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Running head: Time pressure impact on consumer decision-making

Title: Under Pressure: An Integrative Perspective of Time Pressure Impact on Consumer Decision-Making

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Abstract

Time pressure (TP) constrains consumers' decisions: stores have fixed opening hours, promotions have deadlines, and a house to rent may not be available tomorrow. Evidence about the impact of TP on decision-making suggests that when facing complex decisions consumers: do not process all the information, ground decisions upon a restricted set of attributes, defer choice less, but still accomplish utility choices. However, these effects of TP have been typically observed in experimental paradigms that manipulate specific deadlines for task completion. In two experiments involving consumer goods and service choices we have introduced two additional TP manipulations (time limited price-discount and stock-out threat), building an integrative approach where information processing strategies, choice deferral and final choice utility were measured.

Our results emphasize the differences between TP manipulations. When applied to real buying contexts, price-discounts may not be so effective anymore, whereas stock-out threats have

surprising effects, decreasing deferral and final choice utility. These findings contribute to a better understanding of the differences between decision-making upon consumer goods and services, discriminating the effects of TP in real scenarios.

Keywords: Decision-Making, Time pressure, Choice utility, Choice deferral, Information processing, Services Marketing, Consumer Psychology

Imagine that you are planning a trip. It seems like a pretty simple task to choose accommodation. However, when the online search begins, you face over 1000 accommodation options. To make it harder, besides considering room rates, distance to city center, or even other travelers' reports, you are constantly reminded that if you do not choose fast enough, your "perfect room" may be taken or that you may fail an amazing promotion. This example illustrates how in real life situations consumers experience decision complexity and varying degrees of Time Pressure (TP).

Consumer literature has shown that the process of searching information and choosing among different options changed significantly over the past decades (e.g., Kahn & Wansink, 2004). With the increase in assortments size and variety, or even the virtually endless number of options available online, choosing a consumer good or a service has become a demanding task for consumers. Assortment variety has been an extensively researched topic in the consumer behavior domain. However, whether more variety constitutes a benefit for consumers and increases their satisfaction (Anderson, 2006) or makes it harder to decide by increasing choice difficulty (Park & Jang, 2012) still remains an unsolved paradox (for an interesting meta-analysis about moderators on choice overload, see Chernev, Böckenholt, & Goodman, 2015). Furthermore, since most of the daily choices consumers face seem to imply a certain degree of urgency (e.g., Reutskaja, Nagel, Camerer, & Rangel, 2011; Samson & Voyer, 2014), decision processes can themselves induce negative feelings (Schwartz, 2000). In fact, the decision-making process in this context is almost always dependent on time constraints, such as stores opening hours, promotions deadlines or even the possibility of product stock-out.

But does TP change the way consumers decide? Empirical evidence has shown that when consumers feel pressured to decide, the amount of information they are able to process decreases

(Iyer, 1989). In these situations they tend to focus on characteristics that can be quickly and easily evaluated (Lenton & Francesconi, 2010) and defer choice more often (Tversky & Shafir, 1992). However, when consumers perceive that, despite time limitations, there is still enough time to choose, deferral may decrease (Lin & Wiu, 2005).

Theoretically, TP is defined as the perceived cost of time scarcity. Indeed, it has been suggested that “It is only when the available time to complete a task is perceived as insufficient or limited that TP begins to manifest itself and induce feelings of stress” (Thomas, Esper, & Stank, 2010, p. 288). This subjective definition of TP, dependent on individuals' appraisal, has important implications. First, the exact amount of time given to individuals to decide may significantly influence their decisions. Second, since TP relies on subjective perceptions, the way in which TP is induced may also alter these perceptions and, consequently, decision-making behavior.

Previous research has been using creative TP manipulations such as testing several time intervals, using different environmental cues as, for example, ticking metronomes as background noise (Inbar, Botti, & Hanks, 2011) or even making the monetary compensation of participants dependent on the time spent on task completion (Dambacher & Hübner, 2015). Nevertheless, TP has been typically equated to the objective time given to participants for task completion (e.g., Dhar & Nowlis, 1999; Haynes, 2009; Young, Goodie, Hall, & Wu, 2012). To the best of our knowledge, and despite some theorization about individual orientations and attitudes towards TP types (e.g., Time Orientation Models - Bergadaà, 2007; Usunier & Valette-Florence, 2007), the experimental designs that have been used to manipulate TP have not yet provided a solid comparison between the effects of different TP types (e.g., Lallement, 2010). On the other hand, it is plausible to suggest that TP may also benefit the decision-making process. For instance, in

competitive contexts, TP was found to increase individuals' enthusiasm and to shape perceptions of a given game as a more defying task (Freedman & Edwards, 1988). Possibly, similar effects can be extended to consumer decisions. We argue that different TP manipulations may have distinct effects on consumer decision-making. For example, the TP experienced when the milk "two-for-one" promotion is about to end, can be completely different from the TP felt when the grocery shop closes and one needs milk for next day's breakfast.

Research on this subject has been following two distinct methodological paths: forced choice scenarios (where participants are compelled to make a decision and such decision is recorded) or deferral choice scenarios (where participants have the option not to choose any of the available options and it is recorded whether a decision is made). Forced choice scenarios have been examining the decision process, measuring the cognitive processes underlying the decision-making as well as final choice utility (e.g., Pachur, Hertwig, Gigerenzer, & Brandstätter, 2013; Payne, Bettman, & Johnson, 1988). However, since participants are forced to make a decision, there has been some controversy about its ecological validity. Indeed, real consumers may also decide not to choose. This possibility is taken into account by deferral studies that measure whether consumers decide or not (Dhar & Simonson, 2003). However, as the research on deferral does not traditionally examine the chosen option, it may also present limitations. Finally, most of the evidence reviewed on choice deferral and final choice utility under TP predominantly examines choice upon products such as consumer goods (e.g., Dhar & Nowlis, 1999; Lallement, 2010; Lin & Wu, 2005; Reutskaja et al., 2011) whereas service related decisions remain relatively unexamined (for an exception see Rieskamp & Hoffrage, 2008).

Consumer decision-making under TP seems therefore a far more complex cognitive task than isolated studies may capture. The present research examines whether using TP

manipulations resembling real life consumer experiences - such as giving participants a time frame to benefit from a promotion or by presenting a stock-out threat - will yield different results from those previously reported in the decision-making literature. Specifically, we have conducted two studies aiming to: (1) compare different manipulations of TP on consumers' decision-making; (2) examine, within the same experimental design, several dependent variables such as choice deferral, cognitive processing strategies and final choice utility; (3) test two assortment size manipulations as a form of task complexity; and (4) provide a comparison between decision-making about goods and services.

Time Pressure Impact on Consumer Decision-Making

Decision-making rules, that is, the cognitive models adopted in the decision-making process, are one of the most well researched topics in consumer behavior literature (e.g., Dieckmann, Dippold, & Dietrich, 2009; Payne, Bettman, & Luce, 1996; Rieskamp & Hoffrage, 2008). Research has repeatedly shown that participants indeed adopt (and adapt) different decision models and strategies depending on the situation. Each of these models affects the outcome of the decision-making process, since they rely on different levels of difficulty of the decision process or the motivation to decide (e.g., Dhar, 1997).

When facing an assortment, consumers initiate a cognitive process that leads them to a final decision. Such process may be guided by compensatory or non-compensatory strategies and be based upon option or attribute level comparisons (e.g., Bettman, Luce, & Payne, 1998). While compensatory strategies rely upon an extensive examination of available information, non-compensatory strategies refer to task simplification (Mowen & Minor, 2003; Schiffman & Kanuk, 2000; Solomon, 2002).

In order to decide whether the product under evaluation meets the desired standard, consumers simplifying the task may focus on a restricted set of attributes, or even on a single attribute (Lye, Shao, Rundle-Thiele, & Fausnaugh, 2005). Evidence suggests that the urgency to decide limits the amount of information analyzed (Iyer, 1989), increases the tendency to decide based on habits (Wood & Neal, 2009) and to use non-compensatory strategies to process information (Lallement, 2010). Therefore, judgments under TP are characterized by the application of cognitive shortcuts and affected by different peripheral cues (Madan, Spetch, & Ludvig, 2015; Pachur & Hertwig, 2006; Rieskamp & Hoffrage, 2008; Verplanken, 1993) as well as by an increase in choice deferral (Dhar, 1997; Lin & Wu, 2005; Luce, 1998). However, in specific conditions (e.g., assortments with highly attractive options) TP produces the reverse effect on deferral (Dhar & Nowlis, 1999). Such contra-intuitive phenomenon has been explained by faster cognitive processing (Edland & Svenson, 1993), or by increased motivation to analyze the available information (Suri & Monroe, 2003).

Contradictory findings were also reported when the quality of the final decision is considered. Whilst some authors reported the negative impact of TP on final decision quality (e.g., Payne, Bettman, & Johnson, 1993), others reported that, even under severe TP conditions (e.g., 3 seconds to decide), final choice utility remains high (Reutskaja et al., 2011). To explain this inconsistent pattern of data, Maule, Hockey and Bdzola (2000) emphasized the idiosyncratic and subjective nature of TP, concluding that the TP effect on decision-making may be dependent upon the relevance of each decision to the individual.

Building on such assumption, several questions emerge regarding current evidence on TP research in the context of consumer decision-making. In particular, whether it is appropriate to make direct inferences about the effect of TP on decision-making from experiments that merely

ask participants to make decisions within a given time period without further explanation or clue about the motive of such TP.

Time Pressure: Alternative Manipulations

Marketing evidence, namely about the impact of stock-out threats and promotions in consumer behavior may provide important insights in this matter. When facing real or experimental stock-out scenarios consumers feel urgency to decide, either by being forced to replace the previously chosen items that are out of stock or by postponing or cancelling purchases (e.g., Sloot, Verhoef, & Franses, 2005). Overall, decision-making is quicker when there are stock-out products in the assortment or even when there is only a warning that stock-out may occur (Ge, Messinger, & Li, 2009).

The similarities between stock-out literature and TP evidence in consumer decision-making contexts also occurs at the deferral level. For instance, Sloot (2006) reviewed several studies where stock-out increased deferral because the options available were perceived as inferior to the sold-out items. Likewise, since promotions also influence consumer behavior (Herrington & Capella, 1995), it is frequent for stores and e-commerce websites to set deadlines for sales or promotions. This forced urgency seems to compel consumers to decide and several authors have been thriving to find the optimal timing for promotions to have the desired impact on sales (e.g., Chiang, Lin, & Chin, 2011). Research has also revealed that consumers are sensitive to the promotion and its deadline, even when the reference price is exaggerated (Aggarwal & Vaidyanathan, 2003), and that these conditions increase their buying intentions (Krishnan, Dutta, & Jha, 2013). Therefore, in addition to understanding how experimental TP (deadline to task completion) affects decision-making, it is important to investigate how other TP types, namely stock-out threat and price-promotions, affect consumer decisions.

Assortment Size: Do Larger Assortments Increase Decision Complexity?

Research about decision-making in both psychological and marketing literatures has also been focusing on the characteristics of the available assortments. Indeed, the number of options available (Rolfe & Bennett, 2009), as well as the way in which they are described or even presented (Pizzi & Scarpi, 2016) are known to affect consumer behavior. For example, research has shown that visually highlighting some attributes and making them more salient can increase their consideration in decision-making (Lynch & Ariely, 2000). Presenting options simultaneously or sequentially also alters consumer preferences (Hsee, 1996). Assortment variety depends upon individual perception, which, in turn, is known to be affected by the total number of stock keeping units (SKU's), the total space used by the category and by the presence of the favorite product among the options available (Broniarczyk, Hoyer, & McAlister 1998).

Despite some interesting analysis about other variables affecting assortment evaluation (e.g., the moderating role of the perceived quality of products, Kwak, Duvvuri, & Russell, 2015), size can be considered the most relevant feature for perceiving an assortment as varied (SKU's), being, therefore, the feature most frequently manipulated in consumer research. Variety effect has been tested from two options assortments up to 300 options (Diehl & Poynor, 2010). Such studies yielded somehow contradictory results. On the one hand, larger assortments seem to be preferred by consumers (Broniarczyk, 2008), boosting their satisfaction (Anderson, 2006). From the merchants' point of view, larger assortments attract new customers (Lohse & Spiller, 1999), increase loyalty (Srinivasan, Anderson, & Ponnaveolu, 2002) and market share (Bown, Read, & Summers, 2003). On other hand, a growing body of literature has been reporting the "paradox of choice" (Schwartz, 2004). Large assortments make it harder to decide (since cognitive overload increases, Park & Jang, 2012); satisfaction with decision-making process decreases (Broniarczyk

& Hoyer, 2010), and the likelihood of choice deferral increases (e.g., Gourville & Soman, 2005; Sela, Berger, & Liu, 2009). For example, when exposed to a limited assortment of six jams, consumers were more likely to purchase the product than when 24 different jams were available (Iyengar & Lepper, 2000). The larger assortment was, in this study, evaluated as more attractive and more people actually stopped to look at the jam display stand. However, despite consumers were initially attracted towards the extensive assortment, the number of purchases did not increase. Thus, larger assortments (instead of increasing) may actually decrease sales (Borle, Boatwright, Kadane, Nunes, & Shmueli, 2005; Kuksov & Villas-Boas, 2010; Reinartz & Kumar, 1999).

Assortment structure is another variable contributing to decision complexity. The number of attributes in each assortment option and the level in which each attribute varies also determines the amount of information that individuals have to consider before deciding (Jacoby, Speller, & Kohn, 1974; Malhotra, 1982). For instance, when buying a laptop, consumers may focus on attributes such as price, brand, speed or even the software installed. Moreover, each of those attributes may vary in a wide range of levels (e.g., memory may vary from 2GB up to more than 2TB). In contrast, choosing a jam is expected to be less complex since consumers have to compare fewer attributes (e.g., price, brand, flavor, nutritional information). Also, the levels in each attribute are less diverse (e.g., the price of a jar of jam obviously varies less than the price of a laptop). Therefore, variability between attributes increases decision complexity and consumers tend to defer choice less when the difference in attractiveness among the assortment options is small (used as a measure of choice difficulty by Dhar, 1996).

In sum, consumer decisions are influenced by several factors such as the way in which options are described (Read & Loewenstein, 1995), the distinctiveness between such options

(Van Herpen & Pieters, 2007) the quantity of information under evaluation and the overall complexity of the decision-making process (Fasolo, Hertwing, Huber, & Ludwig, 2009). Therefore, recent experimental approaches to assortment size (e.g., Chernev, 2003), seek to control not only the total number of options available, but also the composition of each option under consideration.

Overview

The first goal of this research is to provide comparative evidence about the effect of different TP manipulations on consumers' decision-making. The insights provided by marketing literature on the impact of stock-out threats and price promotions on consumer behavior, as specific pressuring factors in the decision-making process, will be compared with the "classical" manipulation of TP (i.e., requesting participants to complete a task in a given time period) used in psychological research.

The second goal is to bring together two distinct experimental approaches, typically used in consumer decision-making research. Forced choice scenarios, in which participants have necessarily to choose one of the given options (Haynes, 2009) and deferral studies, where the no-choice or the deferral options are available (Dhar & Nowlis, 1999). While forced choice scenarios have been used to measure final choice utility and cognitive processing strategies, deferral studies have been focusing only on whether consumers chose or not. If both experimental paradigms can provide evidence about TP impact on decision-making (for a review see Lallement, 2010), bringing them together in the same research design may provide more comprehensive insights on the way TP affects the consumer decision-making process.

Studies using forced choice scenarios have provided important insights about the information processing models used. Specifically, under TP, consumers tend to: (a) process

information faster (e.g., Ben-Zur & Breznitz, 1981), (b) filter information (Miller, 1960), choose products using heuristics (Hamlin, 2010; Pachur & Hertwig, 2006; Scheibehenne, Miesler, & Todd, 2007; Suri & Monroe, 2003), but (c) accomplish high utility choices (Kocher & Sutter, 2006). Moreover, high utility choices may be achieved by focusing in some of the attributes (e.g., Wright, 1974) while ignoring some options in the assortment (Beach, 1993) or by using lexicographic strategies (Rieskamp & Hoffrage, 2008), such as deciding upon more visual than textual information (Pieters & Warlop, 1999). Overall, time pressured consumers clearly engage in non-compensatory processing models (e.g., Payne et al., 1988; Svenson, Edland, & Slovic, 1990).

On the other hand, and despite their focus on whether individuals decide or not, typical deferral studies may also provide interesting insights about information processing strategies. In line with the hypothesis that decision difficulty is dependent of the processing model used, evidence reveals that participants defer choice more when they are asked to use a compensatory model (Lye et al., 2005). Therefore, if decision-making is an adaptive process, when facing a significant amount of information, consumers' deferral behavior may suggest that individuals fail to adapt their decision model to the context (Scheibehenne, Greifeneder, & Todd, 2010).

In the present experiments, the deferral or no-choice option was included, but data concerning the final choice made and the processing strategy used (when a choice was in fact made) was also recorded. As argued by Dhar and Nowlis (1999) including the option to deferral does not necessarily facilitate decision-making, given that individuals face two decisions: (1) whether they are willing to choose or not; and if so (2) which option to select. Therefore, the inclusion of a non-choice option was made in full awareness that the task may become harder for participants. The advantages in doing so are the increased realism of the experimental scenario,

which is a good proxy to real life decisions, and offers the possibility of comparing both processing strategies, deferral and final choice utility. Assortment size was also manipulated to better understand the effect of different complexity degrees in the decision-making process under different TP conditions. Finally, we have also addressed product type, including consumer goods (digital camera, Experiment 1) and services (accommodation, Experiment 2).

Study 1: Influence of Time Pressure and Assortment Size in Consumer Goods Choices

Participants were given the opportunity to choose a digital camera in an e-commerce store. The experimental scenario was a reproduction of an actual e-commerce platform, framing this research as an ecological representation of a real consumer decision-making process.

TP was introduced in three experimental conditions through the information presented in the website header. Specifically, participants were either informed about: (1) a *promotion* that only lasted for the next three minutes; (2) the need to *accomplish the task* in three minutes; and (3) the danger of *stock-out* due to other online visitors. In the control condition, time constraints were not mentioned. Assortment size was manipulated by presenting either 8 or 32 digital cameras.

In line with the reviewed literature, when exposed to TP and when facing complex decisions (similar attractiveness levels) participants are expected to: defer less (Dhar & Nowlis, 1999); use non-compensatory information processing strategies (Payne et al., 1988; Payne et al., 1996) and ground their decisions on a limited set of product attributes (Wallsten & Barton, 1982); but still accomplish good final choices (Kocher & Sutter, 2006). Hence, we predict TP to:

(a) induce non-compensatory information processing strategies, (b) decrease decision deferral for larger assortments, but also (c) allow high utility choices across conditions.

Method

Participants and Design

Participants were 322 individuals (97 male; $M_{age} = 33.28$, $SD = 11.18$ and 225 female; $M_{age} = 30.01$, $SD = 10.76$) who voluntarily participated in an online survey and were randomly assigned to one condition of a: 4 (TP: control group - no mention to time constraints; classic experimental TP - 3 minutes to complete the task; price-promotion - 3 minutes to benefit from the promotion; stock-out threat - without a specific time deadline) x 2 (assortment options: 8 vs. 32) between-subjects design.

Procedure

Participants were recruited from universities and associations of young professionals, and volunteered to answer a Qualtrics online survey about "online stores and e-commerce processes". Initial instructions made clear that all the data collected would be treated anonymously and participants could terminate their collaboration at any point just by closing the browser. After giving informed consent, we asked participants to imagine they had won a 7-day cruise. The scenario also emphasized that participants did not own a digital camera to take along and should visit an online store to buy one. To ensure that all camera options presented would be considered highly attractive (Chernev & Hamilton, 2009), the online store was presented as a leader in e-commerce with excellent assortments and competitive prices. Instructions clearly stated that participants were free to defer their decision, or even, to search more information by visiting

another website. It was also highlighted that their decisions should be as similar as possible to a real life situation.

Independent variables

Time Pressure. TP for both classic experimental and price-promotion conditions was manipulated by giving participants a total of 3 minutes to make their decision¹ and by presenting a counter in countdown on the survey page. Variable operationalization and instructions given to participants are presented in Table 1.

[INSERT TABLE 1]

Assortment. Assortment size was manipulated by testing two assortment sizes, namely eight and 32 options (Diehl & Poynor, 2010). Furthermore, since cognitive complexity of the decision-making process depends also from the set of attributes and levels used to describe each option (Chernev, 2003), each option presented to the participants, in both types of assortment, was described with the same five attributes. Summing the five attributes and their respective levels there were a total of 11 levels under evaluation (see Table 2).

[INSERT TABLE 2]

Dependent variables

Deferral. Deferral was measured by registering participants' clicks on a button at the end of each assortment presentation stating "Search for other alternatives now or Search later".

Cognitive Processing Strategies. To identify the cognitive processing strategies, the relative importance given by participants to each attribute, while deciding, was measured using a regression model that quantified the weight of each factor (attribute level) on the final choices

¹ A pilot survey (n = 19 participants) confirmed that a 3m period was perceived as adequate to evaluate of 30 products.

made. To allow the statistical test of several factors without testing every possible combination of factor levels an orthogonal design was generated. The orthogonal plan has successfully generated eight product descriptions, the minimum number of digital cameras profiles needed to assess the relative importance of each factor. To generate the larger assortment (32) the same orthogonal plan was used but with 24 holdout cases (the procedure allows the experimenter to request extra product descriptions without compromising the orthogonal design). Compensatory strategies would then be inferred from participants that took all of the attributes under consideration and non-compensatory strategies from those who did not consider some of the attributes as relevant to the decision.

Final Choice Utility. To measure final choice utility the real value of each option had to be quantified. In a previous pilot survey (N = 42), 63 digital camera brands (logo and image of the digital camera) were evaluated in a 9-point Likert type scale (1 = *I would never buy it* to 9 = *I would buy it for sure*). Subsequently, the 16 brands with the highest and the 16 with the lowest evaluation were selected to compose the final assortment (32), and were classified either as highly attractive brands (valued with 2 points for choice utility) or as non-attractive brands (valued with 1 point). All levels in the remaining attributes - price, zoom, delivery availability and costumers' referral rates - were also classified according to their predicted desirability. For example, items with lower price were rated higher (e.g., 2 points) than items with higher prices (1 point), the highest optical zoom option was rated higher (3 points), followed by the average optical zoom (2 points) and the lowest optical zoom option (1 point). Immediate availability obtained higher scores (2 points) than delivery in 7 days (1 point), and the highest referral rate obtained 2 points and the lowest 1 point. After computing and summing all the scores for each

item in the assortments (generated randomly through the orthogonal plan), the final utility of each choice was obtained (ranging from a minimum of 6 and maximum of 11 points).

Control Questions. To check the effectiveness of the experimental manipulations, at the end of the study participants were asked a set of questions (in 9-point Likert type scales):

Perceived time pressure. Perception of time available for decision-making questions were: “Do you believe you had enough time to make a good choice?” (1 = *Not at all* to 9 = *Very much*); “Do you believe you had enough time to carefully evaluate each item available?” (1 = *Not at all* to 9 = *Very much*), and the extent to which they felt time pressured to decide “How pressured did you feel while making your decision?” (1 = *Not pressured* to 9 = *Highly pressured*; see Dhar & Nowlis, 1999; Inbar et al., 2011; Pieters & Warlop, 1999).

Assortment size. To control assortment size manipulation, participants were asked: “How do you evaluate the options available in the present website?” (1 = *Few chances of finding the best option* to 9 = *A lot of chances of finding the best option*; Iyengar & Lepper, 2000).

Additionally, to examine if cognitive overload was experienced in larger assortments we asked participants: “How do you evaluate the buying process in the present website?” (1 = *Not Confusing at all* to 9 = *Very Confusing*; 1 = *Not hard at all* to 9 = *Very hard*; and 1 = *Not exhausting at all* to 9 = *Very exhausting*; Diehl & Poynor, 2010).

Realism of the Experimental Scenario. A final question was used to tap whether participants felt as if they were making a real decision “How likely would you visit such a website in a real life scenario?” (1 = *Not probable* to 9 = *Highly probable*; Thomas et al., 2010).

Results and Discussion

Manipulation Checks

A set of analysis performed on the manipulation check variables confirmed that all the manipulations were successful. Specifically:

Perceived Time Pressure. The items “Do you believe you had enough time to: a) make a good choice? and b) to carefully evaluate each item available?” were significantly correlated ($r = .859, p < .001$) and therefore averaged into a single item renamed as “time for evaluation”. As expected there were significant differences between the TP conditions both for the time evaluation index $\chi^2(3) = 20.163, p < .001$ and the item assessing perceived TP (i.e., “How pressured did you feel while making your decision?”), $\chi^2(3) = 43.887, p < .001$. Results indicated that participants in the control and stock-out threat (without reference to a specific time limit) conditions were the ones reporting having more time for decision-making, and feeling less time pressured. Participants in TP conditions with specific time limits reported less time for decision-making and feeling more time pressured (see Table 3).

[INSERT TABLE 3]

Assortment Size. Results indicated that the manipulation used was successful: participants facing the small assortment ($M = 4.30, SD = 1.97$) reported lower evaluations of the options available (i.e., perceived fewer chances of finding the best option) when compared with those presented with the large assortment size ($M = 5.55, SD = 2.11$), $Z = -4.457, p < .001$.

Cognitive Overload. To measure overload, the three items evaluating whether the choice task was perceived as difficult, confusing, or tiring ($\alpha = .848$), were averaged into a single item and compared across the different TP manipulations (see Figure 1).

[INSERT FIGURE 1]

Results confirmed that being exposed to larger assortments generated higher cognitive overload ($Z = 3.187, p < .001$). Nevertheless, when comparing the level of overload reported for

different assortment sizes and for each TP condition, significant differences were only observed in the Experimental TP condition.

[INSERT TABLE 4]

Realism of the Experimental Scenario. The experimental scenario created was evaluated as realistic (t tests against scale midpoint, 5) by participants in all TP conditions: Control ($M = 5.96$, $SD = 2.62$), $t(66) = 2.99$, $p = .004$; price promotion TP ($M = 6.00$, $SD = 2.79$), $t(38) = 2.24$, $p = .031$; stock-out threat TP ($M = 6.54$, $SD = 2.29$), $t(60) = 5.29$, $p < .001$; and classical experimental TP condition ($M = 6.48$, $SD = 2.49$), $t(30) = 3.32$, $p = .002$. Also, participants in both large ($M = 6.56$, $SD = 2.41$), $t(99) = 6.409$, $p < .001$, and small assortment conditions ($M = 5.90$, $SD = 2.62$), $t(97) = 3.442$, $p < .001$) reported visiting a similar website in a real context as highly likely.

Main Dependent Variables

All participants that choose to quit the survey after being exposed to the assortment (for more than 1 second) were included in the final sample and their choices were coded as deferral. Deferring a choice online reflects exactly our participants' behavior: switching off the browser, moving to another window or tab. The inclusion of such participants has obviously some foils, because data has some missing values, namely regarding manipulations check data. Nevertheless, the aim to conduct an experiment with higher ecological validity, capturing real life behavior, as much as possible, prevailed.

Information Processing Strategies. As an alternative to full-profile conjoint models we choose to run a logit model, also designated as choice-based conjoint analysis (e.g., Loebnitz, Loose, & Grunert, 2015; Louviere & Woodworth, 1983; Manski & McFadden, 1982). Since full-profile conjoint analysis requires that participants rate every option and combination possible to

quantify the utility of each attribute (Green & Srinivasan, 1978), several authors have been warning that such unrealistic cognitive effort may skew results (e.g., Orme, Alpert, & Christensen, 1997). Evaluating and rating every single option hardly reflects real choice behavior because most consumers do not look through every single item to choose. Therefore, to examine the information processing strategies a logistic regression (Gourville & Soman, 2005; Gunasti & Ross, 2009; Novemsky, Dhar, Schwarz, & Simonson, 2007) was projected for each TP condition, being the dependent variable the Log Ratio of choosing (or not) a given option in the assortment. Each attribute and its respective levels were the factors under analysis (see Table 4), functioning as predictors of the final choice. Such method reveals the factors used to ground individual decision and the comparison across conditions depicts TP effect on such processing strategies. All the models projected with small assortments failed to reach significant levels, making impossible to identify information processing models when the amount of information under evaluation was low. Models built upon large assortment conditions, however, were all significant and the results are presented in Table 5.

[INSERT TABLE 5]

As expected, results indicated that when choosing a product, the “default” processing strategy (control condition) can be classified as a compensatory one. Participants decided upon all available attributes (except for referral), with brand and price being the most powerful final choice predictors. However, some of these attributes seemed to have a negative predictive power. For instance, cameras with 25x optical zoom and 6x digital zoom and cameras with higher optical zoom 30x and even smaller digital zoom 5x decreased the logged odds of the camera being chosen ($B = -1.936$ and $B = -1.202$, respectively).

These results indicated that customers prefer the dummy category that presented a smaller optical zoom 15x, but a comparatively higher digital zoom 10x. Please note that the total zoom, multiplying optical per digital zoom, is equivalent in all options. Nevertheless, from a technical point of view, optical zoom produces higher quality images than digital zoom, thus being classified as superior. In the same way, immediate availability seemed to have a negative effect on the final choice. Such results are in line with previous studies showing that consumers tend to prefer products that are not available (e.g., Ge et al., 2009).

Importantly for our first hypothesis regarding the effects of the different TP conditions, the predicted engagement in non-compensatory strategies was observed. Classic experimental TP induced participants to engage more in non-compensatory processing strategies. When asked to complete a task in a specific time period participants made their decision based on the brand only, $B(1) = 1.894, p = .003$. Both in price-promotion and stock-out threat conditions participants appeared to have also used non-compensatory strategies. Nevertheless, they did so in a less extreme way, that is, grounding their choices in more than one single attribute (brand), namely zoom features in the promotion TP and in price and availability in stock-out threat.

Choice Deferral. In line with previous research (e.g., Dhar & Nowlis, 1999), a logit model was developed to test the hypothesis that TP and higher decision complexity (larger assortments) lead to deferral decrease. The dependent variable was the Logs Ratio of choosing or not. The model was developed ascribing the control group in TP manipulation and the small assortment group in the assortment size manipulation to the baseline condition. Both main effects as well as interaction effects of TP and assortment size were assessed (see Table 6).

[INSERT TABLE 6]

The results presented in Figure 2 reflect the main effect of classic Experimental TP on deferral decrease, $B(1) = 2.142, p = .045$. In both assortment conditions, participants significantly choose more, not deferring their decisions, when facing experimental TP than in any other condition (see Figure 2).

[INSERT FIGURE 2]

As in previous studies (Dhar & Nowlis, 1999), Experimental TP decreased deferral, and induced participants to make prompt decisions. There were no further significant differences between assortment sizes or among other TP conditions. Results confirmed previous evidence of TP impact on deferral, but failed to confirm our second hypothesis that all TP conditions would decrease deferral when choosing from large assortments. First, the effect of TP on choice deferral had no interaction with assortment size, $B(1) = .532, p = .254$, occurring also in small assortments. Second, stock-out threats and price-promotions failed to reduce deferral in consumer decision-making. Since only experimental TP manipulation replicates previous evidence on choice deferral while both of the more ecologically valid TP manipulations failed to do so, initial concerns about the ecological validity of classic TP manipulation seem to be corroborated. Such assumption will be developed further in the final discussion.

Final Choice Utility. To test our prediction that final choice utility would remain high across all TP and assortment size conditions, we calculated the final utility of each option and compared the results across conditions. No significant differences between TP manipulations, $\chi^2(3) = .934, p = .817$, as well as between assortment sizes ($Z = -1.376, p = .169$) were observed. As expected, despite TP or increasing decision complexity due to assortment size, participants were still able to make good utility choices: control TP ($M = 8.66, SD = 1.16$); experimental TP

($M = 8.98$, $SD = 1.78$); price promotion TP ($M = 8.74$, $SD = 1.62$); stock-out threat ($M = 8.73$, $SD = 1.53$); small assortment ($M = 8.62$, $SD = 1.84$); large assortment ($M = 8.88$, $SD = 1.31$).

In short, results from Experiment 1 indicated that (a) non-compensatory strategies to process information emerge when any kind of TP is imposed and when individuals face large amounts of information (large assortment); (b) decision deferral only decreases when individuals are specifically told to complete the task in a given time interval (experimental TP condition) and that (c) choice utility remains high, independently of the TP conditions.

To acknowledge that different TP manipulations have distinct effects on deferral may have considerable practical implications. Given that only experimental TP reduced decision deferral (while the TP manipulations that are more akin to real-world situations did not) the generalization of the impact of TP to real life consumer decisions, namely in compelling consumers to decide promptly, needs to be addressed with caution and certainly requires further examination. In a second study we examined the effects of the same TP and assortment size manipulations in the final decisions about a service.

Study 2: Influence of Time Pressure in Service Choices

Most of the evidence on the effects of TP in consumer decision-making has been focusing on goods, while evidence about services remains sparse. From a marketing point of view services have different characteristics. Services lack tangible components such as weight, size or even color which have an evident impact on how consumers and merchants see them (Bebko, 2000). One cannot store services as toys, paper or pencils because services perish (for a review on service marketing “P”s like *Perishability*, see Swartz & Iacobucci, 2000) and that constitutes a

major challenge for management. On the other hand, such an intangible nature makes it harder for consumers to decide between options. For example, one can evaluate two lipsticks, try them out before choosing, but when it comes down to a haircut there is no way of weighting, measuring or previously testing the final outcome. Furthermore, this intangible nature of services has severe implications in a stock-out scenario. When we are searching for services there is a lower probability of finding the exact same offer in any other provider: one flight seat on a particular day to a specific destination, a dinner table in the fanciest restaurant on Valentine's day or a specific house to rent are hardly replaceable.

Mowen and Minor (2003) reported that the strategy used by consumers to process information depends on the type of product in question which, in turn, determines how involved consumers are in the decision-making process. Non-compensatory information processing occurs more often when consumers decide upon low involvement products (i.e., those that imply simpler buying decisions - like commodities - or that are more familiar to the consumer, Solomon, 2002). Extending such considerations to a service level, we may argue that despite the consequences of service intangibility and perishability, the fact that, in general, they imply a single occurrence (e.g., dinner service, flight or accommodation) may render them to be classified as low involvement. Notably, like there are low involvement consumer goods such as commodities (e.g., toilet paper or napkins) and high involvement consumer goods (e.g., cars or laptops), the involvement level of services may also vary. The choice of an accommodation for a honeymoon will surely be made more carefully than a single night in a hotel for a business trip. Therefore, we can expect that when consumers decide upon a new laptop, TV, a car or a restaurant to announce their engagement, the experience resulting from their decision will last longer. Such assumption is corroborated by evidence suggesting that purchasing more durable or

expensive products or making purchases for which consumers expect to be held accountable by others, lead to more careful information processing (Ben-Zur & Breznitz, 1981), smaller impact of peripheral cues (Petty, Cacioppo, & Schumann, 1983) and more reflective decisions (Strack & Deutsch, 2006).

In line with the assumption that some services may be considered equivalent to low involvement products, we asked participants to visit a website to choose accommodation for a single night. As in the first experiment, the website header was similar to a well-known online accommodation booking provider and each assortment was presented in an attractive and standardized way, combining an image stimulus with text describing each option. As described in the following sections, all the manipulations were similar to Experiment 1.

Our hypotheses were the following: (a) as default, participants should use non-compensatory strategies to process service options information, and under TP conditions, the examination of the information should be even more superficial; (b) deferral decision should decrease for larger assortments across all TP conditions, being such decrease more relevant in the stock-out threat since it emphasizes service perishability, and (c) choice utility should remain high across all TP and assortment size conditions.

Method

Participants and Design

Participants were 268 individuals (104 male; $M_{age} = 32.36$, $SD = 12.22$ and 163 female; $M_{age} = 28.37$, $SD = 10.71$) who voluntarily participated in an online survey and were randomly assigned to one condition of: 4 (TP: control group - no mention to time constraints; classic experimental TP - 3 minutes to complete the task; price-promotion - 3 minutes to benefit from

the promotion; stock-out threat - without a specific time deadline) X 2 (assortment options: 8 vs. 32). Both factors were manipulated between-participants.

Procedure

The experimental scenario included the same cover story about the 7-day cruise imaginary prize. However, instead of buying a digital camera, participants were asked to choose accommodation for the night prior to boarding. Again, to ensure that participants would consider all options presented as highly attractive, the online store was presented as having great customer referrals because of its high quality. The deferral option was made available and, as in Experiment 1, a button for such option was added to the assortment.

To ensure that task complexity was comparable to Experiment 1 the number of options in each assortment (i.e., 8 and 32), number of attributes (i.e., 5) and number of total levels under evaluation (i.e., 11) were kept constant. Nevertheless, the attributes chosen for this scenario were changed to be consistent with the required decision (Table 7).

[INSERT TABLE 7]

TP manipulation was similar to the one used in Experiment 1: in the experimental TP condition participants were given 3 minutes for task completion and the web page displayed a countdown clock; in the price-promotion TP condition the website header adverted for the 50% off promotion for shopping made within the next three minutes (the same countdown clock was shown); in the stock-out threat TP condition, the website header text was adapted: “there are only 5 beds left in this accommodation and 15 visitors online. Book right away!” (no clock was shown); and in the control condition no TP information or countdown was introduced.

Dependent Variables

All the dependent variables were similar to the ones used in Experiment 1, namely:

Deferral. Deferral was measured by adding a button stating “Search for other alternatives now or Search later”.

Cognitive Processing Strategies. The relative importance given by participants to each attribute while deciding was measured using a regression model that quantified the weight of each factor on the final choices made. The presentation of each item in the assortment was developed with the same orthogonal design used in Experiment 1.

Final Choice Utility. Again, to measure final choice utility, the real value of each option was quantified. In a previous pilot survey ($N = 40$), 90 room pictures were evaluated in a Likert-type scale ranging from 1 (*Not attractive*) to 9 (*Very Attractive*). The 16 pictures with the highest evaluation and the 16 with lowest were selected to compose the final assortment (32), and were classified either as highly attractive rooms (valued with 2 points for choice utility) or less attractive rooms (valued with 1 point).

All levels in the remaining attributes (price, room capacity, extra services and costumers' referral rates) were also classified according to their predicted desirability. For example, items with lower price were rated higher (e.g., 2 points) than items with higher prices (1 point), the highest room capacity was rated lower (1 points). As for extra services, the option with breakfast and dinner scored a higher score (2 points) while the breakfast only option scored 1 point. The highest referral rate scored 2 points and the lowest 1 point. After computing and summing all the scores for each item in the assortments (generated randomly through the orthogonal plan), the final utility of each choice was obtained (ranging from a minimum of 6 to a maximum of 11 points).

Control Questions. Control questions regarding effectiveness of the TP manipulation, assortment size and the realism of the scenario were adapted from the first experiment.

Results and Discussion

Manipulation Check

As in the first experiment, the results indicated that all manipulations were successfully manipulated. Specifically:

Perceived Time Pressure. Results replicated the ones obtained in Experiment 1. Since time-related questions were significantly and positively correlated ($r = .842, p < .001$), we averaged the scores computing the “time evaluation” variable (see Table 8). Expected differences between TP conditions were found both in time evaluation variable, $\chi^2(3) = 10.303, p = .016$, and time pressure experienced, $\chi^2(3) = 21.520, p < .001$. Participants in the control and stock-out threat conditions, both without reference to a specific time limit, reported having more time for decision-making and feeling less time pressured. Participants in the other TP conditions reported having less time for decision-making and feeling more time pressured.

[INSERT TABLE 8]

Assortment Size. This manipulation was also successful: participants facing the small assortment evaluated the options available as being worse ($M = 4.40, SD = 2.29$) than those facing the large assortment ($M = 5.14, SD = 2.34, Z = -2.222, p = .026$).

Cognitive Overload. As in Experiment 1, evaluations about whether the choice task was difficult, confusing, or tiring ($\alpha = .807$) were averaged and compared across the different TP manipulations (see Figure 3).

[INSERT FIGURE 3]

Final scores confirmed that when choosing a service, being exposed to larger assortments implies higher cognitive overload than the exposure to small assortments ($Z = 3.596, p < .000$).

Such differences were significant in experimental ($Z = -2.020, p = .043$) and stock-out threat TP conditions ($Z = -2.956, p = .003$).

Realism of the Experimental Scenario. Experimental scenario was evaluated as realistic by participants, who reported a high probability of visiting a similar website in a real context in all conditions, as confirmed by the means significantly above the scale midpoint: large assortment ($M = 6.25, SD = 2.09$), $t(71) = 5.080, p < .001$; small assortment ($M = 5.83, SD = 2.62$), $t(82) = 2.894, p = .005$; control condition ($M = 6.23, SD = 2.39$), $t(42) = 3.383, p = .002$; stock-out threat TP ($M = 6.16, SD = 2.13$), $t(30) = 3.035, p = .005$; experimental TP ($M = 6.24, SD = 2.29$), $t(40) = 3.480, p < .001$, except for the price-promotion TP condition ($M = 5.48, SD = 2.66$), $t(39) = 1.129, p = .266$.

Main Dependent Variables

As in the first experiment, participants that were exposed to the assortment for more than one second were retained and abandoning the survey was coded as deferral.

Information Processing Strategies. As in Experiment 1 a logistic regression was projected for each TP condition, being the depend variable the Log Ratio of choosing or not a particular option. Each attribute and level within, were the factors under analysis (see Table 9). Again, all models built upon small assortment conditions failed to be significant, being presented only the large assortment models for each experimental condition.

[INSERT TABLE 9]

As expected, when asked to decide upon a low involvement service like the accommodation for a single night, participants' decision without TP (control group) was based on a limited amount of attributes like the room picture, $B(1) = 1.839, p = .004$, more extra services included, $B(1) = 1.149, p = .036$, and other clients' referral, $B(1) = 1.336, p = .034$,

suggesting that a non-compensatory strategy was used. Furthermore, both price-promotion and stock-out threat appeared to imply similar processing strategies. In price-promotion condition the factors used to decide were room picture, $B(1) = 1.903$, $p = .020$, and room price, $B(1) = 2.902$, $p = .008$, when facing a stock-out threat participants selected their room based only on the room picture, $B(1) = 2.436$, $p < .001$. Such results confirmed the hypothesis that non-compensatory strategies were used to decide upon low involvement services, even in the absence of TP and get more extreme when the TP manipulations were introduced. Nevertheless, experimental TP condition produced unexpected effects. Despite the nature of the choice (service / low involvement) participants seem to have changed their information processing strategy, and engaged in compensatory models. In this condition all factors were carefully examined (excluding room capability) and had a significant impact in the final decision.

It seems that, when asked to accomplish a (experimental) task, participants altered their “typical” behavior, abandoning the non-compensatory processing strategy. Such evidence seems to explain previous findings about the consequences for decision-making of focusing participants in the task completion. When participants are warned, previously to decision-making, that they will have to justify their decisions, they engage in easier to explain, more rational decisions (Sela et al., 2009), and report that it is harder to decide (Scheibehenne, Greifeneder, & Todd, 2009). Considering this pattern, we hypothesized that when consumers focus on task completion: (a) a shift towards compensatory information processing strategies occurs, and (b) that the usage of such demanding information processing strategies raises decision-making difficulty, affecting the final choices made. Importantly for the implications of the present study, the behavior shift observed in participants in the Experimental TP condition, did not reproduce the behavior of

participants in other TP conditions, suggesting that the outcomes observed in experimental TP conditions may not reflect the behavior of real life pressured consumers.

Choice Deferral. In line with Experiment 1, a logit model was developed, with Logs Ratio of choosing or not as dependent variable. The model measured main effects of TP condition and assortment size as well as interaction effects (see Table 10).

[INSERT TABLE 10]

Overall, deferral did not decrease in any TP condition when compared with the control group. Therefore, while the results from Experiment 1 replicated previous evidence of TP effects on deferral, that is not the case in the present experiment.

Nevertheless, the interaction effect derived from the perishable nature of services emerged. When exposed to large assortments in a stock-out threat condition, participants choose more, decreasing deferral, $B(1) = 1.596, p = .024$. Therefore, when facing a complex decision and the possibility of option unavailability participants were compelled to decide.

Final choice utility. Based on participants' ratings of all the attributes, final choice utility was calculated for every assortment option (ranging from 6 to 11).

[INSERT FIGURE 5]

As depicted in Figure 5, when choosing a service, stock-out threat lead to significantly worst decisions ($M = 8.42, SD = 1.50$) than price-promotions ($M = 10.00, SD = 0.82$), $Z = -3.596, p < .001$. Here the perishable nature of the service seemed to be the underlying motive for such results. When a non-replaceable option is about to become out of stock, consumers become eager to decide, deferring less, and seemingly, making worse decisions.

General Discussion

In two experiments we tested the combined effect of assortment size and TP, manipulated in three conditions – experimental, price-promotion and stock-out threat. Results were analyzed upon decision deferral, information processing strategies and final utility choice for a consumer good (Experiment 1) or for a service (Experiment 2).

In a high involvement decision scenario (consumer good), the effect of experimental TP was replicated across the three levels under evaluation – participants deferred their choices less, they used non-compensatory strategies and the final utility of the decision was high. Yet such findings failed to be reproduced in the other two TP manipulations (i.e., price-promotion and stock-out threat). This highlights that the conclusions deriving from evidence obtained with classic experimental TP manipulations may not be directly generalizable to real consumer decision-making scenarios.

As expected, in a low involvement decision scenario (service), consumers “default” (control condition) information-processing strategy was non-compensatory. However, experimental TP produced an interesting unexpected effect. There was no decrease on deferral rates and participants shifted towards compensatory processing strategies (final choice utility remained high). Furthermore, stock-out threat affected consumer decision-making, decreasing deferral (in the large assortment condition), lead to non-compensatory strategies and significantly decreased final choice utility. Again, these results raise important questions regarding experimental TP manipulation and its effects. The shift in the information processing strategy observed in the classical experimental TP manipulation may suggest that participants felt compelled to fulfill successfully the experimental task, not reacting to time pressure as they would do in a real scenario (price-promotion or stock-out threat).

Overall, the hypothesis regarding the adoption of non-compensatory decision strategies when deciding in TP conditions was supported in both experiments across all TP manipulations (except for the classic experimental TP manipulation in the service decision). Results also indicated, in line with the imagetic theory advanced by Beach (1993), that TP increases the usage of picture stimulus (like room picture or logo and digital camera picture), rather than taking all of the attributes into consideration to support the decision.

Instead of manipulating the presence of equally attractive options (Dhar & Nowlis, 1999), we chose to vary assortment size to introduce another variable - cognitive complexity. Experimental manipulations of assortment size were successful, since participants in the large assortment condition reported finding the best option as more likely. Nevertheless, the assortment size variable only had a clear effect on the stock-out threat condition in a low involvement scenario (service). Such finding corroborates final choice utility literature, confirming that consumers shift in processing strategies allows them to cope efficiently with more complex decision-making scenarios. Thus, despite the TP felt, the assortment size did not affect their ability to decide or the utility of their final choices. The exception was, as mentioned, the stock-out threat in a service scenario. It may be argued that since services are perishable, and irreplaceable to a certain extent, choosing (or not) may imply more severe consequences. So, in such a stark scenario, having more options to look upon may fuel the decision-making process.

Since deferral effects were not constant across TP manipulations in both low and high involvement (consumer good or service) decision-making situations, we can only conclude that TP types have different consequences. And, if so, we can argue whether participants in previous research defer less because they felt time pressured or because they were attempting to successfully accomplish the experimental task proposed. Indeed, the results obtained in the

service decision-making task seem to suggest that in the classical TP experimental condition, participants felt the decision-making process as more important (adopting compensatory strategy rules). What if the smaller deferral rate observed in the product scenario is only another indication of the same phenomena – compliance or greater effort to accomplish the task? Indeed, deferral decreased under experimental TP (Experiment 1), promoting a more extreme engagement in non-compensatory strategies in a scenario where the “default” decision strategy is compensatory (consumer good scenario). TP is expected to enhance non-compensatory decision models, based in sensorial attributes such as design (Cohen, Pham, & Andrade, 2008; Shiv & Fedorikhin, 1999). However, we have observed that in a service (low involvement) scenario, experimental TP had the opposite effect (whilst other TP manipulations still induced non-compensatory strategies). Again this result questions what it is really being measured with experimental TP manipulations and to what extent can we use such evidence to make assumptions about real-world consumer decision-making behavior.

Despite the adoption of different processing strategies, final decisions maintained their quality. Our data supported such hypothesis, with one exception though – stock-out threat in the service scenario. Findings suggest that stock-out warnings (extensively used by online service dealers such as flight companies) have a high impact on consumers. Choice increases significantly, extreme non-compensatory strategies are implemented and final choice average utility scores drop down in a significant manner.

Our main conclusion is that high involvement products such as the consumer good examined (digital camera) are chosen after a more careful, cognitive exam. Participants looked through information in a compensatory way, achieving good results from the utility point of view. However, all TP conditions lead participants choosing consumer goods, to engage in non-

compensatory strategies. Thus, if merchants are using TP techniques to simply increase sales, this goal may not always be accomplished: consumers do not defer less when choosing high involvement products because of any time pressure type. Our data suggests, however, that by inducing non-compensatory decision strategies, TP highlights some attributes of the options in the assortment, shadowing others. Indeed, image stimuli became more relevant to decision-making in TP scenarios, suggesting that merchants would benefit if they included attractive images of their products in promotions or other campaigns. On the other hand, if a strong and robust (high involvement) product is to be sold, TP may be counterproductive, restraining consumer attention from relevant attributes.

Low involvement services like accommodation tend to be evaluated by “default” in a more perceptual manner (Langner & Krenzel, 2013) and experimental TP seems to reverse this information processing strategy since it creates task awareness. Imagining a scenario where a service that is above the average is being put to the market, the best option would be to highlight the importance of making a good decision (creating task awareness) and promoting a consumer decision process that is more conscious (compensatory). Consumers must be aware, though, of the extreme effect of stock-out threats in this kind of decision-making. Such marketing strategy appears to be extremely effective in urging consumers to decide (when the decision is complex as with large assortments), making their decision rules weaker (extreme non-compensatory processing) and significantly reducing final choice utility.

Framing our results for theoretical and methodological considerations, it seems that there is a lot to be gained from introducing new TP manipulations in experimental scenarios, thickening a more ecological body of research about time pressure effects (e.g., De Paola & Gioia, 2016). Future studies should also consider product type and the relevance that each

particular item may have to the consumer. In fact, those distinctions may also be useful to re-examine previous findings given the diversity of decision targets included - from binoculars or shaving machines (Dhar, 1997) to CDs, dating services or flavored water (Chernev & Hamilton, 2009). Indeed, if TP induces stress and diminishes our capability to process information, but the level of stress felt is dependent on the decision meaning (Janis & Mann, 1977) then different TP types may impact differently on consumer behavior. Across experimental scenarios cognitive complexity of the decision was always higher in large assortments. However, higher complexity only affected consumer choices (i.e., deferral, processing strategy and final choice utility) when participants had to choose a service facing a stock-out threat.

Limitations and Avenues for Further Research

The role of assortment size manipulation as an inducer of cognitive complexity must be addressed in future studies. Despite the effectiveness of the assortment size manipulation (i.e., when facing large assortment sizes participants were better at evaluating their options), larger assortments did not produce consistent effects on cognitive overload across TP conditions. Therefore, other complexity levels must be tested, using a varying number of assortment options and attributes (ideally, an inverted U distribution; Chernev & Hamilton, 2009).

Furthermore, other price-promotion or promotion manipulations should be tested. Several marketing authors have been arguing that certain promotions (e.g., "x% off") have lost their strength, with consumers nowadays being suspicious and negative about price promotions (e.g., Garbarino & Lee, 2003; Grewal, Hardesty, & Iyer, 2004) and more sensitive to other type of promotions (e.g., coupons, Suri, Swaminathan, & Monroe, 2004).

More evidence is needed about the differential effects on low and high involvement products and services. Do TP manipulations have equivalent effects in low involvement products

and low involvement services? Do consumers also process high involvement services in a non-compensatory way, due to its perishable nature? Or, is the processing of these services similar to the one observed for high involvement products?

On the other hand, fundamental differences between the way consumers decide about low and high involvement products may request another caveat: consumers seem to defer important decisions more than unimportant decisions (Krijnen, Zeelenberg, & Breugelmans, 2015). Current evidence does not support for such assumption, highlighting the need for further research.

Our experiments manipulated assortment as a whole, and not upon one option (we did not try to induce participants towards a particular option, like retailers and brand managers often do). In this domain, Sugden, Wang, and Zizzo (2015) found with a somehow complex lottery game that consumers are more likely to choose offers that are time-limited. Therefore, in order to achieve an even more ecological experiment these effects upon a particular option of the assortment should be tested. For instance, measuring if discounting one product or associating such product to TP (e.g., "Brand A is about to stock-out" or, "Buy Brand A today and get X% off"), would raise the odds of that product being selected.

Finally, new research integrating the role of cultural characteristics such as time orientation (Legohérel, Daucé, Hsu, & Ranchhold, 2009, for a very recent international analysis, Wang, Rieger, & Hens, 2016) and time perception (e.g., Lakens, Semin, & Garrido, 2011; see for reviews Semin, Garrido, & Palma, 2013; Semin, Farias, & Garrido, 2014; Semin & Garrido, 2015) is suggested. A better understanding about the way consumers subjectively experience time pressure may help discriminate incongruent results and fully explain consumer behavior within diverse contexts.

Implications

Our goal of contributing to TP research in consumer decision-making behavior was accomplished with the introduction of new TP manipulations and also by the simultaneous examination of different dependent variables, which have been separately investigated in previous research. The funneled approach used - first measuring deferral, then examining cognitive processing strategies and then, in the same sample, assessing the final decision utility - is likely to contribute to the current understanding of consumer decision-making processes and outcomes. The present experimental design may be considered as the first integrative attempt to bridge several findings regarding the impact of TP in consumer decision-making. Analyzing the effect of TP on deferral in a first stage of decision-making and subsequently on the information processing models adopted and final choice utility accomplished, may provide a deeper and more holistic look into consumer decision-making.

As we noted, in several daily choices consumers face different TP types that may cause direct changes in their decision-making. Therefore, if consumers may benefit from acknowledging retailers' strategies to induce sales, becoming aware of the impact that attractive images may have when deciding on a rush, managers, on the other hand, may profit from understanding the behavioral consequences of different cognitive processing strategies consumers engage in. If TP increases the relevance of visual attributes (Lynch & Ariely, 2000) managers should be fully aware about how and when this happens. Managers ought to know that a bad cover picture may be an immediate sales killer, whereas a good picture combined with TP may even beat deals with better value. Such knowledge may help coordinate promotional allocations and overall pricing strategies for products, allowing for a better optimization of marketing investments.

Marketing standard models are being challenged in this new era of global and instant competition. Being the present marketplace clearly overcrowded and consumers increasingly savvier, professionals must ponder more carefully which products to develop and how to do it in a compelling way, which are the most suitable promotional strategies to boost sales without any pitfalls in the long run and, how to manage stocks avoiding a backlog of excessive inventory or an over complex supply chain. Research so far has provided interesting insights to support daily decisions, but more straightforward evidence is needed. Applied research projects as the present one may provide interesting leads to improve current marketing practices.

Overall, the present results and the future research avenues they may encourage are likely to have important implications. Managers can improve their strategies to really push their products and services. Researchers may reflect upon this new methodological framework and conceptual insights. Finally, consumers can acknowledge the persuasive mechanisms that are used to induce and shape their own choices, becoming aware of the potential impact of marketing actions and how contextual variables as time pressure or assortment size may affect their daily decisions.

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Tables

Table 1.

Operationalization of the TP Manipulations

Condition	Operationalization	Instructions
Classic experimental	3 minutes limit (Counter in countdown)	"You have 3 minutes to complete the task"
Price-promotion	3 minutes limit (Counter in countdown)	"50% off in the next 3 minutes! What are you waiting for?"
Stock-out threat	No time limit (Counter absent)	"23 visitants online and there are only a few units left for delivery, what are you waiting for?"
Control	No time limit (Counter absent)	No mention to any time frame for task completion

Table 2

Attributes and Levels Used to Describe each Assortment Option

	Attribute (levels)
Brand (logo and image of the digital camera)	1 - Unknown brand 2 - Well-known brand
Price (presented as text)	3 - 76,99€ 4 - 99,49€
Optical and Digital Zoom (presented as text)	5 - Optical Zoom 15x Digital Zoom 10x 6 - Optical Zoom 25x Digital Zoom 6x 7 - Optical Zoom 30x Digital Zoom 5x
Delivery Availability (presented as text)	8 - Immediately available 9 - Delivered in 7 days
Costumers referral rates (presented as text)	10 - 85% recommends 11 - 89% recommends

Table 3

Time Pressure Manipulation Check

	Time Evaluation		Experienced Time Pressure	
	M	SD	M	SD
Control condition	4.57 ^a	2.30	4.11 ^a	2.21
Price-Promotion TP	3.27 ^b	1.98	6.43 ^b	2.21
Stock-out threat TP	4.51 ^a	2.46	4.19 ^a	2.40
Experimental TP	2.90 ^b	1.91	6.46 ^b	2.33
	$X^2(3)$	20.163**		43.887***

* $p < .100$ ** $p < .050$ *** $p < .001$

Table 4.

Time Pressure Manipulation Check

	Assortment Size Large'Small
	Z
Control condition	-1.896*
Price-Promotion TP	-1.637
Stock-out threat TP	-.947
Experimental TP	-2.743**

* $p < .100$ ** $p < .050$ *** $p < .001$

Table 5.

Attribute Weight in a Product Decision-Making Process – Logistic Regression Models

	Control condition		Price-Promotion TP		Stock-out threat		Classic Experimental TP	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Brand (Known)	4.117***	1.026	3.174**	1.045	2.333***	.558	1.894**	.646
Price (Cheaper)	1.366**	.465	.833	.707	1.772**	.513	.641	.548
Features (Medium Quality)	-1.936**	.570	-.320	.638	-.522	.489	-.010	.643
Features (Superior Quality)	-1.202**	.405	-1.458**	.713	-.516	.456	.145	.563
Availability (Immediate)	-1.052**	.351	-.710	.560	-1.036**	.395	-.712	.493
Referral (Highest)	-.365	.428	.968	.712	-.443	.421	.404	.523
Constant	-6.224	1.053	-6.165	1.190	-5.339	.674	-5.092	.807
Pseudo R ²	.259*		.244*		.178*		.112**	
	$X^2(1)$	87.182		33.280		48.166		17.602

* $p < .100$, ** $p < .050$, *** $p < .001$

Table 6.

Log Regression: Logged Odds of Choosing per Experimental Condition

	B	S.E.	Wald	df	Sig.
Large Assortment (32 options)	.532	.466	1.302	1	.254
TP – Time Pressure			7.310	3	.063
Price-promotion TP	-.410	.490	.701	1	.402
Stock-Out Threat	-.528	.413	1.637	1	.201
Experimental TP	2.142	1.068	4.019	1	.045***
TP * Assortment			2.722	3	.436
Price-Promotion TP*Large Assortment	-.900	.700	1.653	1	.199
Stock-out Threat*Large Assortment	-.559	.604	.854	1	.355

Experimental TP* Large Assortment	-1.680	1.284	1.711	1	.191
Constant	.903	.306	8.700	1	.003
Pseudo R2	.112***				
X2(7)	26.826				

* $p < .100$, ** $p < .050$, *** $p < .001$

Table 7.

Attributes and Levels Used to Describe each Assortment Option

Attribute (levels)	
Room (logo and image of the actual room)	1 - Highly Attractive 2 - Less Attractive
Price (presented as text)	3 - 10,99€ 4 - 12,49€
Room capacity (presented as text)	5 - 13,99€ 6 - 6 Pax
Services included (presented as text)	7 - 8 Pax 8 - Breakfast included 9 - Breakfast and Dinner included
Costumers referral rates (presented as text)	10 - 92% recommends 11 - 97% recommends

Table 8.

Time Pressure Manipulation Check

	Time Evaluation		Experienced Time Pressure	
	M	SD	M	SD
Control condition	4.98 ^a	2.12	4.40 ^a	2.14
Price-Promotion TP	3.92 ^b	2.36	5.80 ^b	2.44
Stock-out threat TP	4.89 ^a	2.08	3.85 ^a	2.12
Experimental TP	3.98 ^b	2.54	5.62 ^b	2.47
	X ² (3)	10.303**		21.520***

* $p < .100$ ** $p < .050$ *** $p < .001$

Table 9.

Attribute Weight in a Service Decision-Making Process – Logistic Regression Models

	Control condition		Price-Promotion TP		Stock-out threat		Classic Experimental TP	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Picture (Attractive)	1.839**	.645	1.903**	.815	2.436***	.754	1.842**	.650
Room capacity (6 pax)	.867	.529	.401	.706	.061	.456	.952*	.499
Price (Cheapest)	.933	.579	2.902**	1.095	-.011	.457	1.253**	.632
Price (Medium)	.987	.711	-15.150	3002.068	-.786	.669	2.019**	.912
Extra Services (Breakfast/ dinner)	1.149**	.549	18.024	2311.658	.163	.440	3.685*	1.136
Referral (Maximum)	1.336**	.630	.527	.798	.703	.471	1.603**	.818
Constant	-7.420	1.061	-24.409	2311.658	-5.590	.858	-10.265	1.698

Pseudo R ²	.185*	.439*	.139*	.294*
X ² (1)	30.896	46.929	27.481	52.228

* $p < .100$, ** $p < .050$, *** $p < .001$

Table 10.

Log Regression: Logged Odds of Choosing per Experimental Condition

	B	S.E.	Wald	df	Sig.
Large Assortment (32)	-.152	.461	.108	1	.742
TP – TIME PRESSURE			4.235	3	.237
Price-promotion TP	-.298	.485	.379	1	.538
Stock-Out Threat	-.668	.480	1.941	1	.164
Experimental TP	.330	.492	.450	1	.502
TP * Assortment			6.987	3	.072*
Price-Promotion TP*Large Assortment	-.181	.691	.069	1	.793
Stock-out Threat*Large Assortment	1.596	.708	5.082	1	.024**
Experimental TP* * Large Assortment	.352	.711	.246	1	.620
Constant	.363	.326	1.243	1	.265
Pseudo R ²	-.152	.461	.108	1	.742
X ² (7)	14.331				

* $p < .100$, ** $p < .050$, *** $p < .001$

Figures

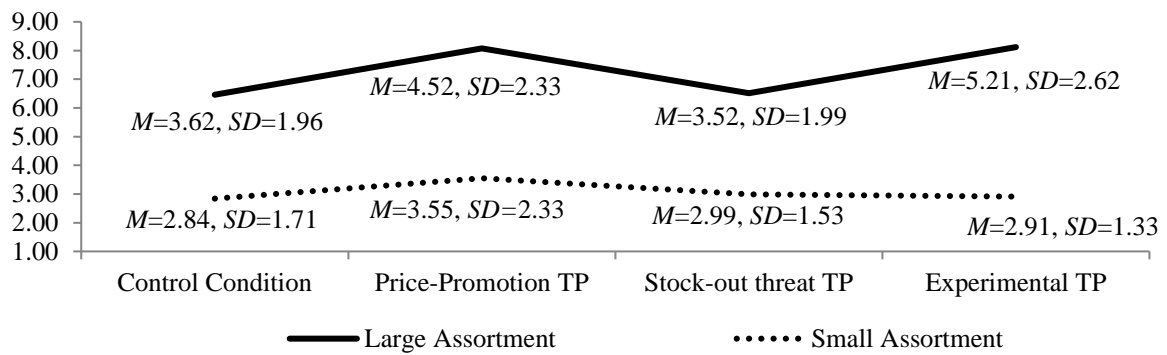


Figure 1. Choice Overload per Experimental Condition

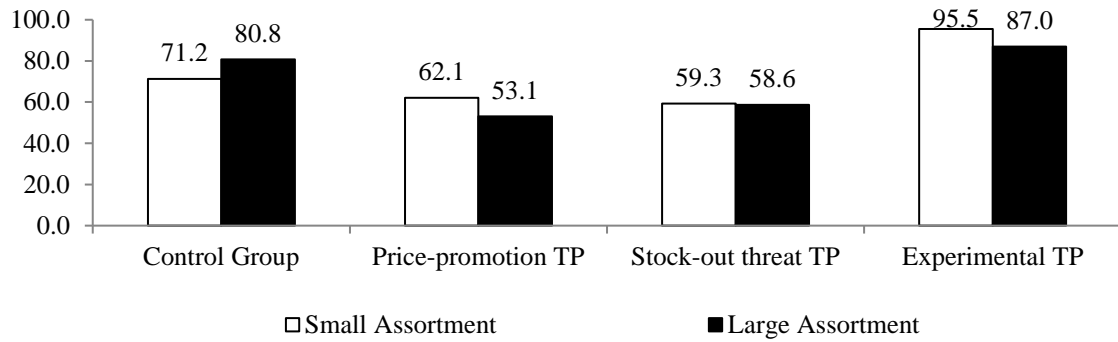


Figure 2. Effective Choice per Experimental Condition (%)

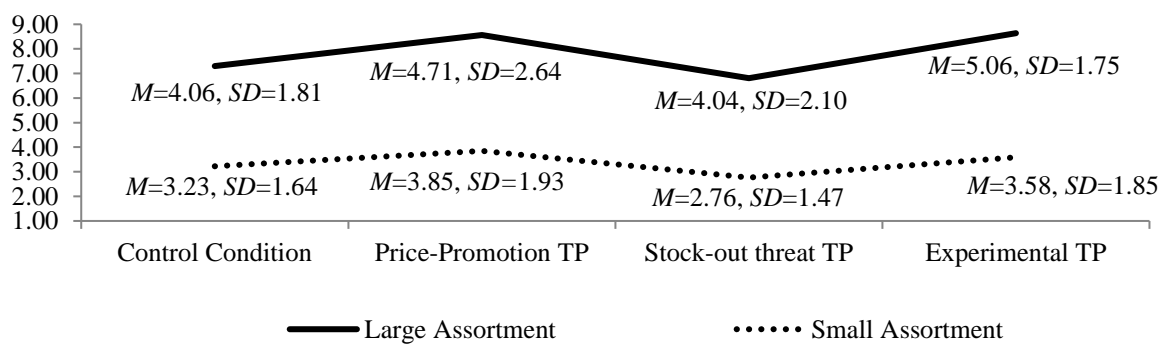


Figure 3. Choice Overload per Experimental Condition

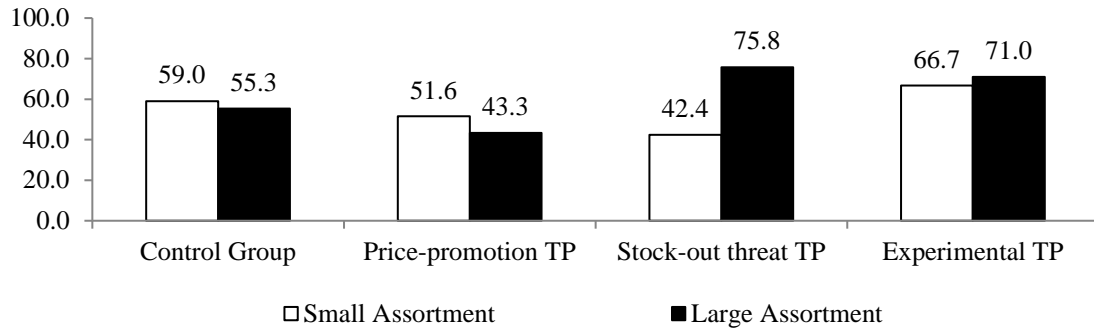


Figure 4. Effective Choice in each Condition

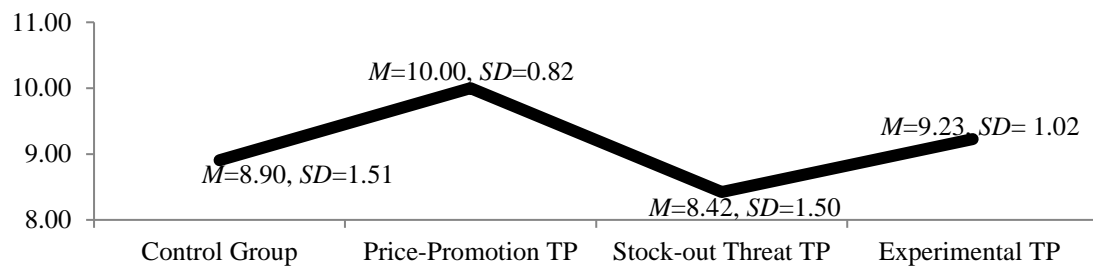


Figure 5. Average Final Decision Utility