning and at end of a sequence). Individuals with higher WMC are able to retain the contents retrieved from high experientiality scenarios (Biswas et al., 2010; Lachman et al., 1992).

Specifically, as Biswas et al. (2009) proposed a moderation model (i.e., the sequence effect on judgment is conditional on distraction), we extended their research by proposing a moderation of these distractors (i.e., this conditional effect of distraction is further conditional on WMC). Thus, all our studies were carried out in the presence of distractors. As an additional theoretical contribution, we found that WMC emphasizes both the recency and the primacy effects for stronger cues, such as for situations of high experientiality.

This study also contributes to the WM literature by reinforcing the role of individual differences in decision making processes and consumer behavior (Conway & Engle, 1994; Posavac et al., 2004). Specifically, individuals with high WMC buffer distractors and retain more relevant information for decisions such as the attribution of product quality. Also, the role of WM is reinforced in scenarios where consumers have high experientiality.

4.1 Implications for Management

From a practical perspective, it certainly appears ambitious to estimate someone's WMC at a first glance in the marketplace, or even provide roughly estimations based on superficial indicators such as education or profession, and manipulate the order of cue information accordingly. However,

as online marketplaces are continuously growing, there might be greater opportunities in the future to assess consumers' current level of distraction, and simultaneously manipulate cue order correspondingly. From a managerial perspective, distraction could also be used as a mean for directing consumers' attention and perception of a target product (Biswas et al., 2009).

Moreover, WM is highly related to academic performance (Lee & Bull, 2016) which is also a predictor of career achievement, upward social mobility and success (Jury et al., 2015). Thus, when targeting products for this consumer profile (e.g., luxury products), marketers should be aware about the importance of presenting their products in a first order sequence, as distractors will not eliminate the primacy effect, due to their high WMC. Another practical implication for advertising from this research is that when cues are strong (e.g., high experientiality), consumers with high WMC tend to reveal primacy or recency effects, depending on the order of presentation of the experientiality stimuli. Thus, for these targeted consumers, strong ads should be presented at the beginning or at the end of a sequence.

Lastly, previous studies suggest brand information should be adjusted to the target group ability to cognitive process such information (Rumpf et al., 2015). Accordingly, our study suggests that in the presence of a distractor, individuals with high WMC are more able to process complex stimuli and to retrieve previously presented information on a product quality. Additionally, when marketers want to target to low WMC, they should conceive simple marketing strategies (e.g., with no distractors), as they tend to perceive products as having higher quality.

4.2 Limitations and Future Research

The study is concluded by a critical reflection on methodological issues of the empirical research and a suggestion for future research directions. As in most experimental studies, a hypothetical scenario in a classroom setting was employed. Nonetheless, the familiarity of the products (wristwatch or cars) can be regarded as adequate to ensure participants acted like actual consumers in the marketplace (Biswas et al., 2009). It is worth mentioning that the product scenario

in study 1 was solely based on informational components, disregarding affective components, which also play a vital role in the purchase decision process. A second limitation is that due to the demanding three WM tasks at the beginning of the experiment, only two cues were used. As in Biswas et al. (2009), this served to keep participants' attention active in the concluding product scenario, in order to obtain clear order effects. Moreover, as a third limitation, we did not account for social nonverbal social cues – which, according to a recent study, may involuntarily impact the metacognitive evaluations of the decisions (Eskenazi et al., 2016). Fourth, the method of assessing participants' WMC could have been designed more meticulously using a computer based approach that is geared to the reaction times of each individual and considering other visual WM contents (e.g., Carlisle & Kristjánsson, 2018). As WMC is a very complex construct, future experimental studies with more controlled conditions may understand which WM components (i.e., attentional process, short-term memory or long-term memory) moderate the informational cue importance presented in each stimuli. A fifth limitation deals with the specificity of the primacy/recency effects. Consumers, upon seeing the first cue, do not have a comparison yet, so a weaker cue might just as well be perceived as strong and still influence downstream consequences. Additionally, the outcome of a strong–weak cue could not be the same as a weak–strong cue if both had been anchored by the first (or last) cue. This could eventually destabilize the predicted cue order effect thus impacting the final results. Also, consumers should more likely respond favorably to when there is a strong fit (i.e., congruency) between the stimuli and cues present in the ads and the targeted brands. Gender effects may also play a role here, as previous research found that men do not need such a strong fit to respond favorably (Putrevu, 2008; Sengupta & Dahl, 2008). Further research should explore both congruency and cue order effects in advertising. A final limitation concerns the participants who were not able to solve the riddle – this might have provoked some frustration and, consequently, lead to a lower rating/appreciation for the product.

In the future, it would be interesting to explore the level or form of distraction that inhibits high WMC individuals from recalling the initial cue and that sways their evaluation behavior to a *recency effect*. In this regard, it would be further insightful to investigate how a third sequential cue would influence quality judgments, especially with high WMC. Does the *primacy effect* prevail? Is the effect substituted by a *recency effect*? Or does a new effect arise, in which the intermediate cue information becomes the anchor for the subsequent product evaluation, if the WM of high WMC individuals is too crowded? Also, similarly to Biswas et al. (2011), future research should test for a sequence of products with moderate degree of experientiality (such as audio clips). Moreover, future studies could test whether the experientiality effects observed in study 2 could be enhanced in settings of brand placement (e.g., movies, sports, festivals) in contexts with high identification with the main characters and engagement with the content, as these variables are shown to increase brand recall (Natarajan et al., 2018).

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Table 1. WM functional categories according to Oberauer et al. (2003).

Functional categories	**Definition**
Simultaneous storage and transformation	WM has the dual function of maintaining mental contents in an active accessible state, while executing cognitive operations on them or other contents.
Coordination	The operation of building new relations between information elements, and arranging these into structures.
Supervision	The process of monitoring continuous cognitive operations and actions, and the selective activation of the processes that are of relevance for the current task, as well as the inhibition of distracting ones.

Table 2. Mean scores of the dependent variable (perceived quality) for low and high WM participants in a two-sequence scenario (reputation vs. warranty and vice-versa and no distractor vs. distractor / riddle) in study 1.

	Low WMC		High WMC	
	Control	Distractor (Riddle)	Control	Distractor (Riddle)
Strong–Weak Sequence	5.22	5.49	5.56	4.67
Weak–Strong Sequence	6.17	5.44	4.52	5.37

Table 3. Mean scores of the dependent variable (preference for the first car) for low and high WM participants in a two-sequence scenario (high vs. low experientiality) in study 2.

	Low WMC	High WMC
	Preference for the first sequencial car	
High *vs.* Low Degree of Experientiality	.06	1.05
Low *vs.* High Degree of Experientiality	-1.25	-2.14

Figure 1. Conceptual framework and hypotheses.

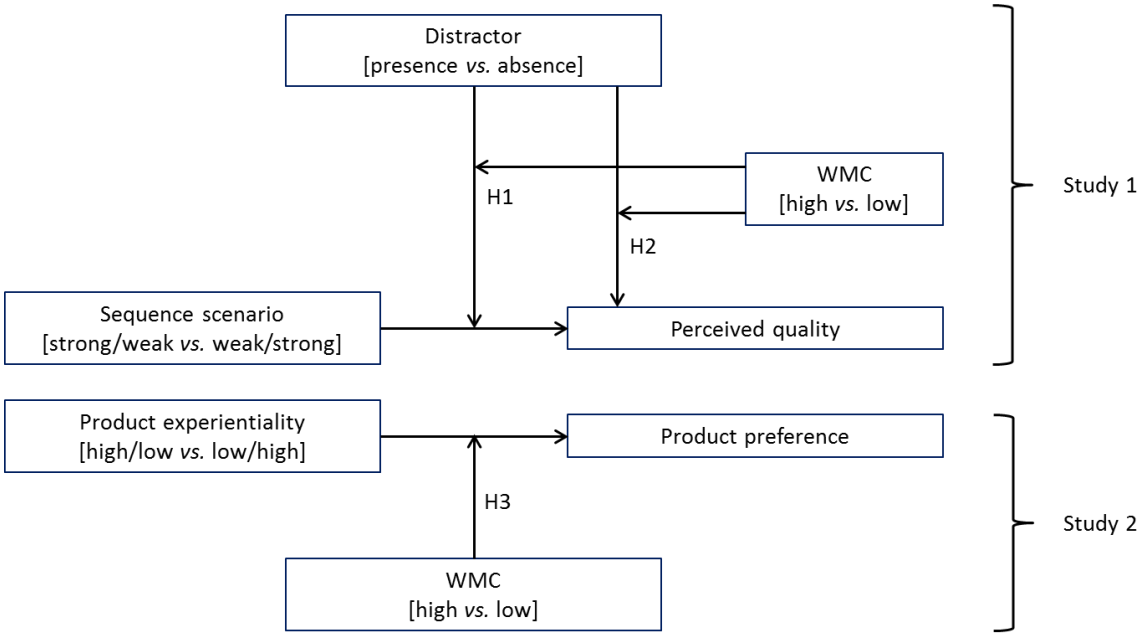

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Figure 2. Marginal means of the dependent variable (perceived quality) for low and high WM participants in a two-sequence scenario (reputation *vs.* warranty and vice-versa and no distractor *vs.* distractor / riddle) in study 1.

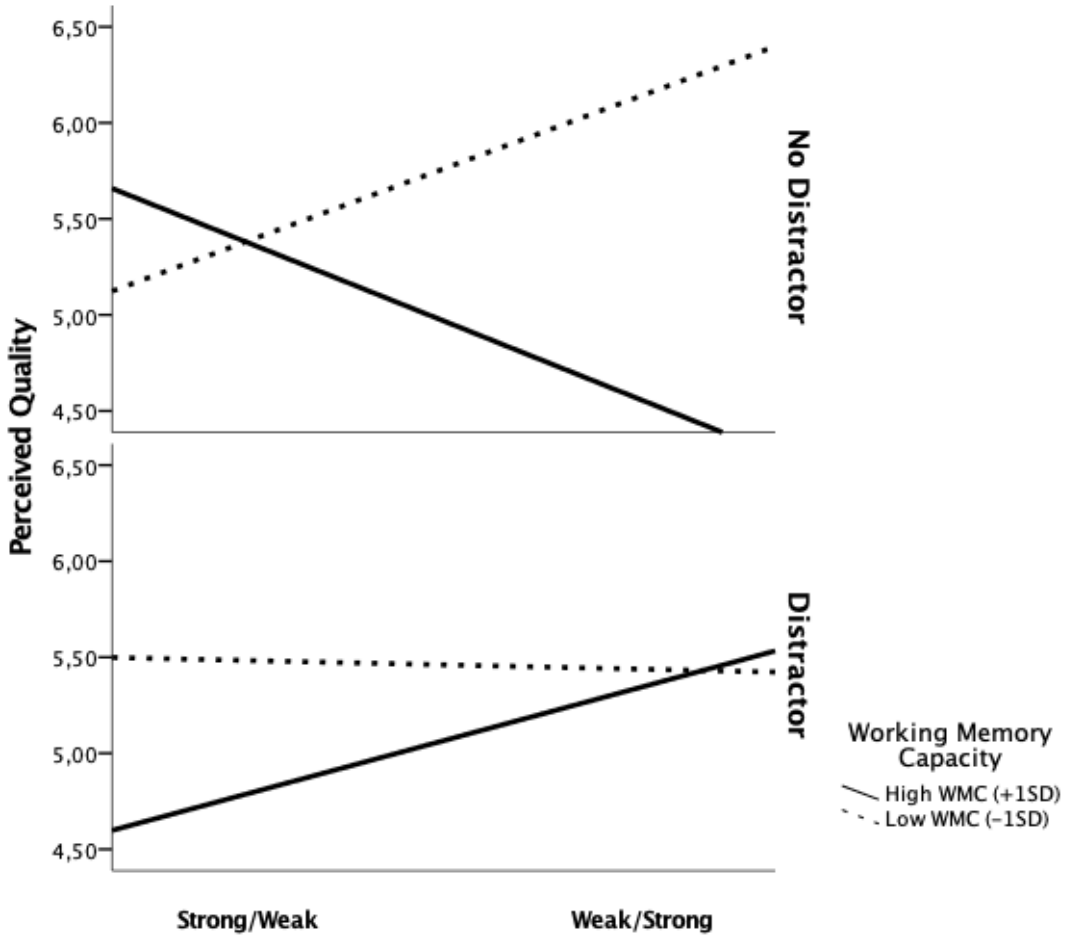

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Figure 3. Marginal means of the dependent variable (perceived quality) for low and high WM participants in a two-sequence scenario (no distractor *vs.* distractor / riddle) in study 1.

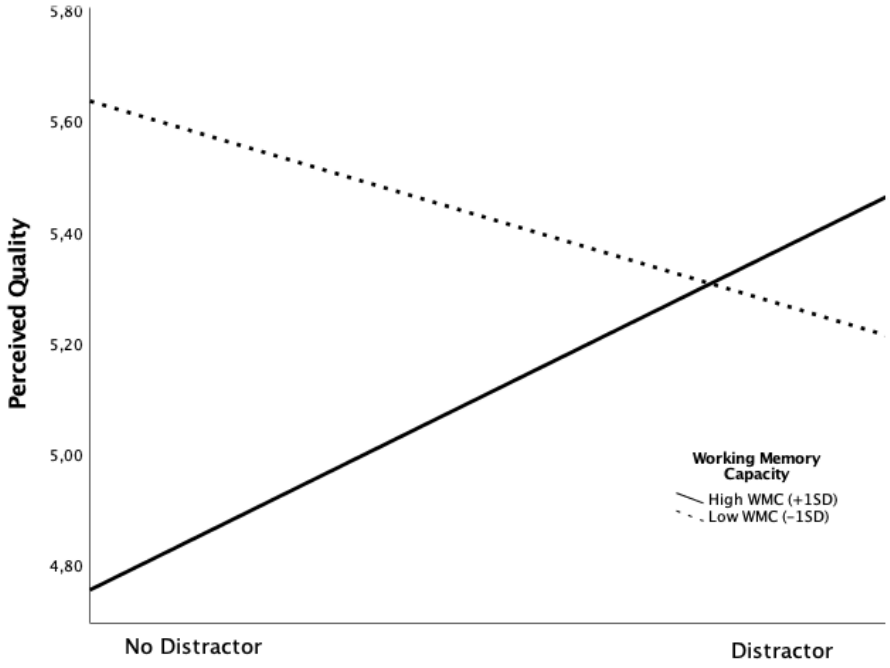

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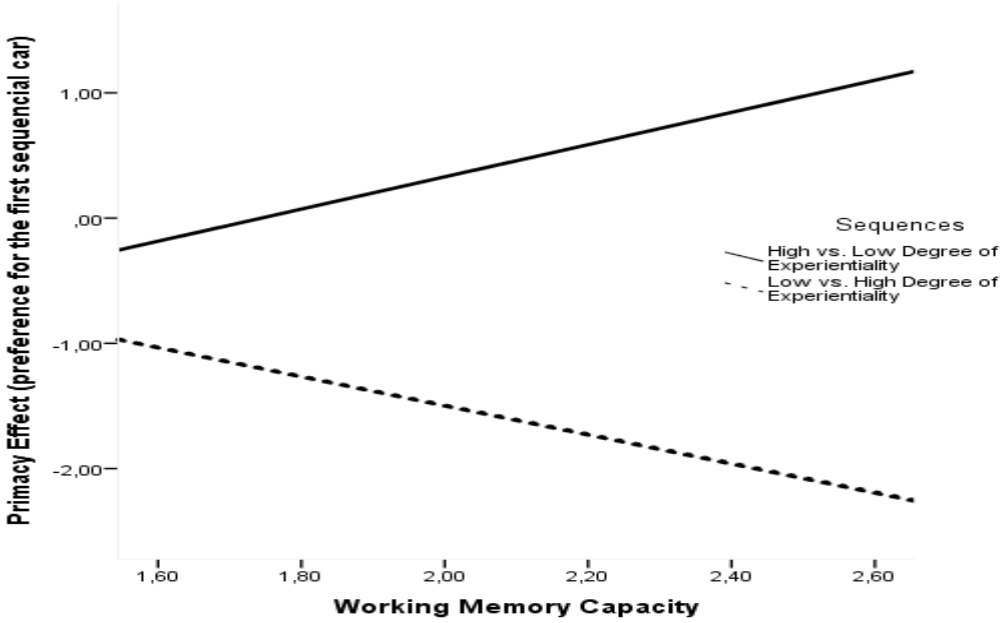
Figure 4. Preference for the first sequential car for low and high WMC (composite of three WM tests) participants in a two-sequence scenario (high vs. low degree of experientiality and vice-versa) in study 2.



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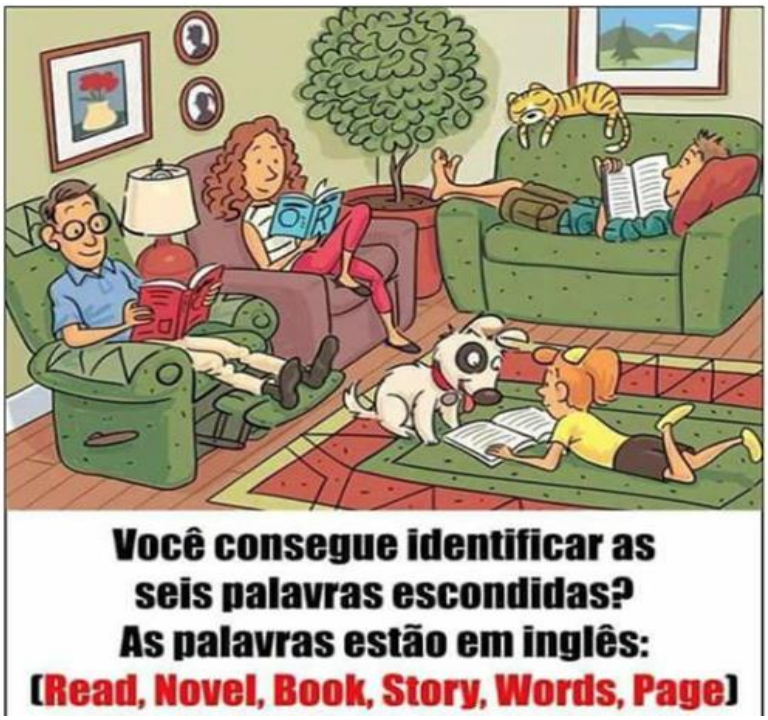
Appendix

Distractor (riddle) for study 1:

You are at an unmarked intersection.
One way lies the **City of Truth**, and the other way lies the **City of Lies**.
Citizens of the **City of Truth** always tell the truth.
Citizens of the **City of Lies** always lie.
A citizen of one of those cities – **you don't know which** – is at the intersection. **What question** could you ask him to find **the way to the City of Truth**? (You only need one question)

Distractor for study 2:



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Examples of video link ad and newspaper ads for study 2:

https://www.youtube.com/watch?v=4vMZpVjhYr4

Diário de N

Segunda-Feira, 12 de março, 2018

Novo I-Pace: saiba tudo sobr

A Jaguar aderiu à mobilidade eléctrica. O I-Pace é a sua primeira proposta neste campo e já está disponível (por encomenda) no nosso país. CHASSIS. Foi realizado com base numa plataforma específica para veículos 100 por cento eléctricos (EV). Com 2.990 mm de distância entre-eixos, 6.682 mm de comprimento e 2.139 mm de largura, tem uma volumetria próxima do Jaguar F-Pace, mas é mais baixo (1.565 mm). A suspensão dianteira de triângulos duplos e multibraços na traseira visa garantir o conforto sem condicionar o dinamismo da condução. Em opção está disponível um sistema pneumático, capaz de reduzir a altura ao solo (10 mm) a velocidades superiores aos 105 km/h.

DESIGN. "O sistema de propulsão eléctrico do I-Pace permitiu-nos uma liberdade de design sem precedentes", afirmou Ian Callum, director de design da Jaguar. "Permitiu-nos deslocar o habitáculo para a frente e criar proporções interiores únicas". A imagem tem um estilo coupé, os volumosos pára-choques vincam e as jantes

Diário de N

Segunda-Feira, 12 de março, 2018

Range Rover Sport: o prime

Foi hoje revelada a gama atualizada do Range Rover Sport, que tem como principais destaques o primeiro híbrido de Plug-In da marca e também o poderoso SUV desportivo de topo SVR com 575CV. A Land Rover já tinha prometido que a partir de 2020 todas as suas gamas de modelos seriam eletrificadas, e na Range Rover esse futuro começa hoje a ser desenhado pelo Sport. A gama deste SUV foi atualizada e passou a contar com aquele que é o primeiro híbrido de Plug-In Range Rover, uma versão com 404CV que integra uma gama internacional composta por nove motorizações e que no topo tem o desportivo SVR de 575CV. A introdução do novo infotainment TouchPro Duo, a iluminação Pixel Laser e a abertura por gestos da cobertura do teto panorâmico são outras das novidades. Range Rover Sport PHEV Com a ligação à corrente a fazer-se através de um espaço específico na grelha do carro, o novo Sport híbrido de Plug-In tem uma potência de 404CV e um binário de 640Nm. Para tal recorre à combinação entre o mo

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