The Impact of Advertised Reference Price on the Attraction Effect

A Constructive Choice Perspective

Master's Thesis

MSc in Economics and Business Administration
(Brand and Communications Management)

Student	**Alessandro Colucci**
Student number	**93252**
Supervisor	**Allan Grutt Hansen**
Date of submission	**May 15, 2019**
Number of characters	**165 252**
Number of pages	**80**

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Acknowledgements

Feedback, inspiration and emotional support were key throughout the writing of this thesis. I would first like to thank my supervisor, Allan Grutt Hansen, whose support and expertise were invaluable in crafting this research project especially at its early stage, and whose constructive criticism was essential to constantly refine this work.

I would also like to acknowledge Professor Harmen Oppewal, PhD, from Monash University. I wouldn't have become so passionate about the attraction effect and this thesis as a whole if I hadn't had you as my consumer behavior teacher, and motivator, during my time in Australia.

In addition, I am immensely grateful to my family. You supported me emotionally before and throughout the completion of this project. You are always there for me. You gave me the freedom and the tools to be, think, say and do everything I wish. Finally, thank you to all the people that I've met across three continents throughout my degree. Some of you may even be data points in this study. But, most importantly, each one of you has left their mark on me and has contributed to shape who I am today and who I will be tomorrow.

Abstract

This thesis seeks to investigate how advertised reference price (ARP) display influences the strength of the attraction effect. The attraction effect is a phenomenon whereby the likelihood of choosing a target alternative over its competitor is greater if the target is presented alongside a third option that is clearly inferior to it (the decoy), compared to when the target is presented along with the competitor only. Extant research in the field has suggested that the attraction effect is amplified when the dominance relation of the target over the decoy is readily apparent, and is minimized when the information presented is perceived as relevant and aids decision making. An ARP is the retailer-provided price against which consumers compare the actual sale price of a product. The relationship between ARP and the attraction effect is, in theory, paradoxical, since the ARP can at the same time increase the intensity of the attraction effect, by making the dominance relation of the target over the decoy more apparent, and decrease it, by presenting information that facilitates decision making.

A survey experiment was administered to 326 participants, randomly allocated to an experimental and a control condition. Participants were asked to choose their preferred options in eight asymmetrically dominated choice sets, which mimicked realistic purchase situations in a variety of low-involvement product categories.

The results suggested that ARP display is associated with a stronger attraction effect. The effect is more robust when the savings information is presented in an absolute ($-off) format than when it is presented in a relative (%-off) format. However, the findings showed that the association between advertised reference price display and attraction effect is not as robust as anticipated. It is likely that the reason underlying this weak association is attributable to an increase in perceived task complexity when ARP information is displayed. Further research is needed to investigate the link between perceived task complexity and attraction effect, as well as to explore the potential incidence of other moderating factors that may have caused a considerable variability across the tested choice sets.

Keywords: Attraction effect; Asymmetric dominance; Advertised reference price; Saving presentation format; Constructive choice; Consumer choice; Consumer behavior

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1 Introduction

The notion that people make perfectly rational decisions, that they know their preferences, and that they have stable and consistent goals has been shown to be flawed by more than 45 years of behavioral economics research. To illustrate this claim, Dan Ariely (2008) opens his book “Predictably Irrational: the hidden forces that shape our decisions” by showing an array of situations in which the behavior exhibited by choice-makers massively deviates from rationality.

One of these situations is a real case supplied by The Economist, the notorious weekly newspaper founded in the UK in 1843. The case in question is an ad, found on the website of the magazine, listing three different subscription offers (cf. Appendix A). The first offer is a one-year web subscription to The Economist, priced at $59. The second offer, a one-year print-only subscription to the magazine, is priced at $125. The third option is a one-year print & web subscription, priced at $125, exactly like the print-only subscription.

This pricing structure, which was likely deliberate, makes one wonder why anyone would prefer the print-only subscription to the print & web subscription when they are offered for the same price.

Interestingly, when Ariely (2008) tested the choice frequencies on a pool of 100 participants, the vast majority (84 subjects) preferred the print & web subscription. Sixteen participants chose the web subscription and zero chose the print subscription. However, when he manipulated the choice set by removing the print-only option, 68 participants chose the web-only option for $59, up from 16 before, whereas only 32 chose the print & web option for $125, down from 84 before.

The effect that was at play is called “attraction effect”, or “asymmetric dominance effect” (Huber, Payne, & Puto, 1982), which is observed when an option that is clearly inferior (= the decoy) to one of the other two alternatives increases the likelihood that the option superior to it (= the target) will be chosen. This kind of choice set is typically referred to as an “asymmetrically dominated choice set”. In the Economist’s case, the decoy is the print-only

subscription, which is just as expensive as the print & web subscription, but offers only a portion of the benefits. This option increases the choice probability of the print & web subscription—the target—from 32% to 84% (Ariely, 2008).

The marketers working for The Economist probably knew that most people would either be indifferent between an Internet subscription or a print subscription of the newspaper, or they would choose the less expensive Internet subscription, since the ad was being viewed on the web and was thus targeting Internet users. However, drawing on the cognitive bias caused by the attraction affect, they reckoned that, by adding an inferior option to the choice set, people would end up choosing one of the most expensive offers out of the three alternatives, which, from a company perspective, also represented the more profitable one.

1.1 Problem Definition

Although the attraction effect seems quite robust in an experimental environment, its existence in more realistic settings has been debated (Frederick, Lee and Baskin, 2014; Yang & Lynn, 2014). The critics that most prominently challenge the existence and relevance of the attraction effect point primarily to the lack of ecological validity in the experimental designs on which the attraction effect literature is largely based. This critical stream of research has generated an enormous amount of literature focusing on the moderators and boundary conditions for the attraction effect, that is, conditions that intensify or weaken its strength.

One of these boundary conditions is that, the more the dominance relation is readily noticeable, the more likely the attraction effect is to occur (Huber, Payne, & Puto, 2014). In other words, asymmetric dominance has a more pronounced effect when the decoy and the target options are easy for the choice-maker to identify.

Another critical boundary condition is that information that aids or facilitates decision making has a tendency to minimize the attraction effect (Mishra, Umesh, & Stem, 1993). Put differently, if the information presented in the choice set makes less sense to the choice-maker, then he or she will resort to a more automatic and effortless type of decision – something that hints to what is known in the literature as “heuristics”; however, if the

information is perceived as relevant, in that it helps the decision maker evaluate the choice task that he or she is being confronted with, the attraction effect will be attenuated.

In some circumstances, these two boundary conditions can seemingly clash with each other. There can be situations in which a piece of information can simultaneously make the dominance relation easier to identify and facilitate decision making, thus at the same time increasing and decreasing, respectively, the intensity of the attraction effect.

One example of such situations is advertised reference price information. An advertised reference price is the price against which consumers compare the actual sale price of a product (Levy, Weitz, & Grewal, 2014; Mazumdar, Raj, & Sinha, 2005). The advertised reference price is explicitly provided by the retailer, and is often displayed in the form of a strikethrough price (e.g. ~~$50~~). The advertised reference price is by definition higher than the sale price. It can be presented in a variety of ways, such as "was $X, now $Y", and displayed alongside the savings information, such as "X% off" or "save $X" (Biswas & Blair, 1991; Lowengart, 2002).

When used to frame the price of the target in a choice set, reference price advertising can trigger two seemingly opposed results. On the one hand, it can make the dominance relation easier to identify, as it enhances the perceived value and attractiveness of the target option (Biswas et al., 1993; Grewal et al., 1998). On the other hand, it can also represent meaningful and relevant information for a consumer, as it can affect their evaluation of a product's price.

This suggests that an advertised reference price can, in theory at least, at the same time increase and decrease the intensity of the attraction effect. This points to a clear inconsistency, which leads to believe that the influence of reference price advertising on the attraction effect is indeed ambiguous.

1.2 Research Objectives

Taking this paradoxical instance as a starting point, the overall purpose of this study is to investigate empirically how advertised reference price display can work in combination with the attraction effect. Otherwise stated, the primary objective of this research is to understand

whether reference price advertising increases or decreases the strength of the attraction effect, or whether there is no significant relationship between the two variables.

Apart from having a direct impact on the intensity of the attraction effect, reference price advertising can set off a chain of events. One side effect of displaying reference price information alongside a product's sale price is that it could potentially overload people with additional information, which can, in turn, make it more complex for them to process the task at hand. A higher task complexity is likely to elicit a negative mood from the chooser. It has been demonstrated (Malkoc, Hedgcock, & Hoeffler, 2013) that people in a negative mood will seek more information before making a decision and pay more attention to the details, thus reducing the biasing power of the attraction effect. Hence, in this study I also set out to investigate how adding reference price information to the target option's price tag affects the chooser's perceived task complexity.

Finally, research on advertised reference prices has shown that the way the savings information is presented (e.g. "30% off" or "save $20") has an impact on how favorable and appealing a deal appears (Chandrashekaran & Grewal, 2006). Hence, the saving presentation format is likely to moderate the relationship between reference price advertising and the attraction effect. Thus, in this thesis I also attempt to research how the saving presentation format moderates the relationship between reference price advertising and attraction effect.

Investigating these issues can be valuable and relevant on both a theoretical and managerial level. From a theoretical standpoint, building on two distinct lines of research—the one on the attraction effect and the one on advertised reference price—can provide valuable new insights. From a managerial standpoint, understanding the mechanisms that play out when the biasing powers of the attraction effect and reference price advertising are combined can help marketers design marketing tactics and strategies that take advantage of the cognitive biases of decision makers.

The very idea that the choices made by decision makers can be controlled, and that consumer behavior can be predicted is paramount to the positivist approach to science, an approach that is adopted by this study. The positivist research paradigm favors experimental designs as

a research method. More than 300 participants were randomly allocated to a test group and a control group, and went through a series of asymmetrically dominated choice sets. The experiment aimed to find out whether a significant difference in behavior could be observed between the group that was shown advertised reference prices and the group that was not.

1.3 Scope and Delimitations

Along with determining the objectives of this research, it is important to delineate upfront its scope and boundaries. Firstly, while the purpose of this study is motivated by understanding situations in which the information displayed in an asymmetrically dominated choice set can theoretically increase and decrease the intensity of the attraction effect at the same time, the focal point of this study is on the specific instance of advertised reference price information and its interplay with the attraction effect.

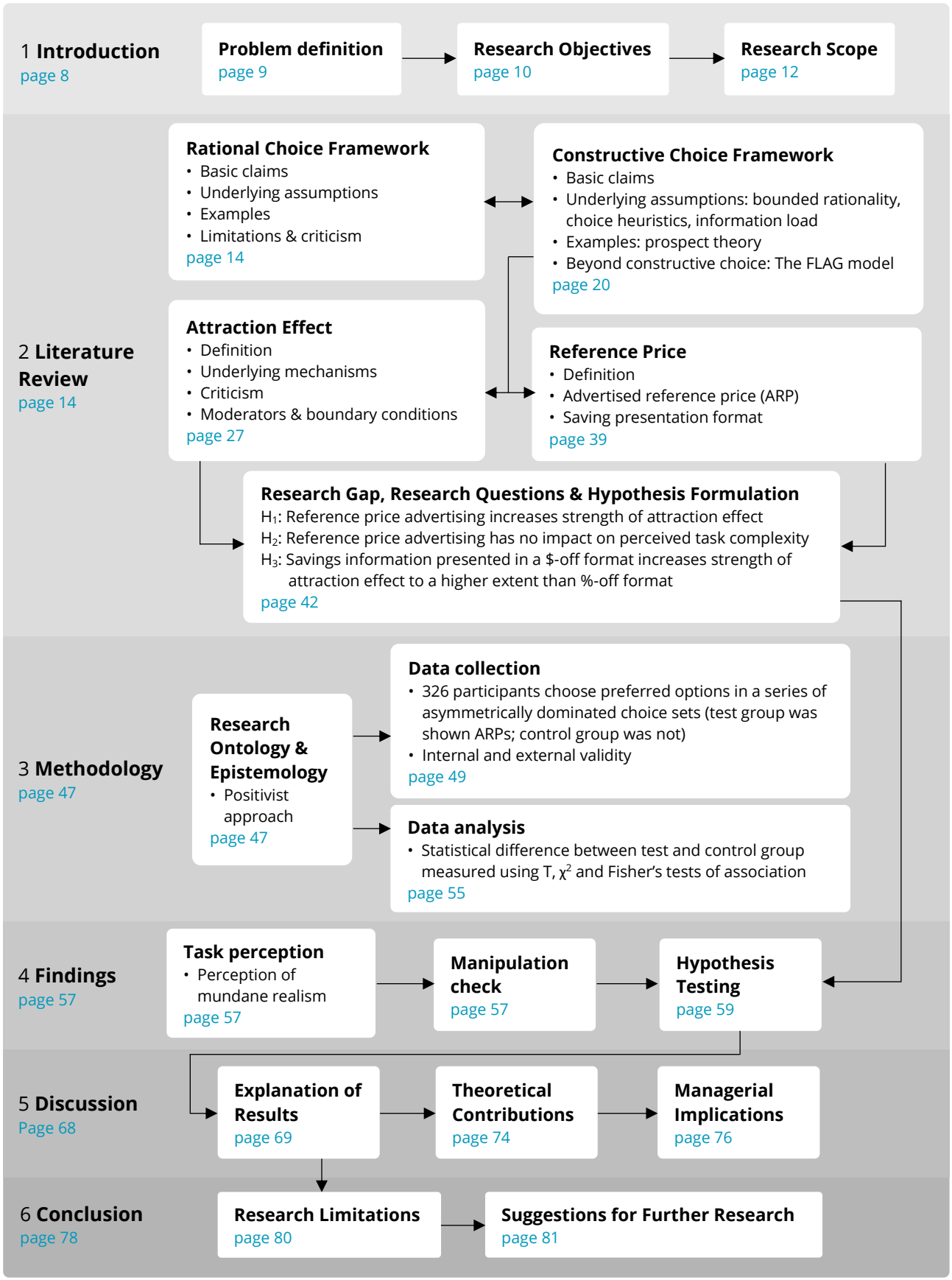
Furthermore, the constructive choice paradigm, which maintains that choice and preferences are largely based on automatic mechanisms that are affected by the context, has often been useful for predicting behavior in low-involvement situations. Thus, this study does not aim at predicting behavior in every single purchase situation, and likely does not provide results that would reliably apply to high-involvement purchases, for which the psychological and financial risk is higher, and consumers are more likely to resort to rational decision making.

1.4 Thesis Structure

This thesis is structured as follows. Section 2, which follows right after this introductory part, provides a theoretical backbone, which both situates the thesis in context, and allows to formulate some hypotheses. The research method for testing these hypotheses, along with the ontological and epistemological assumptions of this study, are explained and justified in section 3. The results from the analysis of the data are presented in section 4. The theoretical and practical relevance of the findings is discussed in section 5, whereas section 6 provides some concluding remarks, research limitations and suggestions for further research.

In order to supply a guide for the reader, Figure 1 provides a visual representation of the outline of this thesis.

Figure 1 Outline of the thesis



2 Literature Review

In this review, I set out to go over the choice literature in consumer research and present a conceptual framework that aims at predicting the outcome of the interplay between the attraction effect and reference price advertising. As such, this theoretical background provides a framework to expand the knowledge regarding the attraction effect in the presence of reference price advertising.

This thesis takes the perspective of constructive choice, but in order to understand this paradigm, it is crucial to understand the framework that is conceptually opposed to it, namely the rational choice paradigm. This chapter is thus organized as follows: firstly, two choice frameworks, namely the rational choice framework and the constructive choice framework, are presented and contrasted; subsequently, the extant research on the attraction effect and reference price are reviewed; finally, an interesting incongruity in the existing literature is highlighted, which enables this study to address a gap that has not, to my knowledge, been tackled thus far.

2.1 Rational Choice Theory

A wide array of theories has been developed throughout the years regarding choice and decision making. These theories make different assumptions about the processing capabilities of the human brain and are heavily influenced by the wider discourse on consumer behavior dominating in the decade in which they were conceived. Within the literature on consumer research, choice theories and models have traditionally been grouped into different frameworks, two of which stand out in the literature on choice making: the rational choice framework and the constructive choice framework (Allen, 2002).

2.1.1 Main Principles

Rational choice theory, or the economic approach to human behavior, derives from and intends to be seen in continuity with many classical and neoclassical claims in economics. Renowned figures such as Adam Smith, as well as his idea of an “invisible hand” guiding supply and demand that preserves the market’s equilibrium, are perceived as founders and

precursors of this choice paradigm (Zafirovsky, 2018). The two pillars of rational choice theory are the notions of rationality and utility maximization.

The basic claim held by rational (or normative) choice theorists is that choice is conscious, deliberate, and guided by rationality (Allen, 2002). Individuals take action based on the information about the consequences of alternative outcomes that they retrieve and process (March, 1978). In particular, the cognitive capabilities of individuals enable them to ponder the advantages and disadvantages of alternative choices, and thus reach decisions (Becker, 1993).

It follows from the principle of perfect rationality that behavior is consistent over time (Becker, 1993). Rational behavior is thus conceived as consistent behavior (Drakopoulos, 1990).

The main, if not the only, force that guides choice is the maximization of value (Allen, 2002). This force, alternatively called by some scholars ‘utility maximization’ or ‘utility optimization’ (Zafirovsky, 2018) is regarded as an aprioristic principle in rational choice theory (Drakopoulos, 1990). There is no universal agreement about the meaning of this basic mechanism characterizing choice behavior, however utility maximization is conceived by most scholars as a positive subjective sensation, which can be associated with pleasure or satisfaction (Drakopoulos, 1990).

In the context of choice, the utility, or subjective value, of an option in a consideration set depends only on that option (Bettman, Luce, & Payne, 1998). This essentially implies that each alternative in a choice set is evaluated separately (Payne, 1976).

In the rational choice framework, any decision or behavior that deviates or is deemed as inconsistent with the principle of rationality and the goal of utility maximization is treated as an error, or a correctable fault (March, 1978).

2.1.2 Underlying Assumptions

The individual in the rational choice framework is seen as an ‘economic man’, who, while being "economic", is also assumed to be perfectly rational (Simon, 1955). In their experience of choice, individuals are completely detached and analytical of the choice task at hand (Allen,

2002). With perfect rationality, individuals can evaluate the estimated consequences of potential alternatives (Allen, 2002; Adanali, 2017). The allegedly robust computing skills that individuals have enable them to assign scores to each of the alternative courses of action that are available to them, in order to reach decisions that have the highest possible score on their preference scale (Simon, 1955). The consumer, or economic man, is also assumed to have perfect knowledge of the relevant aspects of the surrounding environment (Simon, 1955).

Rational theories of choice assume that choices and decisions are consistent with tastes and preferences (March, 1978). Furthermore, the goals, tastes and preferences that determine choice are expected to be clearly defined and largely stable over time (Simon, 1955; March, 1978; Allen, 2002). Preferences are clearly defined to the extent that they are known with enough precision to make any sort of decision unambiguous (March, 1978).

2.1.3 Examples of Theories in the Rational Choice Paradigm

A vast number of theories, models and concepts that embrace the assumptions underlying the rational choice framework can be found in the literature. Here, I present three of the most cited theories of rational choice: the independence of irrelevant alternatives axiom, the expected-value theory of attitude, and the theory of planned behavior.

The independence of irrelevant alternatives is an axiom of decision theory according to which, in a consideration set, the probability of choosing an option over the other is not affected by the inclusion of a third option into the choice set (Ray, 1973). According to this principle, if A is the more preferable option, and B is the less preferable option in a choice set {A,B}, adding a third option C to the choice set {A,B,C} does not make B preferable to A. This occurs because C is deemed as irrelevant to the choice between A and B. For example, let us suppose that a consumer prefers vanilla ice cream over chocolate chip ice cream; when the same consumer is ordering ice cream, the probability that they will choose vanilla over chocolate chip is not affected by whether mango is an option. In other words, if mango is added to the choice set, there is no chance that chocolate chip will be preferable to vanilla.

One of the premises of rational choice theory is that the experience of choice is utterly deliberate, and there are no subconscious influences on behavior (Allen, 2002). In other

words, choice is solely based on an individual's intentional preferences. An implication of viewing consumer behavior merely as the outcome of rational decision making is that choice and action are directly related to, and, as such, strongly dependent upon an individual's attitudes, beliefs and intentions (East, Singh, Wright, & Vanhuele, 2017).

Attitudes are conceptualized as a stable evaluation of a concept, be it a person, a brand, a theory or anything else one can attach feelings to (East et al., 2017). The expected-value theory of attitude states that individuals form attitudes towards objects, alternatives or choices based on their *belief* about the extent to which the object has a particular attribute, and the *evaluation* of the importance attached to those attributes. Thus, individuals end up choosing the option with the largest expected value (Fishbein, 1963). For example, if a consumer is to choose a holiday destination, they will evaluate each destination based on a host of attributes, such as weather, cost, food, traveling effort, and so on, as well as evaluate the relative importance attached to each of those attributes.

Payne's (1976) take on how individuals make choices largely resembles Fishbein's claim. According to his 'additive or linear model of choice', in a situation where each option or alternative in a choice set has multiple attributes or dimensions, a utility value is determined for each attribute of an alternative; then, the values for each attribute are added up to result in an overall value for that alternative; finally, the alternative with the greatest overall value is chosen.

The expected-value theory of attitude has often been criticized because it assumes that attitudes are the only predictor of behavior. Hence, this theory has been extended to combine attitudes, intentions and behavior in a more comprehensive model of consumer choice called the theory of planned behavior (Ajzen, 1991). This theory holds that an individual's behavioral intentions and behaviors are shaped not only by their attitudes, but also by subjective norms—the person's beliefs about what other people think they should do—and perceived behavioral control—a person's self-assessed beliefs about the opportunities for an action which are based on the environment and their own abilities, such as access to sales points or money (East et al., 2017). Although this theory presents the first traces of a more socio-

cultural and interpretive perspective, by contemplating subjective norms and beliefs, it still fundamentally perceives behavior as the result of extended and rational thinking.

2.1.4 Criticism of the Rational Choice Paradigm

Especially over the past 45 years, the choice literature in consumer research has pointed out the limitations of the rational choice paradigm. While pure models of rational choice seem to accurately depict 'intelligent' and ideal behavior (March, 1978), the scientific relevance of these theories in the context of decision making, along with their predictive power have been debated. Many scholars have argued that the rational choice paradigm is inherently flawed as a framework for understanding consumer behavior, because it does not adequately represent the thought process individuals go through when making decisions (Bettman, Luce, & Payne, 1998; March, 1978; Mitchell & Beach, 1990; Zafirovski, 2018; Adanali, 2017).

Detractors of the rational approach argue that choice essentially involves two wild guesses: first, an individual must anticipate what consequences each of the possible alternatives will entail; second, the choice-maker must reflect upon his or her future preferences associated with those consequences. Trying to imagine both what will occur in the future as a result of our actions, and what our evaluation of those occurrences will be is largely subject to error (March, 1978), especially because estimating future consequences requires a well-informed possession of information about *all* possible alternatives (Simon, 1955). Therefore, future behavior cannot be predicted and explained by purely rational thinking.

As such, the rational choice paradigm is believed to make unrealistic assumptions about human cognitive capabilities (Simon, 1955; Adanali, 2017). In reality, it is maintained that the decision maker does not have the cognitive skills required to maximize utility. Information gathering and information processing require a great deal of cognitive resources, which are limited by the finite capacity of the human brain (March, 1978). In a real-world situation, choices tend to be largely effortless, rapid, and simple, and even highly involving decisions tend to be made intuitively, without complex analysis and computation. Only few of the decisions that people make in their everyday lives involve an explicit balancing of costs and benefits (Mitchell & Beach, 1990). This demonstrates that individuals are not perfectly

rational, and the role of emotions in decision making cannot be entirely dismissed (Adanali, 2017).

Furthermore, this paradigm assumes that preferences are clearly defined and consistent over time. This assumption is contended by March (1978). In response to the actions that we take every day, as well as the consequences of those actions, our preferences may change. Furthermore, many of the actions that choice makers take are made ignoring personal preference and tastes, and are instead swayed by rules, traditions and the advice or actions of others. Hence, goals, tastes and preferences are fundamentally inconsistent, unstable and vague.

In addition, the rational choice framework holds that each option in a choice set has a utility, or subjective value, that only depends on the option itself. This also entails that preferences do not depend on the description of options or method of elicitation. However, numerous researchers proposing a different approach dispute this claim. Firstly, individuals cannot be completely detached and analytical when approaching the choice task at hand. Since people are not disconnected entities, it follows that choice and preference can indeed be influenced by exogenous factors (Adanali, 2017). Secondly, individuals rarely choose things in absolute terms; they do not have an internal value meter telling them how much things are worth; rather, value and utility are estimated focusing on the relative advantage that an option has compared to the others (Ariely, 2008). Thus, the value of an option cannot only depend on the option itself.

Attitude theory has been subject to criticism as well. More specifically, it is argued that decision makers rarely go through an extended thought process that weighs and contemplates different beliefs and evaluations before making a choice. In fact, attitude theory inadequately represents the thought process that individuals go through when making a decision; put another way, there is no fit between what actually happens in an individual's brain and what attitude theory suggests, when it states that people assign likelihoods and evaluations to different attributes, and multiply and sum the products to form their attitudes (East et al., 2017).

In conclusion, the limits of the computational and predictive ability of the human brain make the global rationality implied by traditional choice models fundamentally flawed (Simon, 1955). To put it in the words of Zafirovski (2018), rational choice theory, with its reliance on the economic approach to human behavior, “reveals itself as an overly ambitious but unconvincing mix of claims, equivalences, and analogies” (p.198).

2.2 Constructive Choice Theory

The criticism of the rational approach has inspired researchers to propose and develop a different model of consumer choice: the constructive choice framework. This view suggests that consumer choice and decision making are inherently constructive (Bettman, Luce, & Payne, 1998). This entails the idea that choice is essentially based on automatic psychological mechanisms that are elicited and affected by the information environment and the situation in which people find themselves when experiencing choice (Allen, 2002; East et al., 2017).

2.2.1 Automatic and Context-Dependent Choice

Constructive choice theory focuses on the automatic mechanisms that govern information-seeking and choice. Especially in situations of unimportant or repetitive choice tasks, choice is heavily swayed by subconscious psychological mechanisms. Choice is thus conceived as subconscious information-processing (Allen, 2002). There are many instances in which individuals respond to a stimulus by largely avoiding a deep cognitive processing of the stimulus itself. Hence, the evaluative response to a stimulus is said to be faster than the cognitive response. As such, the constructive choice approach seems to reflect more closely the—often unconscious—thought processes that direct behavior (East et al., 2017).

One of the fundamental arguments of the constructive choice framework is that human decision making is not independent of contextual factors, but is instead affected by the situation in which people find themselves (East et al., 2017). In other words, human behavior is continually shaped by the interaction between the human information-processing system and the task environment (Bettman et al., 1998). Hence, normative pressure and negative emotions, for instance, are likely to affect information processing and the experience of choice (Allen, 2002).

The main implication of the argument that choice among options is context-dependent is that the utility, or value, of an option is not merely dependent on the characteristics of the option itself, but is also dependent on the characteristics of other options in the choice set (Bettman et al., 1998). This suggests that choice is not entirely controlled by the decision maker, but it can instead be affected by the information environment. From a marketing perspective, this means that decision making can be significantly influenced by carefully engineering how the different options are framed and displayed in a choice set.

Preferences are highly context-dependent. They are constructed, not merely revealed, when people are asked to make choices (Huber et al., 2014). They are constructed using a variety of strategies that are dependent on the task that the chooser is facing (Bettman et al., 1998). Thus, alongside decision making, even preferences are not clearly-defined, stable and consistent over time, but are instead dependent on the context and the choice task at hand.

Consumers often do not have well-defined existing preferences. There is no evidence that the human memory stores a master list of preferences that are then retrieved during a choice-task, as the rational choice paradigm seemed to suggest. Since consumers do not have previously well-established preferences and goals, choices and preferences are constructed on the spot as a result of subconscious information-processing (Bettman et al., 1998).

In short, constructive choice theory essentially claims that the individual is not always fully analytical and conscious about how he or she is approaching a choice task, and that choice entails some subconscious psychological mechanisms and mental shortcuts, that had been ignored by traditional theories of choice. The notions of bounded rationality, choice heuristics and information load thus become three fundamental aspects of the constructive choice paradigm, that possess strong explanatory power to understand how consumers behave. I will now review these three notions more in detail in the following sections.

2.2.2 Bounded Rationality

The rational choice framework views the individual as an economic man that possesses a global rationality enabling him or her to make sound decisions after carefully processing and evaluating all of the information provided in the task environment.

In many occasions, however, behavior deviates from pure rationality. It has been demonstrated that many decisions that involve simple choices are biased away from purely economic reasoning, and, as such, challenge the assumptions of the rational choice paradigm (East et al., 2017).

This most likely occurs because the capabilities that decision makers have for processing information are limited (Bettman et al., 1998). Choosers and decision makers are not omniscient. Due to their limited cognitive capacities, their choices incorporate the conditions of the decision environment, and are thus highly contextual.

The assumption that the human mind can make perfectly rational decisions has thus been deemed unrealistic, due to the narrow cognitive resources that individuals have. Therefore, scholars have felt the need to review and replace the global and pure rationality assumed by theories of rational choice with a rationality that is more well-suited to describe the computational capabilities that individuals truly possess. Hence, the constructive choice paradigm endorses a rationality termed 'bounded rationality' (Simon, 1955), which clashes with the omniscient and complete rationality assumed in rational choice models.

Bounded rationality portrays more closely human thought processes and explains choice behavior more accurately, by taking into account the cost of information gathering and processing that—though inevitable, given the limited working capacities of the human mind—had been ignored by rational choice theorists (Simon, 1955).

In this perspective, decision makers act as "satisfiers" (East et al., 2017). In contrast with the rational and more cognitive model of consumer behavior, the constructive choice paradigm acknowledges that people typically tend to simplify decision making, by accepting the first option that they find satisfactory or seemingly acceptable enough to solve a problem.

The idea that people have a tendency to satisfice, that is to seek a satisfactory solution rather than an optimal one, has an important implication for marketers: the order in which options are presented and displayed in a choice set is crucial, because the first satisfactory solution is

likely to be adopted and, thus, the most prominent options in the choice set have a better chance of being selected (East et al., 2017).

In conclusion, decision makers do not use strict rules of utility maximization or optimization to make decisions, but instead rely on heuristics, to which I will now turn.

2.2.3 Choice Heuristics

In their attempts to get past the assumption of omniscient rationality posited by rational choice theory, researchers proposing the constructive choice paradigm postulated the presence in people's minds of a mechanism called 'heuristic processing' (Bettman et al., 1998).

Heuristics are inexact or rule-of-thumb processes, or information-processing shortcuts, that are used either consciously or unconsciously to make judgements (Bettman et al., 1998; East et al., 2017). These processes streamline decision making, by making it less analytical and more effortless, and are particularly useful when individuals need to make unimportant or repetitive choices. The use of heuristics to construct choice is triggered by a variety of factors in the information environment (Allen, 2002).

Having suggested that human cognitive capabilities are finite, constructive choice theorists also argue that every decision implies a cost-benefit trade-off between accuracy and effort. In other words, when an individual is making a choice, the cognitive goal of maximizing the accuracy of that choice is counterbalanced by the goal of minimizing the cognitive effort needed to make that choice (Bettman et al., 1998).

2.2.4 Information Load

The importance of heuristics in making judgements and the premise that consumers have limited abilities to assimilate and process information at any given time is associated with the idea of information load.

Information load is a notion that refers to the variety of stimuli—both in terms of number and in terms of type—that the receiver must process simultaneously. The human mind is limited in its ability to absorb and process information during any unit of time, and when this limit is

surpassed, the processing system is said to be “overloaded”, and decision making becomes more confused, less accurate, and less effective (Jacoby, 1977).

The significance of information load is particularly relevant for marketing. Marketers are regularly confronted by the need to communicate and present information, be it on a product’s package or on its price tag. Jacoby, Speller, and Kohn (1974) present two perspectives one may adopt regarding information quantity and their impact on the consumer. On the one hand, there is the view supported by consumer advocates, which suggests that—regardless of whether the recipient of the message makes use of that information—the more information always benefits the consumer, who has a moral and legal right to be informed about the product in question, in order to be able to make reasonable comparisons with competitive products. On the other hand, there is the view supported by behavioral scientists, who argue that there is empirical evidence that, as the information to be assimilated and processed increases, decision making becomes more confused and dysfunctional; in addition, it appears that increasing the amount of information can also increase uncertainty and enhance a consumer’s perceived risk. Put another way, with more information, consumers make poorer purchase decisions (Jacoby et al., 1974; Payne, 1976).

The idea of “overload” has also been applied to choice and assortments. Iyengar and Lepper (2000) demonstrate that providing extended choices to consumers can be demotivating, compared to when the variety of choices is more limited, due to the difficulty that people encounter when managing complex decisions. By contrast, when the variety of choices is more limited, people are more intrinsically motivated to complete the choice task, and are more satisfied with their choice.

This does not necessarily mean that less is always better. While simplified information makes decision making easier, because the mental shortcuts, or heuristics, used would be more accurate, individuals may become dissatisfied due to a lack of information (Scammon, 1977). It also appears that consumers who are subject to a heavier amount of information are also more confident in their judgements (Payne, 1976).

Thus, it has been argued that decision accuracy increases when more information is provided up to a point, and then decreases when additional information is given (Malhotra, 1982). Achieving the right balance between presenting accurate information that helps the consumer make an informed decision and avoiding an information overload is a pervasive challenge (Jacoby et al., 1974).

2.2.5 Prospect Theory

While the issue regarding the optimal amount of information that is provided is crucial for marketers, an equally relevant issue is related to the way information is presented, or framed. One of the premises of the constructive choice view is that choice is context-dependent; in other words, choice can heavily be affected by the information environment, and decision making can be influenced by carefully engineering how information is displayed.

In the context of choice tasks, the way options in a choice set are presented influences decision making. By manipulating how options are framed, subjects can be pushed towards a specific alternative in the choice set (East et al., 2017).

Kahneman & Tversky (1979) can be credited for being pioneers in the development of the constructive choice approach, and for having changed the way we think about how individuals process information and make choices. Together they have developed one of the most prominent theories of choice: prospect theory. The model suggests that people tend to give less attention to outcomes that are only probable compared to outcomes that are certain. In choices that involve sure gains, this tendency contributes to risk aversion, whereas in choices that involve sure losses, this tendency contributes to risk seeking.

To demonstrate this claim, they set up a number of experiments, one of which is notoriously termed “the Asian Disease problem” (see Table 1). The problem asks subjects to imagine a situation in which a disease is expected to kill 600 people. Some respondents are told that two alternative programs have been proposed to fight the disease. Program A would *save* 200 people. Program B has a one-third chance to *save* all 600 people and a two-thirds chance to *save* no one. In this version of the problem, which entails a choice involving sure gains, a substantial majority of respondents opted for program A, thus indicating risk aversion.

Another group of respondents is told about a different set of alternative programs to fight the disease. Program A' would *kill* 400 people. Program B' has a one-third chance to *kill* no one and a two-thirds chance to *kill* all 600 people. In this version of the problem, which entails a choice involving a sure loss, a substantial majority of respondents opted for program B', the risk-seeking alternative. There is in fact no difference between the two versions of the problem, other than the way they are phrased, but they clearly seem to induce different associations and evaluations (Kahneman, 2003).

Table 1 The Asian Disease Problem (Kahneman, 2003)

Version 1		**Version 2**	
Program A	**Program B**	**Program A'**	**Program B'**
100% chance to save 200	33% chance to save 600 66% chance to save 0	100% chance to kill 400	33% chance to kill 0 66% chance to kill 600

Prospect theory not only demonstrates that the way a problem is represented can have a significant impact on the respondents' decisions, but it also contributes to challenge the assumptions of the rational choice paradigm, as well as the idea that decisions are always made on the basis of the utility-maximization principle.

2.2.6 Beyond Constructive Choice: The Fits-Like-a-Glove Framework

Boasting more than 45 years of research, the constructive choice view is arguably the most mature and dominant choice framework in academia. This has not, however, prevented it from being challenged by alternative choice paradigms. One of these newer paradigms is the Fits-Like-a-Glove (FLAG) framework, proposed by Allen (2002).

Alongside his efforts to organize and condense the existing knowledge in the field, by properly classifying and grouping choice theories into the two well-established frameworks that I have just reviewed, Allen (2002) can also be credited for providing and illustrating his own choice framework. Based on an ethnographic investigation of student choice for post-secondary education, his framework offers an interesting and novel perspective on choice.

In the Fits-Like-a-Glove (FLAG) framework, choice is conceptualized as an embodied, spontaneous and holistic experience of perfect fit (hence, "Fits-Like-a-Glove"), which is

constructed during the encounter between the individual and the object of choice. In layman's terms, choice can be conceived as "love at first sight". What determines the perfect fit are the social and historical factors that are embedded in the consumer and in the object of choice. For instance, the way the subject wishes to be perceived by the society, as well as his or her past experiences play an important role in choice. Choice is thus fundamentally shaped by social and historical relations (Allen, 2002).

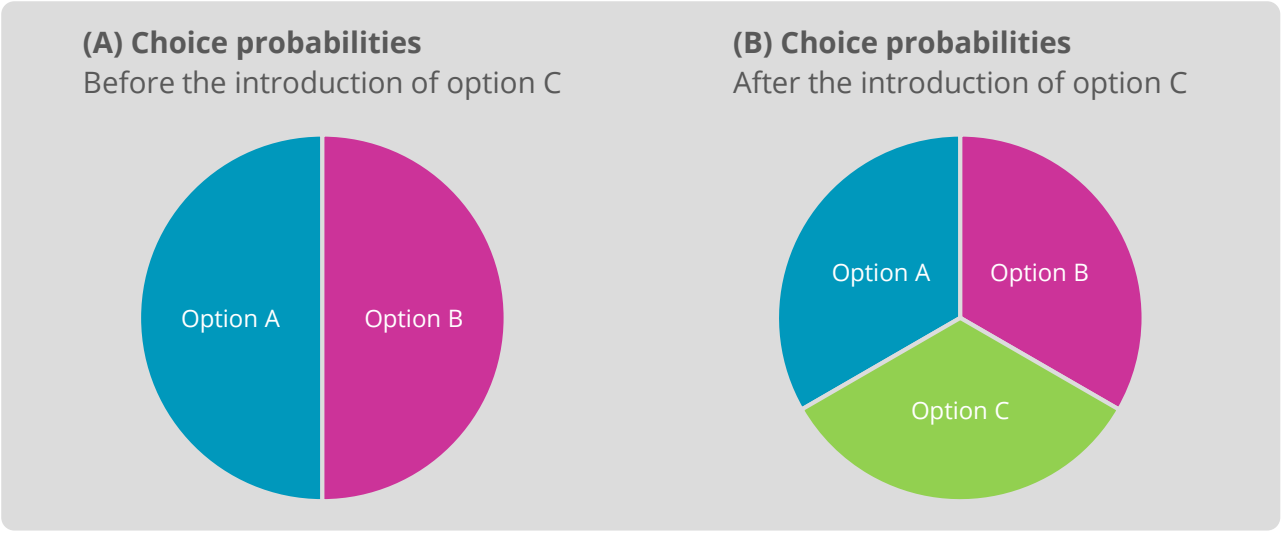
The Fits-Like-a-Glove (FLAG) framework does have its own delimitations. For instance, it is better suited to grasp experiential choices that are largely affected by social and historical forces, such as choices made for romantic partners, works of art, or styles of cars (Allen, 2002). Furthermore, the boundary conditions of the FLAG choice framework are still under-researched. Therefore, this paradigm has not yet managed to challenge the dominance in the literature on consumer choice of the constructive choice framework.

2.3 The Attraction Effect

The literature on constructive choice has demonstrated that choosers do not often behave rationally, and that their decisions can instead by swayed by carefully engineering how options in a choice set are framed and presented. The insight that choice is context-dependent, along with the intuition that the value of an option is dependent upon the characteristics of other options in a choice or consideration set, can be remarkably useful for marketers interested in launching a new product or brand into the market.

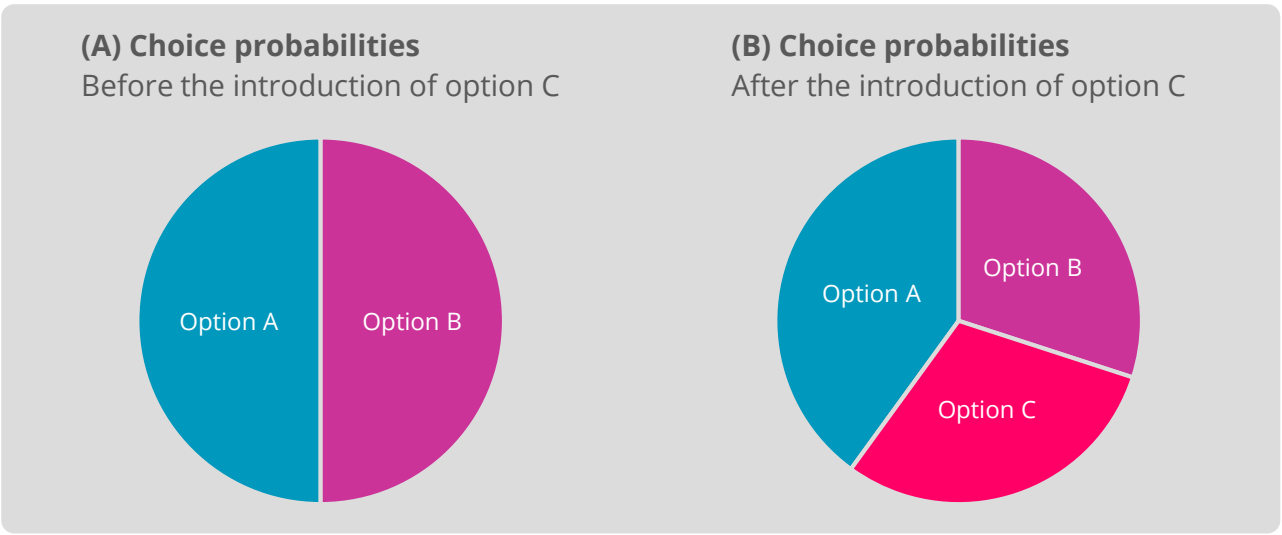
Let us assume a situation in which two options in a choice set have an equal probability of being selected (see Figure 2A). A traditional, rational model of consumer choice would assume that, when a third alternative is added to the choice set, the new option will take an equal proportion of choice probabilities from the other two options (see Figure 2B). This condition is known as the constant-ratio rule.

Figure 2 Change in choice probabilities – constant-ratio rule



Tversky (1972) challenged this principle by proposing the similarity hypothesis – the notion that, when a new alternative is added to a choice set, it will take more share from the option that it resembles the most. In other words, assuming that option C is more similar to option B than it is to option A, option B will lose relatively more share compared to option A after the introduction of option C (see Figure 3). This intuition is reflected in the managerial belief that, in order to minimize cannibalization, a firm should design a product that is as dissimilar as possible from its current offerings.

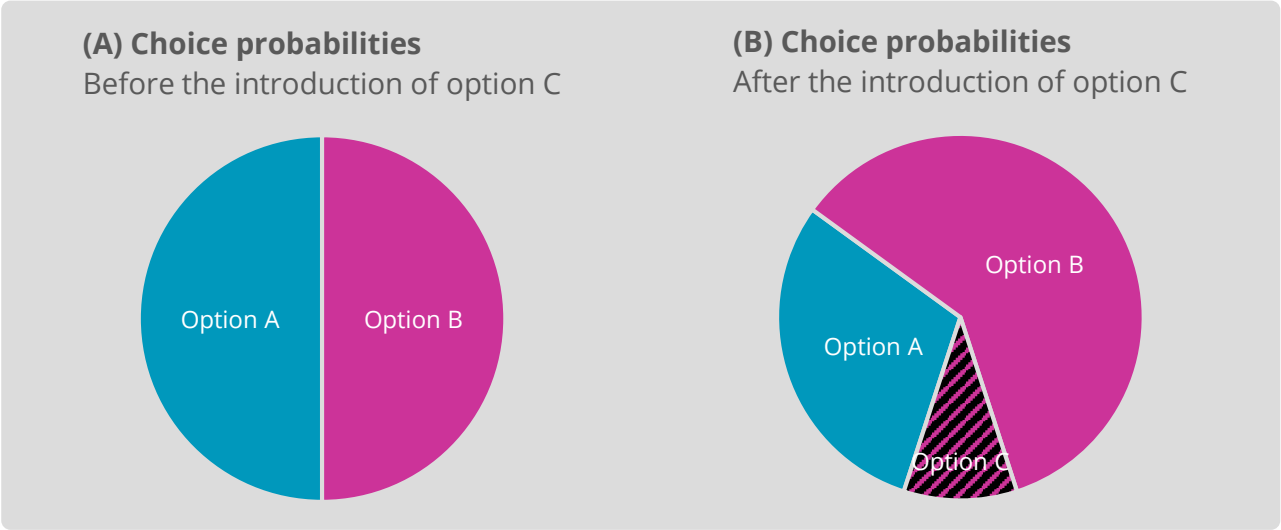
Figure 3 Change in choice probabilities – similarity hypothesis



Both the constant-ratio rule and the similarity hypothesis seem to be founded on the assumption of "regularity", the idea that the introduction of a new alternative (in this case, option C) can only decrease and never increase the probability of choosing one of the options that were present in the original set (in this case, options A and B).

Huber et al. (1982) have shown that, adding a third option, which is inferior to (or dominated by) one of the two options present in the original set, can indeed increase the likelihood that the superior (or dominating) option will be chosen. Let us assume that the third option, option C, is a worse version of option B. Introducing option C to the choice set is likely to increase the choice probability of option B, instead of decreasing it (see Figure 4). This effect has been termed "attraction effect", or alternatively "asymmetric dominance effect" or "decoy effect", and it essentially provides further evidence for the general insight that preferences are constructed.

Figure 4 Change in choice probabilities – attraction effect



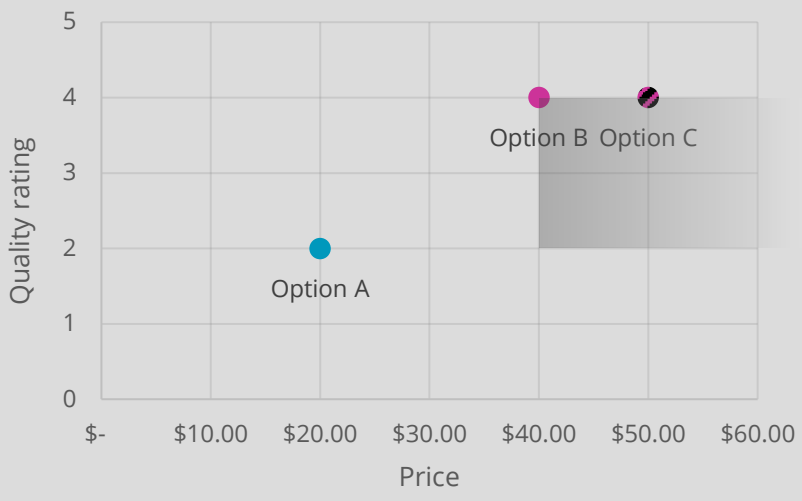
2.3.1 Breaking Down the Attraction Effect

The attraction effect is a phenomenon whereby individuals are more likely to choose an alternative (option B in the previous example) rather than its competitor (option A) if that alternative is presented alongside an option that is clearly inferior to it (option C), compared to when that alternative is presented along with the competitor only (Crosetto & Gaudeul, 2016). Put another way, in a choice set, the likelihood of choosing a specific option against its

alternative increases when that option is presented alongside a similar, yet inferior, version of it.

To understand what makes an option “inferior” or “dominated”, let us consider a simple example (see Figure 5). Options A and B constitute the core choice set, that is, only these two options are available initially. Each option has two attributes determining preferences, price (which is inversely related to preference, i.e. as price increases, preference decreases) and quality (which is directly related to preference, and is rated on a scale from 1 to 5). Option A has a lower price and a lower quality, and is thus superior to B on the dimension of price (because it is cheaper). Option B has a higher price and a higher quality, and is thus superior to A on the dimension of quality. In this situation, some consumers would choose option A for its lower price, and some others would choose option B for its higher quality. Now, let us suppose that option C is added to the choice set. Compared to option B, option C has the same quality, but it is inferior on the price dimension (being it more expensive); compared to option A, option C is inferior on the price dimension, but it is superior to it on the quality dimension. When the choice set consists of all three options, option C is unlikely to be chosen, and it is likely to increase the attractiveness of option B relative to option A. In principle, for the attraction effect to work, option C could be placed anywhere in the shaded area in Figure 5, as long as it is equal or inferior to option B on both dimensions, and it is inferior to option A on one dimension (price) but not on the other (quality).

Figure 5 Choice set including 2 equally viable options (A and B) and an “inferior” option (C)



	Price	Quality rating
Option A	$20	2
Option B	$40	4
Option C	$50	4

The terminology “decoy effect” stems from the way the inferior option in the choice set is typically called (“decoy”). The alternative expression, “asymmetric dominance effect”, grasps even better the required characteristics of the third, inferior option in the choice set; such option is “asymmetrically dominated” if one other option (the “target”) in the choice set is clearly superior to it, while the other one (the “competitor”) is not (Huber et al., 1982). To refer back to Figure 5, option A is the competitor, option B is the target, and option C is the decoy.

There are three essential conditions for the attraction effect to work. Firstly, the decoy must be dominated by the target but not by the competitor (Huber et al., 1982). Hence, while a comparison between the decoy and the target involves no trade-off (because the decoy is clearly inferior compared to the target), a comparison between the decoy and the competitor should imply a trade-off. Secondly, it is also imperative that the two attributes or dimensions are unrelated, or, more specifically, not readily comparable; two good examples are price and quality of instant coffee brands, or location and size of apartments. Finally, the two choices of the original choice set should, for the most part, sit along the same indifference curve; in other words, a comparison between the target and the competitor should involve a trade-off (Crosetto & Gaudeul, 2016).

The attraction effect is measured as the difference in choice frequency of the target across the initial choice set and the choice set with the added decoy. This suggests that the effect is stronger when a larger difference in choice frequency across the two sets is observed, and is weaker when the choice frequency does not vary as much across the two choice sets. While the literature has normally assumed that the attraction effect works best when there is indifference between target and competitor, more recent research has demonstrated that people are more likely to choose the target up to when it is 8% less profitable than the competitor (Crosetto & Gaudeul, 2016). To refer back to the example in Figure 5, the price of option B (and option C) could be as high as $43.20, and people would still prefer it to option A.

On a theoretical level, the attraction effect violates three principles of traditional decision theory. Firstly, it violates the regularity condition, which suggests that a new alternative can only decrease and never increase the probability of choosing one of the options of the core

choice set. Secondly, since the third, inferior alternative is typically similar to the option that dominates it, by suggesting that the third alternative "helps" the dominating one, this effect essentially constitutes a reversal of the similarity hypothesis (Huber et al., 1982). Finally, the attraction effect is also a violation of a basic principle of decision theory—the independence of irrelevant alternatives axiom—whereby the probability of choosing an option over the other is not affected by the inclusion of a third option into the choice set (Crosetto & Gaudeul, 2016; Milberg, Silva, Celedon, & Sinn, 2014; Simonson & Tversky, 1992).

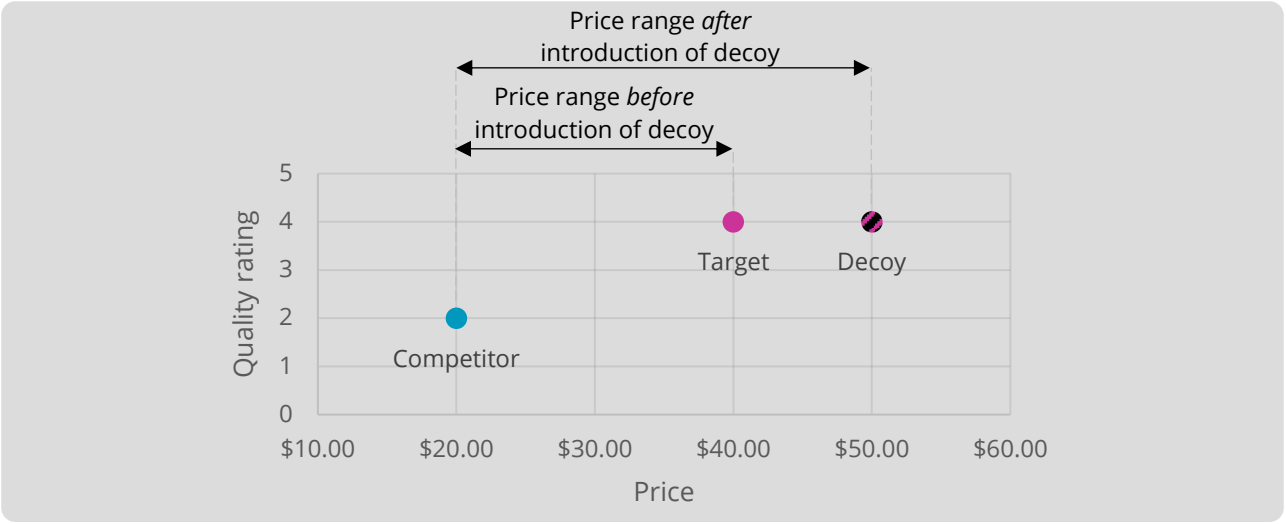
The attraction effect also has an important managerial implication. It suggests that, in order to increase the choice probability, and hence the market share, of a brand or product line, an inferior, dominated alternative—which virtually nobody will ever choose—ought to be introduced to the market (Huber et al., 1982).

2.3.2 Mechanisms Underlying the Attraction Effect

The process whereby a decoy is expected to increase the choice probability of the target at the expense of the competitor may be explained by several possibly interacting mechanisms, namely the perceptual framing of the decision problem and a change in the evaluation strategies used to make the decision.

Huber et al. (1982) have hypothesized that introducing a decoy to the choice set alters the perceptual framing of the decision problem, and thus causes a cognitive bias from the respondent's side. In the example given in Figure 6, introducing the decoy increases the range of the dimension on which the competitor is superior (i.e. price), thus making the advantage of the competitor over the target seem less extreme. It appears that the more the decoy spreads the range of the attribute on which the competitor is superior, the greater the attraction effect (Heath & Chatterjee, 1991).

Figure 6 Change in price range before and after introduction of decoy



The example given in Figure 7 shows a slightly different situation. Here, introducing a decoy whose quality is within the range of the target and the competitor (i.e., between 2 and 4) is expected to spread out the psychological distance between the quality ratings of the target and the competitor, draws more attention to the quality dimension, and increases the perceived weight of that dimension. Once again, the attraction effect is supposedly caused by a change in the perceptual framing of the problem (Huber et al., 1982).

Figure 7 Quality range between target and competitor

It has also been suggested that introducing a decoy enables an easier evaluation of the alternatives. For this reason, the source of the attraction effect is to be found in the influence

that the introduction of the decoy has on the evaluation strategies that are used by the subject (Huber et al., 1982). The decoy option is essentially used as an anchor to make comparisons easier (Huber & Puto, 1983). The cost-of-thinking model (Shugan, 1980) proposes that there is a cost associated with the act of making a decision. From this perspective, choosing between two options, one of which is dominant and the other is inferior, is easier than choosing between two equally viable options. Hence—consistently with the constructive notion that individuals naturally tend to simplify decision making—people prefer to choose between the target and the decoy (clearly preferring the former), rather than between the target and the competitor.

On a similar line of thought, Simonson & Tversky (1992) argue that, when people find it difficult to assess the absolute values of the attributes of an option in a choice set, they are more likely to be influenced by the local context, that is, by the other options that are available in the set. They propose the theory of tradeoff contrast to explain that the introduction of an inferior alternative simplifies the evaluation of the target, and even increases the perception of the attractiveness of the target option relative to the competitor. Put another way, people use the dominance relationship as a heuristic to avoid any trade-offs between attributes. As such, the introduction of the decoy to the choice set makes it easier for subjects to justify their choice (Simonson, 1989); the target is the easiest option to justify, so it tends to be chosen more frequently.

These latter arguments are consistent with the fundamental assumption that human beings are not good at evaluating things unless they see them in context (Ariely, 2008). Having some points of comparison is essential in decision making. Introducing a decoy creates a simple relative comparison with the target, and thus makes the target look better, not only relative to the decoy, but also overall.

2.3.3 Debating the Existence of the Attraction Effect

The existence of the attraction effect has recently been debated. Although several studies in the field of consumer research have consistently shown that the attraction effect is quite robust in an experimental environment, a newer stream of research has pointed out that the

effect does not appear in realistic settings when alternatives have more than two attributes, when real brand information is present, when the options are presented graphically, and when the target and the competitor do not exactly sit along the same indifference curve. The studies that most starkly challenge the robustness of the attraction effect and question its practical validity thus point primarily to the lack of ecological validity in the experimental designs on which the attraction effect literature is largely based.

Critics of the attraction effect literature argue that the extant attraction effect literature has generally made use of highly stylized and unrealistic product depictions in their experimental designs, placing too little value on the ecological validity and practical utility of those findings. For instance, the experiments conducted by Huber et al. (1982), Simonson & Tversky (1992) and Crosetto & Gaudeul (2016) presented choice sets where product dimensions were merely quantitative, meaning that attributes such as quality, durability and ease of use were presented as a number; pictorial elements were totally absent, and product options were denoted by letters, rather than brand names, even fictitious or disguised. However, in a real buying situation, people are exposed to pictorial depictions of products (e.g. the quality of hotel rooms on different price levels is typically conveyed by photos), as well as meaningful qualitative verbal information, including brand names. When these elements were integrated in newer experiments, the intensity of the attraction effect was significantly reduced (Frederick et al., 2014; Yang & Lynn, 2014; Milberg et al., 2014).

Huber et al. (2014), the ones who first studied the attraction effect, partly agreed to the criticism. More recently, they acknowledged that the asymmetric dominance effect in its strict form occurs rarely in the marketplace, because attribute properties can be more complex than numerical values, because people may value the different product attributes differently, and because very few dominated decoys actually exist in the marketplace, due to the problematic costs of producing and distributing products that consumers will probably not choose. However, to respond to the criticism regarding the impossibility of presenting product quality as a numeric value, Huber et al. (2014) suggest that in the emerging digital marketplaces, such as Amazon.com, almost every choice option includes a price and a numerical indication of perceived quality, i.e., a reviewer's 1 to 5-star rating.

While opponents mostly challenge the practical significance of the attraction effect, due to its failure to be replicated in real-world marketing contexts, they maintain that it remains possible that there could be some circumstances in which this effect can be reliably produced.

2.3.4 Boundary Conditions for the Attraction Effect

The debate on the existence and relevance of the attraction effect has set in motion a new line of research whose intention has been to identify moderators and mark out boundary conditions beyond which this effect cannot be observed. Understanding these conditions can be valuable for both researchers, who can thus design choice experiments more carefully, and practitioners, who can design marketing tactics and strategies that take advantage of the attraction effect (Mishra et al., 1993). These moderating factors are: the ease of identification of the dominance relation, the perceived information relevance, the product category knowledge, the degree of indifference between the choice alternatives, the level of involvement, the mindset evoked by the choice task, the perceived decoy popularity, and whether the decoy extends the range of the dimension on which the competitor is superior.

Firstly, the attraction effect is more likely to occur if the dominance relation is easy to identify (Huber et al., 2014; Simonson, 2014). In other words, asymmetric dominance has a more pronounced effect when the decoy is clearly inferior to the target. Earlier experiments (Huber et al., 1982) had already suggested that, in situations in which the decoy is inferior to the target on both product dimensions, the dominance relation is not readily apparent. Hence, attraction is more robust when the decoy is inferior to the target only on one dimension, and is equal to it on the other dimension.

“Noise” and other qualitative salient information is also likely to make the dominance relation more difficult to encode. However, when attributes are quantitative, the attraction effect is more often observed (Simonson, 2014). For instance, when price, weight, storage, square footage or any other quantitative dimension are one of the attributes, the dominance relation is easier to identify, and the attraction effect can be observed.

Secondly, the magnitude of the attraction effect seems to be considerably influenced by the perceived relevance of the information presented in the choice task (Mishra et al., 1993).

Relevance is defined as the degree by which the information presented helps the subject distinguish options in the choice set. If this information makes less sense to the subject, then he or she will resort to simplifying heuristic mechanisms. By contrast, if the information is perceived as relevant, it is likely to facilitate decision making and a cognitive bias is less likely to occur. Hence, increased information relevance reduces the intensity of the attraction effect.

Thirdly, the degree of knowledge about the product category influences the extent to which subjects will be swayed in their choice by the attraction effect (Mishra et al., 1993). Someone who is more knowledgeable about and familiar with the product category will be more skillful at telling apart the different alternatives in the choice set. On the other hand, people with low levels of familiarity with the product category will be more inclined to be influenced by how the alternatives are presented in the choice set. Hence, the attraction effect will be stronger on people having a weaker knowledge about the product category.

Furthermore, it appears that the attraction effect only occurs when the subject is in a condition of indifference between that target and the competitor (Huber et al., 2014)—or, as mentioned by other studies (Crosetto & Gaudeul, 2016), when the subject is at least *nearly* indifferent—which is likely to be true when the attributes of the options are about as important as each other. In other situations, when the chooser has clear prior preferences between the target and the competitor, the effect of adding a dominated decoy will be attenuated.

Task involvement also moderates the impact of the attraction effect on a person's choice (Mishra et al., 1993). The higher the level of involvement with the choice task, the better the information is processed, and the less likely is a person to exhibit a cognitive bias. Hence, as task involvement increases, the magnitude of the attraction effect decreases.

It also appears that the mood that the choice task evokes in the subject has an influence on the intensity of the attraction effect. More specifically, when people are in a negative mood, the attraction effect is attenuated. The negative mood can be induced, for instance, when the choice task involves a set of undesirable options. In this case, a more vigilant mindset is activated, and subjects tend to evaluate each alternative and process the information more

accurately. As a consequence, people in a negative mindset are less likely to show cognitive biases, thus diminishing the influence of the attraction effect on their decision (Malkoc et al., 2013).

Interestingly, the popularity of the decoy option can have an impact on the strength of the attraction effect (Mishra et al., 1993). Consistently with effects like herd behavior, social pressure and the bandwagon effect, if people believe that the decoy is liked by many people, they will include it in the consideration set, compare it to the nearest option (the target), realize that the target is clearly superior to it, and end up choosing the target at the expense of the competitor. Therefore, as perceived decoy popularity increases, the strength of the attraction effect will also increase.

Moreover, as earlier experiments (Huber et al., 1982) had already demonstrated, the attraction effect is stronger when the decoy extends the range of the dimension on which the competitor is superior (cf. Figure 6 above, on page 33). Instead, the effect of introducing a decoy that does not extend the range of the dimension on which either the target or the competitor is superior (as shown in Figure 7 above, on page 33) is not as robust (Milberg et al., 2014).

Lastly, it has been demonstrated that the attraction effect is stronger when measured across subjects than within subjects (Huber et al., 1982). Within-subjects research designs require the respondent to complete two choice tasks, one with and one without the decoy option; this design entails pairwise comparing the choice proportions of the target and the competitor before and after the decoy is introduced to the choice set. By contrast, in between-subjects designs, the choice proportions of the target and the competitor in the asymmetrically dominated choice set are compared across two groups, one of which is also shown the decoy alternative, while the other is not. Within subjects, the attraction effect has been shown to be quite significant; however, the effect is stronger when measured in between-subjects experimental designs. To explain why between-subjects designs lead to stronger attraction effects than within-subjects designs, it has been hypothesized that measuring the same individual's responses before and after the manipulation of the independent variable can

produce carryover effects (Milberg et al., 2014). Learning, sensitization to the experimental manipulation and fatigue can be the overarching factors challenging the validity of within-subjects designs. This is a methodological concern worth considering when designing experiments.

In conclusion, some of these moderating factors seem to suggest that the attraction effect is minimized in conditions that aid or facilitate *rational* decision making, which underscores and is consistent with the notion that the attraction effect occurs as a function of *automatic* information processing. At the same time, however, the magnitude of the attraction effect is strengthened as the dominance relation of the target over the decoy is made readily noticeable. Hence, it would be interesting to see how the interplay of asymmetric dominance and advertised reference prices would affect the strength of the attraction affect.

2.4 Reference Price

An advertised reference price can provide relevant and meaningful information that facilitates decision making, and thus decreases the strength of the attraction effect. Nonetheless, it can also make the dominance relation easier to identify, and thus increase the magnitude of the effect. This section will delve into the notion of reference price, and, in particular, explore how advertised reference prices can frame sale prices in an appealing way to affect people's judgments and decisions.

2.4.1 Deconstructing the Concept of Reference Price

One of the premises of the constructive choice paradigm is that individuals do not process stimuli in isolation. Prices too are informative when they are compared to other prices, called reference prices, which can be recalled from the memory of past experiences or formed based on the prices observed during the shopping situation itself (East et al., 2017). Prices stored in memory are typically known in the literature as *internal reference prices*, whereas other prices observed in the shopping environment are named *external reference prices*. In summary, reference price is commonly conceptualized as what a consumer expects to pay for a good or service, based on their prior experiences and on the current purchase environment (Mazumdar et al., 2005).

Price evaluations are strong inputs of consumer decisions regarding what, when, where and how much to buy (Gupta, 1988). Whether a price is evaluated more or less favorably depends on whether it is below or above a consumer's reference price (Kan, Lichtenstein, Grant, & Janiszewski, 2014). Typically, when the sales price is higher than the reference price, the item is perceived as expensive; on the other way around, when the sales price is lower than the reference price the item is perceived as economical. Thus, it follows that consumer choice is heavily based on the difference between the sales price of an item and its reference price.

Reference prices have typically been explained using the adaptation-level theory (Helson, 1947). This theory states that stimuli are judged with respect to what one has become accustomed to, or internal norms, which are shaped by the combination of past experiences and present stimulation.

2.4.2 Advertised Reference Price

Marketers commonly use "framing" to make the price of a product look more attractive (East et al., 2017). In this context, framing refers to presenting a price in a format that affects people's judgements, and, more precisely, alters their internal reference price of a specific item. The frequent use of price framing across multiple retail types denotes the success of this technique (Kan et al., 2014).

In order to influence consumers' reference prices, retailers often integrate advertised reference prices in their pricing and promotional strategies. A retailer-provided advertised reference price is the price against which consumers compare the actual sales price of a product (Levy et al., 2014; Mazumdar et al., 2005). Hence, instead of merely stating the sale price of an item, retailers present some comparative price information to emphasize the saving represented by the offering (Biswas & Blair, 1991). Advertised reference prices provide an external reference against which to judge an offered price (Kopalle & Lindsey-Mullikin, 2003), and are, as such, a specific type of external reference price (Biswas, Wilson, & Licata, 1993).

The advertised reference price is explicitly provided at the point of purchase, is usually labelled by retailers as the "list price" or the "regular price", and is often displayed in the form

of a strikethrough price. The advertised reference price is higher than the sale price and can be, for instance, a previously charged price, the manufacturer's suggested retail price, or the price of the same item at competing stores (Biswas et al., 1993). The comparative price information typically appears as a temporary price reduction, which can be presented in a variety of ways, such as "was $X, now $Y", "list price $X, our price $Y", "X% off", "save $X", and so on (Biswas & Blair, 1991; Lowengart, 2002).

Reference price advertisements essentially ask the buyer to change their beliefs about the price they should pay for an item (Biswas & Blair, 1991). Put another way, when the advertised reference price information is assimilated into a consumer's existing beliefs, it increases their internal reference price relative to that item (Grewal, Monroe, & Krishnan, 1998; Chandrashekaran & Grewal, 2006). When consumers see the advertised reference price—which is, by definition, higher than the sale price—the internal reference price of that product is raised (Mazumdar et al., 2005), and, consequently, the perceived value and attractiveness of the offer are enhanced as well (Biswas et al., 1993; Grewal et al., 1998).

The update of the internal reference price occurs unconsciously owing to an anchoring effect (Sinha & Adhikari, 2017). That is to say, the advertised reference price and the posted sale price are used by buyers as anchors to adjust their internal reference prices upwards or downwards (Chandrashekaran & Grewal, 2006).

It appears that the greater the difference between the advertised reference price and the sale price, the greater the perceived value of the offer. In other words, the better the deal, the more consumers will be attracted to buy that product (Levy et al., 2014; Kan et al., 2014). Interestingly, although consumers tend to be skeptical about advertised reference prices, they are still affected by them (Biswas et al., 1993). The retailer-provided advertised reference price raises the consumer's internal reference price even when it is perceived to be implausibly higher than the actual selling price. However, the impact on a consumer's internal reference price of a moderately inflated advertised reference price is stronger than either an exaggerated advertised reference price or an understated one (Mazumdar et al., 2005).

In conclusion, the ubiquitous use of advertised reference prices in the marketplace support the theoretical intuition that this sales promotion technique can exert a powerful influence on consumers' responses to sale prices (Kan et al., 2014).

2.4.3 Saving Presentation Format

Under the constructive view of consumer choice, consumers are influenced by the way the information is presented to them. Pricing information can be framed according to different semantic cues, one of which is the saving presentation format. It is in a retailer's best interest to frame savings information in the format that raises more effectively the internal reference price for an offering. In the marketplace, retail advertisers can present savings in absolute ($-off) or relative (%-off) terms (Chandrashekaran & Grewal, 2006).

According to Chandrashekaran & Grewal (2006), the internal reference price increases to a larger extent in response to the advertised reference price when savings information is presented in a $-off format rather than a %-off format. This seemingly occurs because, when the savings information is presented in a percentage format, the buyer does not have to process in-depth the advertised reference price, whereas when the savings information is presented in a $-off format, the buyer must notice and pay attention to the advertised reference price to figure out the extent of the savings. In conclusion, the more the consumer pays attention to the advertised reference price, the more their internal reference price will be raised, and the more attractive and favorable the offer will appear.

2.5 Research Gap and Research Questions

The review of the literature on consumer psychology suggests that choice can be viewed from two different perspectives: the rational perspective, which sees the consumer as an 'economic man' fully guided by rationality, and the constructive perspective, which acknowledges that the rational capabilities of the individual are limited, and choice is often automatic and swayed by contextual factors, cues and by how the options in the choice set are framed or presented. The research on the attraction effect and on reference price advertising stems from the constructive perspective of consumer choice. Both the attraction effect and reference price advertising assume that consumers process stimuli in ways that deviate from

rationality, and the way information is presented to the decision maker is likely to have an influence on their choice.

The existing literature on the attraction effect has revealed, among other things, that the effect is stronger when the dominance relationship of the target over the decoy is readily apparent (Huber et al., 2014; Simonson, 2014). At the same time, however, research has shown that the more the information that is presented to the consumer is meaningful and relevant, the weaker the impact of the attraction effect on their decision (Mishra et al., 1993).

When used to frame the price of the target in a choice set, reference price advertising can be viewed as an example of a tool that can trigger two seemingly opposed results. On the one hand, it can make the dominance relationship of the target over the decoy easier to identify, as it enhances the perceived value and attractiveness of the target (Biswas et al., 1993; Grewal et al., 1998). On the other hand, it can also represent meaningful and relevant information for a consumer, as it can affect their evaluation of a product's price.

This suggests that an advertised reference price can, in theory, simultaneously increase and decrease the intensity of the attraction effect. This points to a clear inconsistency, which leads to believe that the influence of reference price advertising on the attraction effect is indeed ambiguous. Hence, the purpose of this study is to investigate how advertised reference price information can work in combination with the attraction effect. More specifically, the main research question that I set out to address in this study is:

RQ. How does displaying reference price information alongside the sales price of the target of an asymmetrically dominated choice set influence the intensity of the attraction effect?

Apart from addressing this main research question, the impact of reference price advertising on perceived task complexity is also worth researching. Displaying reference price information could potentially overload the chooser with additional information, and increase the perceived complexity of the choice task. Extant research on the attraction effect has shown that, when people perceive a choice task as complex, a negative mood is elicited, which

in turn induces people to process the information provided more carefully and reduces the biasing power of the attraction effect (Malkoc et al., 2013). Furthermore, it has been demonstrated that the saving presentation format (be it in relative [%-off] or absolute [$-off] terms) affects how favorable and appealing a deal appears (Chandrashekaran & Grewal, 2006), and can have an impact on how attractive the target option appears in an asymmetrically dominated choice set.

Hence, to build on these insights provided by the literature on asymmetric dominance and reference pricing, in this study I also set out to address the two following sub-questions:

- How does adding reference price information to the target option's price tag affect the chooser's perceived task complexity?
- How does the saving presentation format moderate the relationship between reference price advertising and attraction effect?

2.6 Hypothesis Formulation

The attraction effect is claimed to be attenuated under conditions which facilitate or aid decision making (Mishra et al., 1993). It would appear that reference price information can, in theory, provide a heuristic for easily finding the most favorable deal, and thus facilitate decision making (cf. Yao & Oppewal [2016] for a similar line of reasoning on unit pricing). Nonetheless, while it has been observed that reference price advertising does affect a consumer's evaluation of a product's price, there is a lack of clear-cut evidence that advertised reference price information actually facilitates decision making.

In fact, advertised reference price information can be expected to increase a person's information load. The notion of information load draws on the argument that people have limited abilities to assimilate and process information, and the more information they need to process, the poorer—or less rational—the decisions that they make (Jacoby et al., 1974; Payne, 1976). However, apart from increasing the information load, adding reference price information to the target option's price tag can have the advantage of presenting the target

option as the most favorable one, and thus make the dominance relation of the target over the decoy easier to identify.

In short, it can be argued that merging the two strategies—attraction effect and reference price advertising—could combine the biasing power of both. Therefore, the first hypothesis is:

H_1. In an asymmetrically dominated choice set, adding advertised reference price information to the price of the target increases the strength of the attraction effect.

By increasing the information load, reference price advertising could be argued to increase the perceived task complexity. A higher task complexity is likely to elicit a negative mood from the chooser, which in turn activates a more vigilant mindset. Put differently, people in a negative mood will seek more information before making a decision and pay more attention to the details (Malkoc et al., 2013). This would make choosers take a second, closer look at the choice set, and realize that, while the decoy is inferior to the target, the competitor is not, and could be an equally viable option. However, the very statement that advertised reference price information increases the perceived task complexity is not empirically supported. People are used to encounter advertised reference prices in their daily lives, and reference price information is unlikely to have a substantial impact on how easy or difficult people perceive the choice task. Thus, the second hypothesis is:

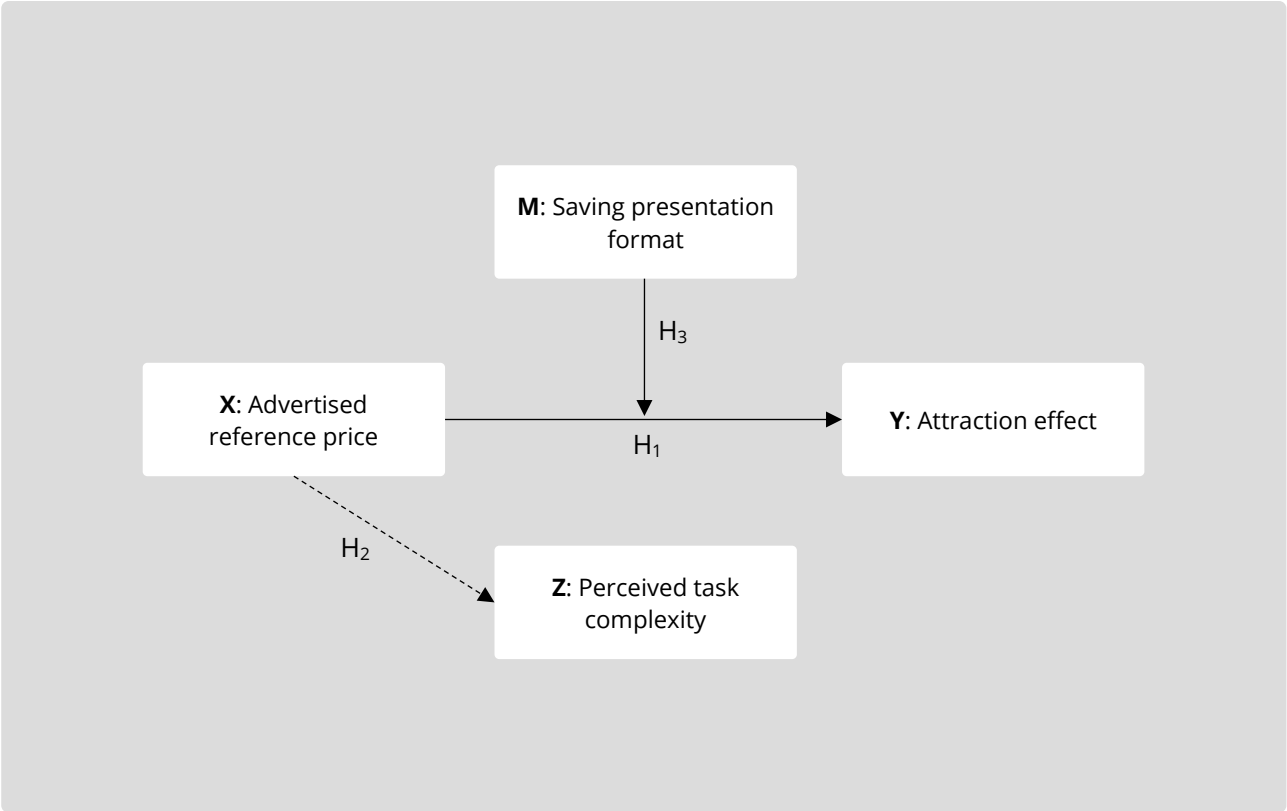
H_2. Adding advertised reference price information to the target option's price tag does not significantly affect the chooser's perceived task complexity.

Finally, it has been found that the internal reference price increases to a larger extent in response to the advertised reference price when savings information is presented in a $-off format rather than a %-off format (Chandrashekaran & Grewal, 2006). The more the internal reference price is raised, the more attractive and favorable the offer appears. Thus, when the target option's price is displayed alongside an advertised reference price presented in an absolute format, the attraction effect is likely to be stronger than when it is presented in a relative format. Hence, the third hypothesis to be tested is:

H_3. The intensity of the attraction effect is amplified to a higher extent when the savings information of the advertised reference price is presented in an absolute ($-off) format rather than a relative (%-off) format.

Figure 8 provides a graphical depiction of the hypotheses to be tested. The research method illustrated in the following section is used to test these hypotheses.

Figure 8 Graphical depiction of the stated hypotheses



3 Methodology

With the purpose of measuring, among other things, whether a significant difference in behavior can be observed in a scenario in which advertised reference price information is present as opposed to when it is not, a suitable methodology is proposed in this section. According to Hudson & Ozanne (1988), methodology entails a set of assumptions about the nature of reality and of knowledge, which are described and explained in the first part of this section, as well as the set of data-gathering techniques, subjects, research designs, settings, and analyses, which I will deal with in the second part of this section.

3.1 Ontological and Epistemological Assumptions

Given the overall aim of this study to test the relationship between variables to develop generalized claims, and the underlying assumption that phenomena can be broken down into their various components and observed in a controlled environment, this thesis broadly subscribes to the positivist approach to science.

The marketing literature is characterized by a variety of competing orientations and approaches to the nature of reality, to what constitutes scientific knowledge, and to the degree by which human behavior can be predicted and controlled (Ellis et al., 2011). These different approaches, more properly termed “paradigms”, inform the choice of research methods, and ultimately have different goals (Hudson & Ozanne, 1988). Hence, understanding and communicating the approach of a piece of research is important not only because each approach carries with it a specific methodological toolkit, but also because it says something about the extent to which findings can be generalized and inferred to other settings.

One of these paradigms is positivism. This position, which was offered by Hunt (1976), is known as the “orthodox approach” in marketing (Easton, 2002). The positivist paradigm holds that research must be objective, scientific, systematic and rigorous. For that reason, research publications embracing this paradigm tend to encompass some element of mathematical symbolism, laboratory research, experimental design and high-powered statistics (Ellis et al., 2011). Apart from being generally quantitative in nature, positivist research also entails a

strong reliance on theory. Furthermore, positivism claims that consumer behavior and marketing phenomena can be accurately predicted and controlled (Ellis et al., 2011).

On an ontological level, whereby “ontology” entails the set of assumptions about the nature of reality and social beings (Hudson & Ozanne, 1988), the world is assumed to exist independently of our perception (Ellis et al., 2011). Reality is thus objective, external and one (Saunders, Lewis, & Thornhill, 2009). According to Hunt (1976), nature presents underlying uniformities that yield empirical regularities. Put another way, many of the phenomena that we observe are consistent with and can be deconstructed to a limited set of laws that govern nature. Once these underlying uniformities have been discovered by the researcher, law-like generalizations and principles can be produced.

Positivism thus takes a reductionist approach, which assumes that the subject matter, regardless of the domain of study, can be broken down into its various fundamental components and made subject to analysis (Ellis et al., 2011). Phenomena can thus be fragmented, and parts can be isolated and placed in laboratory/experimental settings for observation. Social beings are assumed to behave in the same way in their natural context and in the laboratory setting (Hudson & Ozanne, 1988).

On an epistemological level, whereby “epistemology” concerns what constitutes acceptable knowledge (Saunders et al., 2009), positivists take a generalizing approach to research. In other words, researchers seek time- and context-free general laws that can be applied to an infinite number of phenomena and people (Hudson & Ozanne, 1988). This translates into positivist research being generally structured as following: after conducting appropriate literature reviews, hypotheses are developed, and later tested in a controlled environment; with any luck, hypotheses are empirically supported, and general laws and claims are sought; if not, hypotheses are refuted and modified.

The positivist approach has been subject to criticism (Ellis et al., 2011). More interpretive, constructionist and humanistic forms of marketing research reject the ontological argument that the world that we observe is independent of human judgement. Instead, since scientific practice is a human activity, the beliefs of the researcher, as well as their embedded cultural

values, affect how we understand and produce scientific knowledge (Anderson, 1986). That being said, while it can be argued that some research approaches are more suitable to specific studies than others, research paradigms are inherently incommensurable (Kuhn, 2012), in that they cannot be compared, there is no approach that is superior to the other, and each approach has its own unique advantages and disadvantages.

3.2 Data Collection Method

The empirical data for this research was gathered living up to the assumptions made and the strategies proposed by the positivist approach to science.

3.2.1 Participants

Three hundred and twenty-six participants were recruited through snowball sampling, and from an online panel; social media websites—Facebook and Instagram—as well as messaging platforms—Messenger and WhatsApp—were also used as recruitment tools. No material incentive was offered in exchange for participating in the study. The sample was not particularly heterogenous in terms of gender, age and occupation. Among the respondents who were included in the analysis, the majority (65%) were female, about one-third (34%) were male, and a smaller fraction of the sample (1%) identified as gender diverse (gender non-conforming and/or transgender). With regards to age, the sample was relatively young (M = 25.4, SD = 6.8). Finally, with reference to occupation, most participants were full-time university students (73% of all respondents), followed by full-time employees (19%), high-school students (4%), unemployed (4%), and retired (<1%).

3.2.2 Research Design

A survey experiment, conducted entirely online, was used to test the proposed hypotheses. The experiment was used in a positivistic fashion (Hudson & Ozanne, 1988) to manipulate the relevant independent and moderating variables (i.e., reference price advertising and saving presentation format) and observe the effects on the dependent variables (i.e., the strength of attraction effect, and the perceived task complexity). Table 2 presents a summary of all the variables included in the experiment.

Table 2 Independent and dependent variables

	Independent and moderating variables	Dependent variables
H_1	**X**: Advertised reference price	**Y**: Attraction effect
H_2	**X**: Advertised reference price	**Z**: Perceived task complexity
H_3	**M**: Saving presentation format	**Y**: Attraction effect

A mixed design, in which some conditions are manipulated within subjects and others between subjects, was used in this experiment. More specifically, the presentation of advertised reference price information was manipulated between subjects, in that the test group was exposed to advertised reference prices whereas the control group was not. In contrast, saving presentation format was manipulated between subjects, meaning that, in half of the choice sets in the test-group experiment, the savings information of the advertised reference price was presented in an absolute ($-off) format, whereas in the other half it was presented in relative (%-off) format.

With regards to variable measurement, the strength of the attraction effect was measured as the choice proportion of the target over the competitor and the decoy; the higher the choice proportion of the target over the other two alternatives, the stronger the attraction effect. Perceived task complexity, on the other hand, was self-reported and measured on a five-point Likert scale.

3.2.3. Procedure

Participants were randomly assigned to two different conditions. The links to two distinct survey experiments, one for the test group and one for the control group, were embedded into a random redirect URL, which was then spread across the Web. By clicking on the random redirect URL, participants were sent to one of the two different survey experiments, without them being aware of this randomization process. In other words, participants were not aware of the group to which they had been assigned, nor did they know that two versions of the experiment were circulating. An equivalent number of participants (N = 163) was allocated to each group. There was no significant difference in terms of demographic characteristics between the two groups.

The survey experiment was made available in two languages, English and Italian. Upon choosing their preferred language, participants were informed about the broad nature of the study, participant's confidentiality, the time required to complete the survey, and the researcher's contact information. The study was framed as a research on consumer psychology; to encourage an unbiased choice-making process and safeguard the validity of the results, "attraction effect" was never mentioned in the survey, to prevent any existing or researched knowledge about the effect from having an impact on the participants' choices.

After completing a short and optional demographic questionnaire, including questions about gender, age and occupation, participants were asked to choose their preferred option in eight different purchase situations, each involving three alternatives. Respondents were invited to imagine they were facing the choice tasks in real life, and to rely solely on the information they were given.

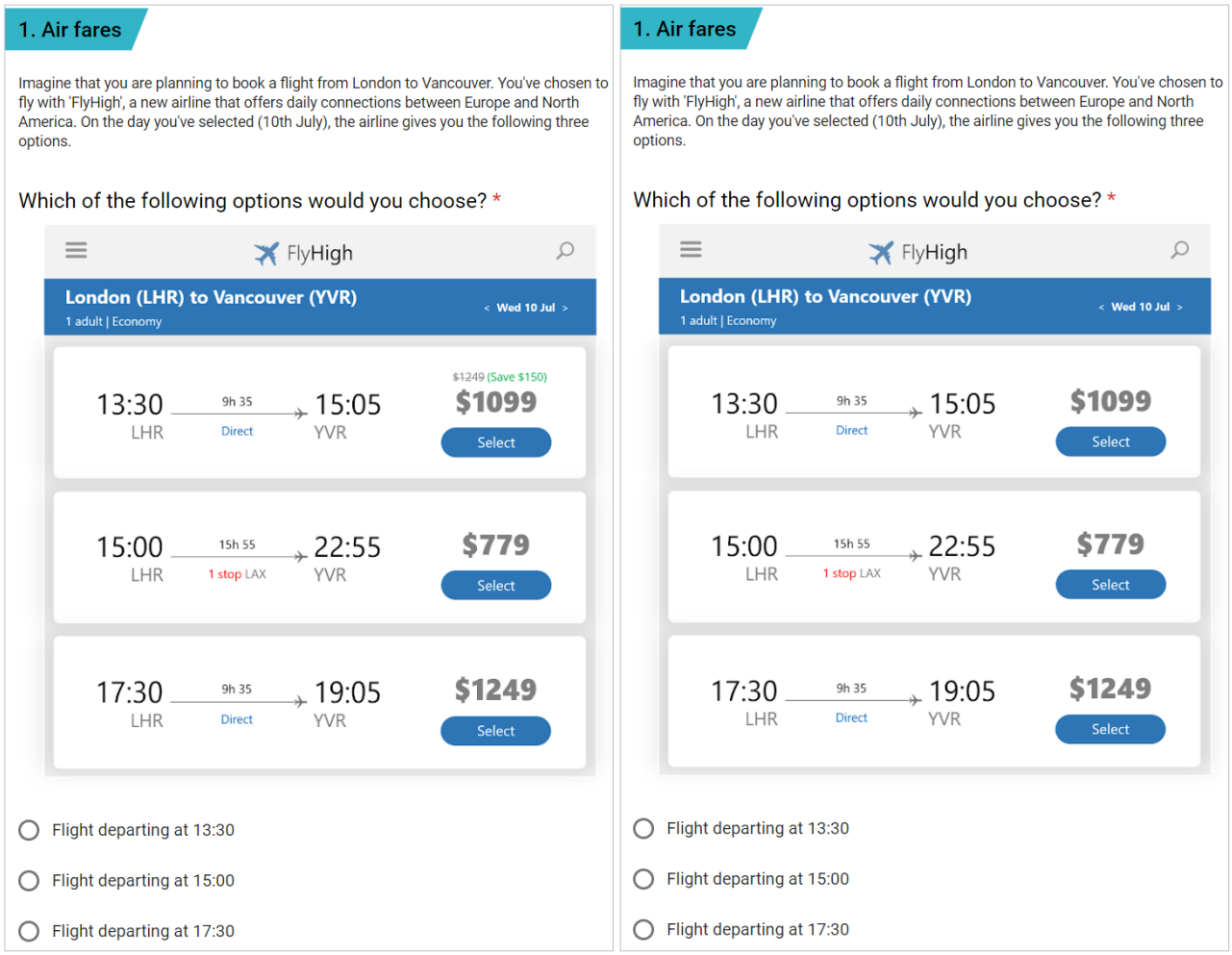
The choice sets involved a variety of product categories, ranging from dish detergents to hotel rooms, and the different scenarios attempted to simulate both online and offline buying situations. In all the purchase settings, the three alternatives were defined on two attributes, one of which was always price, whereas the other was a measure of quality (e.g. customer rating, screen resolution, storage capacity, energy rating, etc.). Participants in the test group, who were shown advertised reference price information, encountered the savings information presented in an absolute ($-off) format in half of the choice sets, and in relative (%-off) format in the other half. The alternatives in each choice set were designed to represent a target, a competitor, and a decoy. In all scenarios, the competitor was the least expensive, lower-quality option, the target was the more expensive, higher-quality option, whereas the decoy was of the same quality as the target, but it was an even more expensive alternative. While not telling the participants explicitly, the placement of targets, competitors and decoys was shifted around in each purchase scenario, as shown in Table 3.

Table 3 Summary of choice sets

	Product	Quality measure	Saving format	Option 1	Option 2	Option 3
1	Air fares	Journey duration	$-off	Target	Competitor	Decoy
2	TVs	Screen resolution	$-off	Competitor	Decoy	Target
3	Dish soaps	Package size	%-off	Decoy	Competitor	Target
4	Suitcases	Weight	$-off	Competitor	Target	Decoy
5	Smartphones	Internal storage	%-off	Competitor	Target	Decoy
6	Hotels	Customer rating	%-off	Decoy	Target	Competitor
7	Washing machines	Energy efficiency	%-off	Competitor	Decoy	Target
8	Laptops	RAM	$-off	Target	Decoy	Competitor

As an example, Figure 9 shows one of the choice sets presented to participants. It also demonstrates that the only difference between the test and the control condition is that participants in the test group were shown advertised reference price information alongside the price of the target alternative, whereas participants in the control group were not.

Figure 9 Sample choice set (test condition on the left-hand side, control on the right)



After going through the eight choice sets, participants were asked to rate the extent to which they perceived the choice tasks as realistic and as complex; both were measured on a five-point Likert scale. As a manipulation check, participants were then given a short definition of "advertised reference price" and were asked whether—in the choice sets shown beforehand—they had encountered any options whose price was presented alongside an advertised reference price. Finally, participants were thanked for their participation in the study, and asked whether they had any further comments to share on the survey or the research.

The survey experiments administered to participants in the test group and in the control group are provided in full length in Appendix B.

3.2.4 Data Quality Considerations

A number of quality checks were made before the survey experiment was administered to the respondents. To verify the internal validity of the experiment, that is the confidence with which a cause-effect inference can be made by a particular study, choice tasks were kept simple. To this aim, each task involved only three alternatives defined merely on two attributes. Furthermore, some of the most relevant moderators and boundary conditions identified from the review of the literature were taken into consideration.

Firstly, the attraction effect was measured across subjects rather than within subjects, since its impact on choice had been shown to be stronger in this particular study design. Indeed, measuring the responses of participants repeatedly may lead to bias, as participants may remember the answers they have given beforehand or realize that the test variables have been manipulated.

Secondly, previous studies had demonstrated that the attraction effect is stronger when the decoy extends the range of the dimension on which the competitor is superior. In all the choice sets, the competitor was conceived as the least expensive, lower-quality option, and was thus superior on the dimension of price. The decoy of each choice set was hence designed to extend the price range and become the most expensive alternative out of the three options, while being on par with the target alternative on the quality dimension.

Research had also demonstrated that the dominance relation is not readily apparent in situations in which the decoy is inferior to the target on both product dimensions. In order to make the dominance relation easier to identify, the decoy alternative of all choice sets was inferior to the target alternative only on one dimension, namely the price dimension.

Moreover, as it had been shown that the attraction effect is more often observed when product dimensions are quantitative, all the alternatives in the choice sets were defined solely on attributes that could be presented as a number. This raises an interesting point because, while no qualitative attributes were used to define the characteristics of the products, many of the choice sets—such as the hotel room scenario—also supplied a pictorial element, so as to not compromise the ecological validity of the study, the extent to which the choice tasks of the study approximate real-world purchase situations.

Since much of the criticism that emerged in recent years had pointed out the lack of ecological validity in the experimental designs on which the attraction effect literature is largely based, one of the priorities of this study has been to create choice tasks that resembled real store shelves and online shopping websites. In addition to providing supporting pictorial elements and realistic website designs, qualitative verbal information—such as fictitious brand names—has also been used to identify the different alternatives and retailers.

To conclude, it is crucial to acknowledge that choosing between maintaining a high level of internal validity and a high level of ecological validity inherently involves a trade-off. While the degree of control provided by a high level of internal validity enables to isolate and analyze only the behaviors specified by the hypotheses (Hudson & Ozanne, 1988), with it comes a high level of artificiality which questions the generalizability of the results. Vice versa, as an experiment carries elements that enhance its resemblance to a realistic scenario, thus increasing its ecological validity, the ability to make causal inferences between independent and dependent variables is fundamentally jeopardized (Krosnick, Lavrakas, & Kim, 2014). As much as validity appears to be a zero-sum game, this study has been designed primarily to ensure that findings could be generalized to larger groups or contexts.

3.3 Data Analysis Method

The responses collected from the survey experiment were analyzed following a three-step process. The software used to analyze the data was Microsoft® Excel® for steps one and two, and JMP® for step three.

The first step involved streamlining the raw data, which essentially meant translating all the responses given in Italian into English, and transforming all the responses given in the eight choice sets into “target”, “competitor” or “decoy”. For example, in the first choice set, “Air fares”, the first alternative (“Flight departing at 13:30”) was the target option, the second (“Flight departing at 15:00”) was the competitor, and the third (“Flight departing at 17:30”) was the decoy. This enabled to add up and compare the responses given in the eight different choice sets with one another.

The second step involved looking at the raw data again to identify the presence of low-quality responses originating, among other things, from survey satisficing. Survey satisficing is the behavior exhibited by respondents who do not fully engage with the survey questions and tend to practice the so-called “straightlining”, the act of clicking on the same option throughout the entire survey, for example the middle option. Given the threat that uninvolved participants pose to data quality, the following rules were followed to exclude from the analysis all the responses given by a participant: the respondent always chose the same alternative, such as the first, middle or last option in the choice set; the respondent always stated to neither agree or disagree with the given statements, and also stated that they did not remember whether they had seen the advertised reference price information throughout the experiment; the respondent selected four or more decoy alternatives throughout the experiment; the participant was aged 15 or below. Upon acting on these decision rules, eight responses were excluded from the analysis, thus reducing the number of participants in the study from 326 to 318.

The third step involved summarizing the data, plotting the data in graphs, and performing statistical tests of the hypotheses. This third step allowed not only to visualize the distribution

of demographic characteristics and responses, but it also allowed to attest the likelihood that the relationships between the different variables were due to chance.

All the variables involved in this study were initially treated as categorical—rather than measurement—variables. Categorical variables are variables that lend themselves to measuring but are not characterized by a number, such as advertised reference price display and saving presentation format, which can only take two values ("yes" or "no", and "$-off" or "%-off" respectively). In these cases, the most appropriate way to analyze the data is arguably through contingency analyses and Pearson's χ^2 (Chi-Square) tests of association (or independence). This test allows to conclude with confidence whether there is an association between two variables, such as exposure to advertised reference price (ARP) information and strength of the attraction effect, or whether the association is due to random variation in the responses. In addition to Pearson's tests of association, Fisher's exact test was used to conduct one-tailed tests.

While perceived task complexity was initially treated as a categorical variable, it was later treated as a discrete measurement variable. When dealing with the association between a categorical independent variable and a measurement (or quantitative) dependent variable, a T test was conducted instead.

The entire set of analyses and statistical reports is provided in full length in Appendix C.

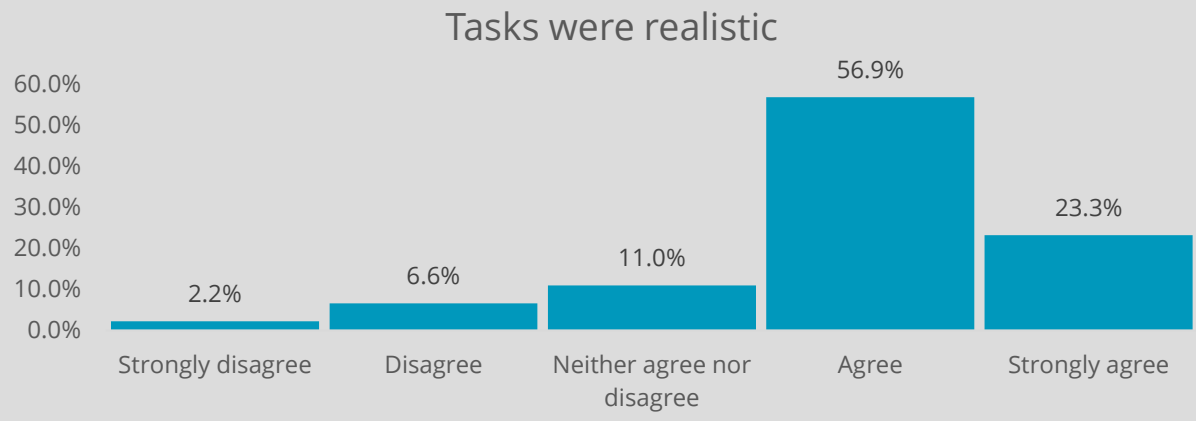
4 Findings

Taking a quick look at the summary figures suggests that the data partly gives support to the stated hypotheses. However, strictly speaking, the statistical significance of the findings is every so often marginal. In this section, I review and summarize the data gathered and analyzed, and present the results of the survey experiment.

4.1 Task perception

In order to verify the ecological validity of the experiment, towards the end of the survey, participants were asked to rate the mundane realism of the choice tasks. In other words, they were asked to evaluate the extent to which the choice tasks, while using fictitious brand names, were similar to settings they would encounter in real-life purchase situations. As Figure 10 shows, 80.2% of respondents agreed or strongly agreed that the choice tasks were realistic, thus confirming the relatively high degree of ecological validity of this study.

Figure 10 Perception of mundane realism



Cf. Figure 36 in Appendix C, page 132, for an extended version of the graph

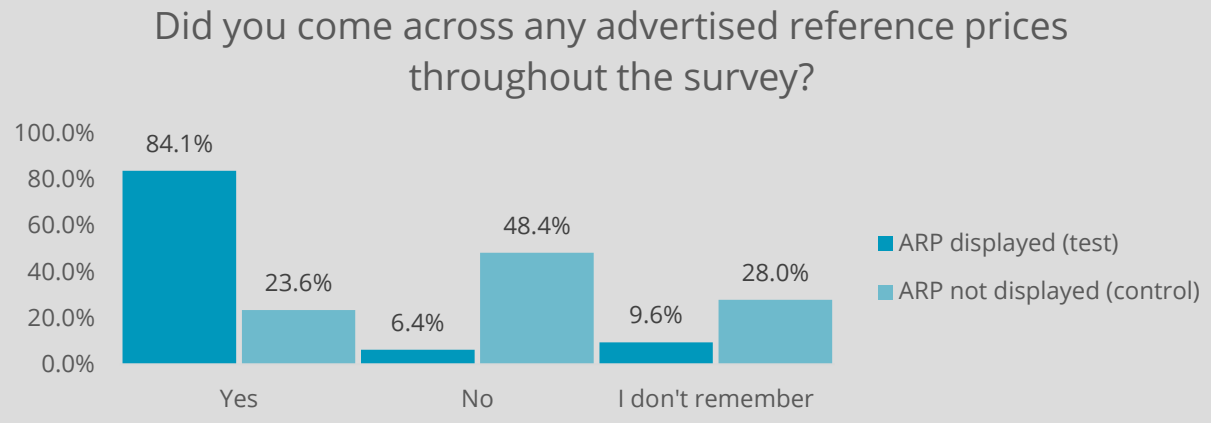
4.2 Manipulation Check

To evaluate the effectiveness of the experimental manipulation, that is, whether participants perceived the manipulation of the independent variable of interest (i.e., presence or lack of advertised reference price information), the last portion of the survey experiment consisted of a manipulation check. Participants in both the test group and the control group were

presented with a short and simple definition of “advertised reference price”, and subsequently asked whether, in the choice sets presented earlier, they had come across any options whose price was presented alongside an advertised reference price. Participants were explicitly invited not to look back at the choice sets to answer the question.

The expectation was to have respondents in the test group state that they had encountered advertised reference price information, and respondents in the control group state that they had not encountered advertised reference price information. As Figure 11 demonstrates, the proportion of participants who stated that they had come across advertised reference price information is visibly higher in the test group (84.1%) than in the control group (23.6%), partly in line with initial expectations. Although this result validated the effectiveness of the experimental manipulation, these percentages were not 100% and 0% respectively. This could be due to a relatively low respondent involvement; however, it is comprehensible that participants in the control group might have had a false memory of coming across advertised reference price information, whereas, in fact, they had not. Nonetheless, the important result was that the vast majority of test participants did notice the presence of advertised reference prices.

Figure 11 Manipulation check



Cf. Figure 40 in Appendix C, page 137, for an extended version of the graph

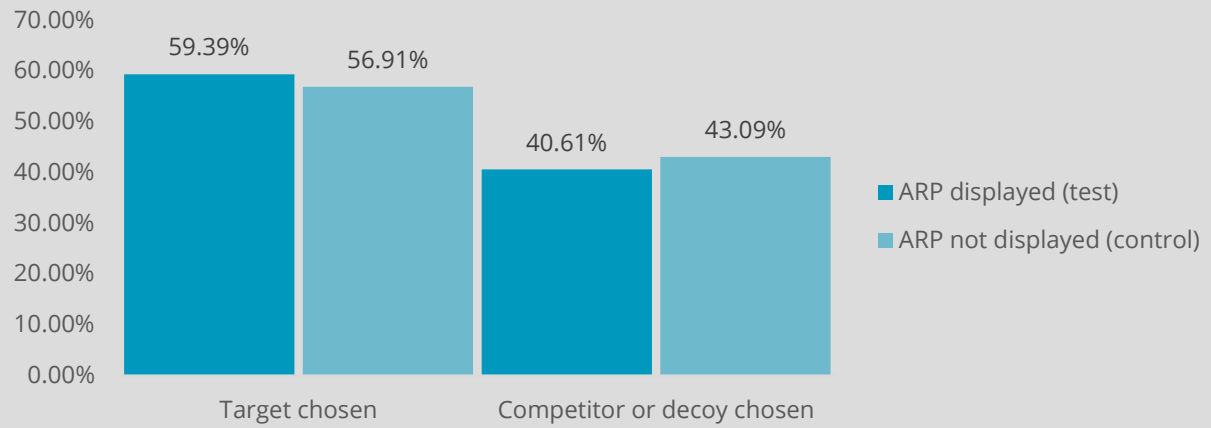
4.3 Hypothesis Testing

4.3.1 Association Between Advertised Reference Price Display & Attraction Effect (H_1)

After thoroughly reviewing the literature on the attraction effect and reference pricing, I hypothesized that adding advertised reference price (ARP) information to the target alternative in an asymmetrically dominated choice set would increase the likelihood of choosing the target, and thus amplify the strength of the attraction effect. The empirical data demonstrated that, while the choice proportion of the target alternative was indeed higher on average when the ARP was shown than when it was not, the association between ARP display and the attraction effect was not as strong as anticipated.

Figure 12 summarizes the choice proportions of target, competitor and decoy options across all choice sets and shows the difference between the test group, to which the ARP was displayed, and the control group, to which the ARP was not displayed. In support of hypothesis H_1, the choice proportion of the target alternative was higher when the ARP was displayed (59.39%) than when it was not displayed (56.91%), thus suggesting that reference price advertising is associated with a stronger attraction effect.

Figure 12 Proportions of choices (test vs. control group, choice sets merged)

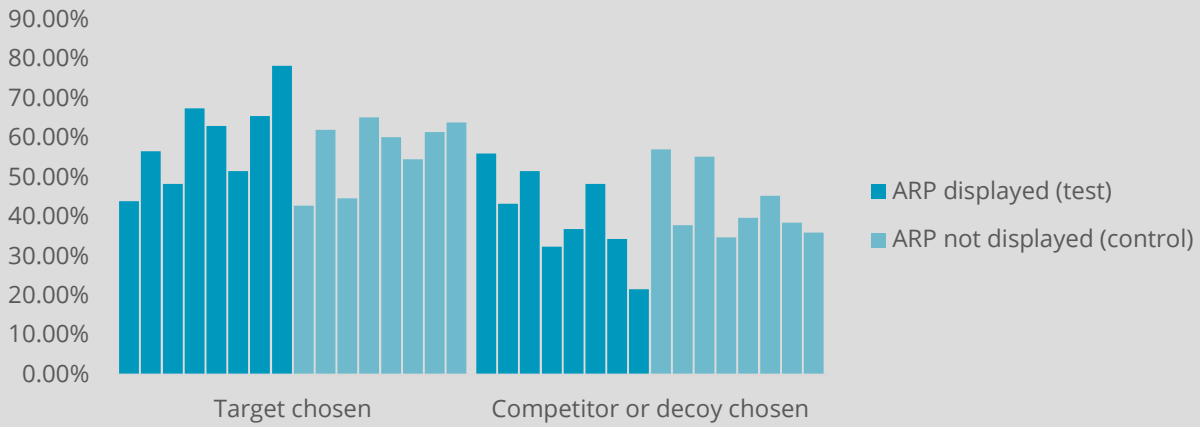


Cf. Figure 26 in Appendix C, page 123, for an extended version of the graph

Exactly like Figure 12, Figure 13 summarizes the choice proportions of target, competitor and decoy options across all choice sets, but rather than presenting the average proportion for all

the sets, each bar in this figure represents one of the eight choice sets. This figure provides a closer look at the individual choice sets, and reveals that there was a certain degree of variability between them. Put another way, there were choice sets in which the difference between the test and the control group was noticeable, and others in which the choice proportion of the target was roughly the same whether the ARP was displayed or not.

Figure 13 Proportions of choices (test vs. control group, individual choice sets)



Cf. Figure 27 – Figure 34 in Appendix C, pages 124-131, for more detailed insights on the individual choice sets

A statistical test was conducted to examine whether the difference between the two groups was indeed caused by the presence or lack of ARP information, or whether it was due to chance, something that is known in statistics as a type 1 error. Pearson's Chi-Square test of association indicated a *p* value of .2040, well above the $p = .05$ significance level (see Figure 26 in Appendix C, page 123). This essentially suggested that there was a 20.4% chance that the difference between the two groups was largely due to chance, $\chi^2(1, N = 2544) = 1.613$, $p = .2040$. Although this seemed to point towards a weak association between ARP display and the attraction effect, it is worth considering two further results that emerged from the analysis.

Firstly, even the *p* value appeared to vary considerably across the different choice sets. On the one hand, for instance, the results for the first choice set, "Air fares", showed that there was an 84.4% probability that the difference in choice proportion between the test and the control group was due to chance, which constituted enough evidence to reject the hypothesis. On the

other hand, the *p* value of the last choice set, "Laptops", was .0047, a highly significant result, which is well below the conventional $p = .05$ threshold of statistical significance. The variability across the different choice sets raises several interesting questions about other potential moderators that could be at play, and will be considered in further detail in the following sections of this thesis.

Secondly, and most importantly, while the Pearson's test showed whether the probability of choosing the target option was *different* depending on whether the ARP was displayed or not, and was thus a two-tailed test, a more exact test of association was Fisher's right-tailed test. This test allowed to conclude whether or not it was due to chance that the probability of choosing the target option was *greater* (not just "different") when the ARP was displayed than when it was not. The *p* value in this case was .1093, which is slightly above the marginal significance level of $p = .10$. This value was, however, considerably smaller that the *p* value for the alternative hypothesis, which held, on the contrary, that ARP display reduces the probability of choosing the target option. In this latter case, the *p* value was .9050, which suggested that there was a massive probability (91%) that this latter association could occur by chance (see Figure 26 in Appendix C, page 123).

In conclusion, there was some evidence to reject the hypothesis that, in an asymmetrically dominated choice set, adding advertised reference price information to the price of the target increases the strength of the attraction effect. However, this statement comes from considering any *p* value above the $p = .05$ significance level as an indication to reject the hypothesis. Based on the result that there is a 10.93% likelihood that the effect of ARP display on the attraction effect is due to chance, the reader can make their own judgements.

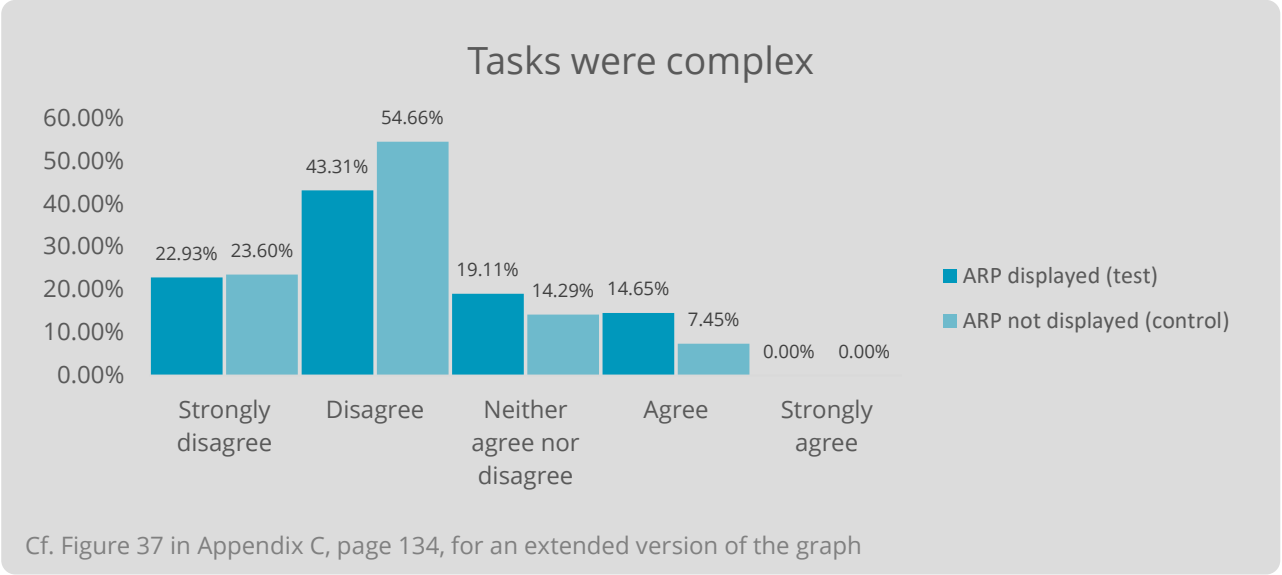
4.3.2 Association Between Advertised Reference Price Display & Task Complexity (H_2)

The experiment also tested the association between advertised reference price display and perceived task complexity. More specifically, it was hypothesized that adding advertised reference price information to the target option's price tag does not significantly affect the chooser's perceived task complexity. Therefore, the expected outcome in this case was a lack, rather than a presence, of correlation between the two variables, namely advertised reference

price and perceived task complexity. Nevertheless, the results of various analyses revealed that ARP display is likely to increase the self-reported perceived task complexity.

A quick look at the summary data in Figure 14 demonstrates that respondents in the test and in the control group had roughly the same perception of task complexity. However, it appears that, on average, participants in the test group, who encountered ARP information, perceived the choice tasks as slightly more complex, compared to participants in the control group, who were not exposed to ARP information.

Figure 14 Association between ARP display and perceived task complexity



Cf. Figure 37 in Appendix C, page 134, for an extended version of the graph

A Pearson's Chi-Square test of association was conducted to verify whether the two variables were independent or associated. The *p* value for the test was .0735, which suggested that there is a 7.35% probability that the association between the two variables is due to chance, $\chi^2(3, N = 318) = 6.951$, $p = .0735$ (cf. Figure 37 in Appendix C, page 134, for the full statistical analysis). Being this *p* value above the conventional $p = .05$ significance level, there was enough evidence to reject the hypothesis that there is an association between ARP display and perceived task complexity, which is a finding consistent with H_2. It is paramount, nonetheless, to reflect once again on the relativity of .05 as a reference point for a statistically significant result. A *p* value of .0735 is still marginally significant, and suggests that there could potentially be an association, though weak, between ARP display and task complexity.

The problem with this data analysis technique is that it treated each response alternative (strongly disagree, disagree, etc.) as discrete and disconnected from the others. Put another way, the distance between “strongly disagree” and “disagree” was treated in the same way as the distance between “strongly disagree” and “strongly agree”. However, the degree of agreement to the statement should rather be seen on a scale. Thus, further analysis was conducted based on the participants’ responses to identify the potential of a relationship between ARP display and perceived task complexity.

The previous analysis was thus repeated, but in this case the responses were coded as “low perceived task complexity” and “high perceived task complexity”. To do so, participants who strongly disagreed or disagreed to the statement “I found the choice tasks to be complex” were counted in the group “low perceived task complexity”, whereas participants who strongly agreed or agreed to the statement were counted in the group “high perceived task complexity”; “neither agree nor disagree” responses were excluded from the analysis this time around. By doing so, both the independent variable (ARP display) and the dependent variable (perceived task complexity) could only take two values (“yes” or “no”, and “low” or “high”, respectively). This allowed to construct a 2 x 2 contingency table and perform Fisher’s exact test (which is only feasible in the case of 2 x 2 contingency tables). The resulting contingency analysis is shown in Table 4.

Table 4 Contingency table: ARP display and perceived task complexity (high vs. low)

		Perceived task complexity	
		Low	**High**
ARP displayed	**No** (control group)	91.30%	8.70%
	Yes (test group)	81.89%	18.11%

The table reveals that the proportion of respondents who perceived the complexity of the choice tasks as high was larger in the test group (18.11%) than in the control group (8.70%). Correspondingly, the proportion of respondents who perceived the complexity of the choice tasks as low was smaller among the respondents who were shown advertised reference prices (81.89%), than among those who were not (91.30%). Fisher’s exact test enabled to determine whether the difference in proportions between the test and the control group was

significant enough to conclude that ARP display has an influence on perceived task complexity. The *p* value for the right-tailed test was .0185, which pointed towards a strong evidence that the probability of the task's complexity to be perceived as high was greater when the ARP is displayed than when it is not (cf. Figure 38 in Appendix C, page 135, for the full statistical analysis). The *p* value was thus significant enough to reject the null hypothesis, which corresponds to H_2, and to assert that there is in fact an association between ARP display and perceived task complexity.

This second analysis, however, also presented an important drawback. More specifically, it drew on a coding technique that less closely reflected the responses given in the survey. In other words, it did not recognize that there could be a difference in perception between the respondents who stated to strongly disagree and those who stated to (just) disagree to the statement that the choice tasks were mentally challenging.

In order to address this issue, a last, definitive analysis was conducted. In this case, the responses were coded on a scale of 1 to 5, where 1 corresponded to "strongly disagree" and 5 to "strongly agree". Hence, task complexity was treated as a discrete measurement variable, rather than as a categorical one. This coding technique not only accurately reflected the responses given by the participants, but it also treated each response option as a point on a scale of agreement. Respondents who encountered ARP information reported a higher perceived task complexity (M = 2.25, SD = 0.97) than did respondents who did not encounter ARP information (M = 2.06, SD = 0.82).

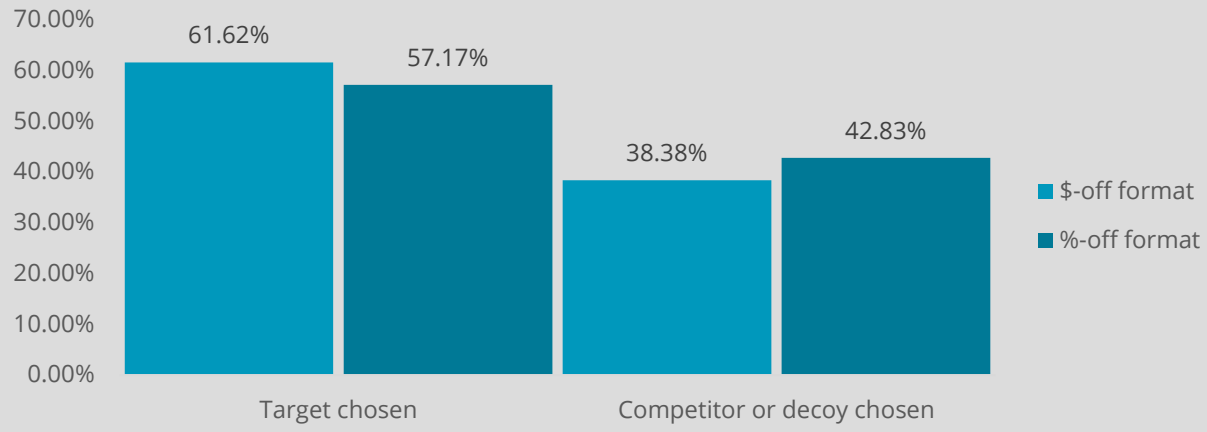
A right-tailed T test was conducted. In this case, the *p* value was .0252, which is again below the p = .05 significance threshold, and provided strong evidence that the respondents who encountered ARP information reported a higher perceived task complexity than those who did not, $t(305) = 1.96$, p = .0252. The *p* value for the alternative hypothesis—that respondents who encountered ARP information reported a lower perceived task complexity than those who did not—was .9748, which suggested that there is a considerably high probability (97%) that this latter association could be due to chance (cf. Figure 39 in Appendix C, page 136, for the full statistical analysis).

4.3.3 Association Between Saving Presentation Format & Attraction Effect (H_3)

The third hypothesis derived from the review of relevant literature stated that the intensity of the attraction effect is amplified to a higher extent when the savings information of the advertised reference price is presented in an absolute ($-off) format rather than a relative (%-off) format. To put it more simply, one would expect that the choice proportion of the target alternative would be higher in the choice sets whose ARP information is presented in a $-off format than when it is presented in a %-off format. The analysis of the responses given by the participants in the experiment revealed that the association between saving presentation format and choice proportion of the target alternative in an asymmetrically dominated choice set is marginally significant.

A quick look at the summary figures and graphs supports the stated hypothesis (as shown in Figure 15), and demonstrates that the choice proportion of the target alternative was higher when the savings information was presented in absolute ($-off) terms (61.62%) than when it was presented in relative (%-off) terms (57.17%).

Figure 15 Association Between Saving Presentation Format and Attraction Effect



Cf. Figure 35 in Appendix C, page 132, for an extended version of the graph

The difference in choice proportion of the target between the two formats was relatively small. Conducting Fisher's exact left-tailed test could reveal whether the difference in choice proportions was due to the effect of the saving presentation format or to random variation. In this specific case, it was the left-tailed test that was relevant, because it allowed to detect not

only a *difference* across the saving presentation formats, but, more precisely, it tested the likelihood that it was by chance that the probability of choosing the target option is *greater* when the savings information is presented in $-off terms than when it is presented in %-off terms. This scenario reflected closely the way hypothesis H_3 was stated. The *p* value was .0604, suggesting that there is a 6.04% probability that these results are due to chance. The .0604 value is above the $p = .05$ significance level, but below the $p = .10$ level of marginal significance, thus suggesting some degree of association between the saving presentation format and the strength of the attraction effect. While this association may not seem as strong as anticipated, it was still considerably more significant than the opposite scenario, that the probability of choosing the target option is greater when the savings information is presented in a %-off format than when it is presented in a $-off format. In this latter case, the *p* value was .9522, suggesting that there would be a 95% probability of seeing this association while, in fact, it does not exist.

4.4 Summary of Findings

To sum up the results of the analyses, hypothesis H_1 was rejected (despite its alternative being considerably less plausible), hypothesis H_2 was also rejected, whereas hypothesis H_3 was supported at $p < .10$.

With regards to hypothesis H_1, Fisher's right-tailed test of association was performed to examine the relation between ARP display and strength of the attraction effect. The hypothesis, which stated that adding advertised reference price information to the price of the target increases its choice probability, and hence the strength of the attraction effect, was in principle rejected ($p = .1093$). However, responses to the experimental task demonstrated that the choice proportion of the target alternative is generally higher when the ARP is displayed than when it is not displayed, thus suggesting that reference price advertising is associated with a stronger attraction effect. Furthermore, the analysis showed that the alternative scenario, that ARP display reduces the strength of the attraction effect, is far more implausible.

With reference to hypothesis H_2, stating that adding advertised reference price information to the target option's price tag has no impact on the chooser's perceived task complexity, results of the independent sample t-tests indicated that respondents who encountered ARP information reported a higher perceived task complexity (M = 2.25, SD = 0.97) than did respondents who did not encounter ARP information (M = 2.06, SD = 0.82), $t(305) = 1.96$, p = .0252. Hypothesis H_2, corresponding to the null hypothesis, was thus rejected.

Hypothesis H_3, which stated that the intensity of the attraction effect is amplified to a higher extent when the savings information of the advertised reference price is presented in a $-off format rather than in a %-off format, was supported at $p < .10$ (p = .0604). This hinted at a marginally significant probability that presenting the savings information in an absolute format has a higher chance of increasing the likelihood of choosing the target option.

Table 5 reviews the p values for the tested hypotheses, as well as for their alternatives. Hypothesis H_2 was revised in this table to reflect the result of the analysis.

Table 5 *P* values for tested and alternative hypotheses

	Hypotheses	***p* value**	***p* value** (alternative hypothesis)
H_1	The probability of choosing the target option is greater when the ARP is displayed than when it is not displayed	.1093	.9050
$H_{2'}$	(Revised) The probability of perceiving the task as complex is greater when the ARP is displayed than when it is not displayed	.0252	.9748
H_3	The probability of choosing the target option is greater when the savings information is presented in a $-off format than when it is presented in a %-off format	.0604	.9522

In the following section, I move on to explain these findings and discuss their theoretical and managerial implications.

5 Discussion

This thesis is fully grounded in the constructive choice framework, which maintains that choice is based on automatic and largely subconscious mechanisms that are elicited and influenced by the information environment (East et al., 2017; Bettman et al., 1998). It is hence assumed that decision making can be heavily swayed and manipulated by marketers by strategically framing the options in a choice set. Building on this perspective on choice, the purpose of this research was to explore a specific instance in which additional price information can simultaneously make an asymmetric dominance relation easier to identify, and present meaningful and relevant information that facilitates decision making, thus potentially increasing and decreasing at the same time the intensity of the attraction effect. Based on this assumption, advertised reference price (ARP) information, which is the retailer-provided price against which consumers compare the actual sales price of a product, can have an ambiguous impact on the strength and direction of the attraction effect. This study investigated this paradoxical instance, as well as the association between ARP display and perceived task complexity, and the one between saving presentation format and strength of the attraction effect.

These research problems were tackled in a positivistic fashion, by administering a survey experiment to a wide number of participants, who were randomly allocated to a test condition and a control condition. Participants were asked to choose their preferred options in a series of asymmetrically dominated choice sets, which mimicked realistic purchase situations in a variety of low-involvement product categories. ARP display was manipulated between subjects, meaning that participants in the test condition encountered ARP information, whereas participants in the control group did not. In contrast, saving presentation format was manipulated within subjects, with one half of the choice sets in the test condition displaying ARP information in a $-off format, and the other half in a %-off format. The analysis of the results was focused on measuring the differences in behavior between the two conditions, and whether such differences were statistically significant.

The findings showed that the choice proportion of the target alternative is normally higher when the ARP is displayed alongside the price of the target alternative, compared to when it is not displayed, thus suggesting that reference price advertising is associated with a stronger attraction effect; while some questions can be raised regarding the statistical significance of this association, it has been proven that the opposite effect—i.e., that reference price advertising reduces the intensity of the attraction effect—is extremely unlikely to occur. One more finding of this research is that, unlike previous expectations, adding advertised reference price information to the target option's price tag increases the chooser's perceived task complexity. Finally, the strength of the attraction effect is found to be increased to a higher extent when the savings information of the advertised reference price is presented in a $-off format rather than when it is presented in a %-off format; once again, the marginal significance of this finding might point to the possibility of a type 1 error, but it is worth mentioning that the probability of observing the opposite effect (i.e., that the %-off format increases the strength of the attraction effect more than the $-off format) is extremely remote.

5.1. Explanation of Results

While these results in part substantiate the stated hypotheses, some other patterns and associations were unanticipated.

5.1.1 Interpretation of Expected Findings

The data analysis partly supports the hypotheses that have been formulated on the basis of the previous research conducted in this field. To begin with, the proposition that adding advertised reference price information to the price of the target increases the strength of the attraction effect is corroborated in the experimental setting. Strictly speaking, consumers who encounter ARP information are more likely to choose the target alternative, compared to those who do not encounter ARP information. Moreover, further analysis of the data indicates that the association between ARP display and the probability of choosing the target option is considerably stronger when the advertised reference price is displayed than when it is not. This gives support to the assumption that the biasing powers of the asymmetric dominance

effect and of reference price advertising work in the same direction. In other words, when consumers see the advertised reference price next to the sales price of a product, the perceived value and attractiveness of the offer are enhanced; hence, adding reference price information to the target option's price tag presents that option as the most favorable one, and thus makes the dominance relation of the target over the decoy easier to identify.

One further result substantiating the previously formulated hypotheses is that the intensity of the attraction effect is amplified to a higher extent when the savings information of the advertised reference price is presented in an absolute format rather than in a relative format. As a matter of fact, choosers exhibit a greater tendency to pick the target alternative when the savings information is presented in a $-off format than when it is presented in a %-off format. Apart from the observed choice proportions, further statistical tests demonstrate that it can be inferred that the probability of choosing the target option is greater when the savings information is presented in a $-off format. This likely occurs because the internal reference price increases to a larger extent in response to the advertised reference price when savings information is presented in an absolute format rather than a relative format (Chandrashekaran & Grewal, 2006); it follows that the more the internal reference price is raised, the more attractive and favorable the offer appears.

5.1.2 Interpretation of Unexpected Findings

Some further results, however, were unexpected, as they did not fully endorse the stated hypotheses. Firstly, while the results of the experiment demonstrate that the choice proportion of the target alternative is generally higher when the advertised reference price (ARP) is displayed than when it is not displayed, the association between ARP display and the intensity of the attraction effect is not found to be significant (at $p < .05$). Furthermore, another unanticipated finding that emerges from the data analysis is that there is a certain degree of variability across the tested choice sets; namely, the association between ARP display and attraction effect is significantly above chance levels in some of the choice sets, while it is less strong in others.

One further unforeseen result is the presence of a significant association between ARP display and perceived task complexity. Extant research has revealed that a higher task complexity is likely to elicit a negative mood from the chooser, which in turn activates a more vigilant mindset, drives the choice-maker to pay more attention to the details, and weakens the intensity of the attraction effect (Malkoc et al., 2013). Although it could have been argued that, by increasing the information load, reference price advertising can increase the perceived task complexity, it was hypothesized that consumers are used to encounter advertised reference prices in their daily lives, and the lack or presence of reference price information is unlikely to have a substantial impact on how easy or difficult people perceive a choice task. However, the analysis of the findings suggests that these two variables are, in fact, not independent.

One last unexpected finding is the lack of a significant association (at $p < .05$) between the saving presentation format of the advertised reference price and the strength of the attraction effect. While choice-makers seem to exhibit a greater tendency to choose the target alternative when the savings information is presented in a $-off format than when it is presented in a %-off format, which is consistent with the assumption derived from theory (Chandrashekaran & Grewal, 2006), it must be acknowledged that there is a marginal possibility that this association might have been observed by random chance.

Three potential reasons, each of different nature, can help explain the cause of these unanticipated results, namely: 1) an underestimation of some of the cognitive effects at play, 2) the likely presence of flaws in the experimental design, and 3) the existence of other, still unexplored interacting moderators.

To begin with, it would appear that the negative effect of the advertised reference price display on a chooser's perceived task complexity had been underestimated. It has been suggested previously that, although reference price advertising can increase the information load, since it adds visual information to a product's price tag, it is unlikely to have a significant impact on how easy or difficult people perceive a choice task. This hypothesis, that advertised reference price display does not affect a chooser's perceived task complexity, rested on the—possibly faulty—assumption that people are used to encounter advertised reference prices in

their daily lives, and therefore would not perceive a choice task as more difficult when reference price information is displayed. The results of the data analysis reveal, however, an entirely different picture. People who encounter advertised reference prices exhibit a significantly greater perceived task complexity, in comparison to those who do not encounter advertised reference price information.

This profound observation can be substantiated by appreciating the effect that advertised reference price information has on a chooser's perceived task complexity. By increasing the information load, reference price advertising seemingly does increase the perceived task complexity. A greater perceived task complexity in turn elicits a negative mood from the chooser, which activates a vigilant mindset. This leads choosers to seek more information before making a decision and to pay more attention to the details, as argued by Malkoc et al. (2013). Paying more attention to the details and to the attributes of the alternatives in the choice set may conceivably involve a reconsideration of the "competitor" alternative, which might have been previously ignored due to the attraction effect. Therefore, while the ARP display may increase the choice probability of the target alternative, since its biasing power operates alongside the one of the attraction effect, the increased perceived task complexity may concurrently attenuate the impact of ARP display on the attraction effect. To sum up, acknowledging the underestimation of the negative effect of advertised reference price display on a chooser's perceived task complexity not only explains why hypothesis H_2 was rejected, but may also help explain why the association between ARP display and the intensity of the attraction effect was not as strong as anticipated.

A second potential reason why some unforeseen patterns were observed may be due to the presence of flaws in the experimental design. Some methodological shortcomings were driven by the high ecological validity of this research, and the resulting low internal validity. It has been argued earlier that this study has been designed primarily to ensure that findings could be generalized to larger groups or contexts. Put another way, in an effort to take on the criticism that the experimental designs on which the attraction effect literature is largely based lack ecological validity, this research has prioritized the usage of choice tasks resembling real-life store shelves and online shopping websites. While this relatively high

degree of ecological validity ruled out any artificiality questioning the generalizability of the results, it might have also partially undermined the internal validity of this study. To make specific reference to the choice tasks included in the survey experiment, the TVs, smartphones and laptops shown in the choice sets presented different pictorial elements and had different brand names; the dish detergent options all had different packaging designs; the suitcases had slightly different colors; the proposed hotel rooms showed different interior designs; the appearance of the washing machines varied slightly. While these choices were not accidental, but were instead made deliberately, the possibility that the variables examined may not have been fully isolated has to be acknowledged.

Some other methodological choices, which could potentially explain the source of the unexpected findings observed, may, in fact, also shed some light on further, still unexplored interacting moderators. One final reason why some of the results of the experiment were unanticipated is indeed the presence of other factors, which the literature has yet to focus on, and which can have an impact on the intensity of the attraction effect, and moderate its relationship with reference price advertising. For instance, even though the purchase situations included in the experiment were all financially and psychologically low-involving to the average consumer, the product categories varied considerably across the tested choice sets. The retail channel also varied across the choice sets, as some situations involved a purchase in an online store, whereas other simulated purchase situations occurring in brick-and-mortar stores. Similarly, the price range—or the distance in price between the competitor, the target and the decoy—was not set rigidly, in that there was not a fixed percentage markup of the decoy over the target, or of the target over the competitor. Finally, some general visual characteristics differed across the proposed choice sets, such as the website design, the arrangement of items on the store shelves, the placement of the target, competitor and decoy options, the visual prominence of the advertised reference price, of the saving presentation format, and of the product attributes.

While this variability was deliberately sought to make the findings as widely applicable as possible, it is conceivable that product category, retail channel, price range, and other visual features of the choice scenarios may have a moderating role in the relationship between

advertised reference price display and attraction effect. Acknowledging the incidence of other moderating factors can help explain why a certain degree of variability across the choice sets is observed, and more specifically why the association between ARP display and attraction effect is stronger in some of the choice sets, and less so in others.

5.2 Theoretical Contributions

The contribution of this research to the general debate on the theoretical relevance of the attraction effect is twofold. The findings of this study are important and significant as they contribute: 1) to identify supplementary factors moderating the strength of the attraction effect, and 2) to address the potentially ambiguous relationship between advertised reference price and attraction effect.

The impact of the attraction effect on decision making has been repeatedly shown to be less substantial and relevant outside a laboratory setting (Frederick et al., 2014; Yang & Lynn, 2014), which has led scholars to highlight the existence of a variety of boundary conditions for the effect. These conditions have sprung from the intuition that most of the seminal papers on the attraction effect tested this effect in artificial and overly simplified experimental environments, and thus did not closely reflect realistic purchase scenarios. This has led researchers in the field to identify and describe situations in which the attraction effect is more or less likely to sway consumer decision making. This thesis weighs in in the discussions around the different boundary conditions for the attraction effect, and more specifically focuses on the influence that advertised reference price display has on the attraction effect.

Furthermore, the review of relevant literature in the field has suggested that—when used to frame the price of the target in a choice set—advertised reference price display can be viewed as an example of a tool that may trigger two seemingly opposed results. On the one hand, it can strengthen the attraction effect, by making the dominance relationship of the target over the decoy easier to identify (Huber et al., 2014; Simonson, 2014), as it enhances the perceived value and attractiveness of the target. On the other hand, it can also represent meaningful and relevant information for a consumer, which has been shown to weaken the impact of the attraction effect on their decision (Mishra et al., 1993). Hence, an advertised reference price

can, in theory, simultaneously increase and decrease the intensity of the attraction effect. The main purpose of this study has been to tackle this paradox and investigate how advertised reference price information can work in combination with the attraction effect.

The findings of this research are significant in light of what had already been found about the attraction effect. The arguments proposed by Frederick et al. (2014), Yang & Lynn (2014) and Milberg et al. (2014)—who criticized the studies conducted by Huber et al. (1982) and Simonson & Tversky (1992), pointing primarily to the use of highly stylized and unrealistic product depictions in their experimental designs—generated a discussion on the moderators and boundary conditions beyond which the attraction effect is less prominently observed. To begin with, this research validates the existence of moderating factors (Mishra et al., 1993), and identifies one that had not yet been explored: advertised reference price display.

The results of the test of association between advertised reference price display and strength of the attraction effect reveal that this cognitive bias is more prominent when the advertised reference price is displayed, thus supporting the claim that the attraction effect is more likely to occur when the dominance relation is easy to identify (Huber et al., 2014; Simonson, 2014). This finding may also reveal that advertised reference price information works more as an anchor that subconsciously adjusts a consumer's internal reference price upwards (Mazumdar et al., 2005; Chandrashekaran & Grewal, 2006), and less as a relevant piece of information that helps the chooser distinguish options in the choice set. If advertised reference price were perceived as a relevant piece of information, it would facilitate decision making and reduce the likelihood of a cognitive bias—such as the attraction effect—to occur (Mishra et al., 1993), but this does not seem to be the case.

The finding that choosers perceive the choice tasks as more complex when advertised reference price information is displayed further substantiates the idea that advertised reference price information does not necessarily facilitate decision making, but rather increases the likelihood to resort to heuristic judgement and exhibit a cognitive bias. Nonetheless, the effect of a greater perceived task complexity is dual. If, on the one hand, it increases the likelihood to resort to heuristic judgement, on the other hand, it can also in part

counteract the cognitive bias of the attraction effect. This would also be aligned with the insight that a greater perceived task complexity evokes a negative mood from the chooser, which in turn activates a more vigilant mindset and leads the choice-maker to pay more attention to the details and potentially reconsider the previously ignored “competitor” option (Malkoc et al., 2013). Hence, the difference in perceived task complexity when advertised reference prices are displayed, versus when they are not, may help explain why the relationship between advertised reference price display and strength of the attraction effect, while present, was not as strong as anticipated.

Finally, the finding that the strength of the attraction effect is increased to a higher extent when the savings information of the advertised reference price is presented in a $-off format, compared to when it is presented in a %-off format, is consistent with the argument proposed by Chandrashekaran & Grewal (2006). The internal reference price increases to a larger extent in response to the advertised reference price when savings information is presented in a $-off format rather than a %-off format, because the savings information presented in a $-off format requires the consumer to notice and pay more attention to the advertised reference price to figure out the extent of the savings. This raises the internal reference price to a larger extent and makes the option (the target) look more attractive.

Findings from this study revealed, however, new gaps in the literature that have not yet been uncovered or adequately explored. There can possibly be a considerable number of further moderators and boundary conditions, which research has yet to investigate.

5.3 Managerial Implications

Apart from their theoretical relevance and significance, the results of this study can be applied more generally on a managerial level, and can be particularly useful for marketing practice. Effectively increasing the strength of the attraction effect can be profitable for managers, because it can sway the choices of consumers who are largely indifferent between two options in a choice set, and shift the choice frequencies to the higher quality, more expensive alternative. This can prove especially relevant for businesses for which the profit obtained from selling a higher-quality offering (i.e., the money earned minus the cost of producing and

selling that particular good or service) is greater than the profit obtained from selling a lower-quality offering.

With reference to the finding that advertised reference price display is associated with a stronger attraction effect, practitioners could benefit from displaying advertised reference prices alongside the sale price of the target option in their asymmetrically dominated choice sets. The advertised reference price could be, for instance, a previously charged price, the manufacturer's suggested retail price, or the price of the same item at competing stores, and it should ideally be in line with the sales price of a similar option (the decoy). While there is a certain chance that other lurking variables might be at play, this study confidently rules out the opposite effect, namely the possibility that advertised reference price information weakens the intensity of the attraction effect.

While displaying advertised reference price information on a product's price tag, practitioners should beware of the risks of adding information content to the product label. It has been demonstrated that advertised reference price display increases the perceived complexity of a choice task. Hence, it is critical to avoid providing too much information on the product label, which could potentially trigger a negative mood from the consumer, and reduce the intensity of the attraction effect.

Finally, practitioners could benefit from providing advertised reference price information in an absolute ($-off) format, rather than in a relative (%-off) format. The results of this research reveal that, in an asymmetrically dominated choice set, when the sale price of the target option is accompanied by savings information, the absolute format does a better job at increasing the internal reference price for a good or service. This makes the target deal look more favorable, it increases the dominance relation of the target over the decoy, and it makes the target alternative outshine the competitor alternative. Hence, in order to increase its choice probability, the target option of an asymmetrically dominated choice set should not only be displayed alongside a stricken through advertised reference price, but it should also be accompanied by the dollar saving amount, or the difference, in dollars (or any other currency), between the advertised reference price and the sale price of the item.

6 Conclusion

The primary objective of this study was to investigate empirically how the display of advertised reference price (ARP) information—i.e., the retailer-provided price against which consumers compare the actual sales price of a product—can work in combination with the attraction effect. More specifically, this research was designed to explore the change in attraction effect strength following the display of advertised reference price information next to the sales price of the target option of an asymmetrically dominated choice set. Advertised reference price may be regarded as a piece of information that can potentially make the dominance relation of the target over the decoy more readily noticeable, thus increasing the likelihood of the attraction effect to occur, as demonstrated by previous research in the field. At the same time, however, advertised reference price information could provide a heuristic for easily finding the most favorable deal in a choice set, which facilitates decision making and, as it has been shown, minimizes the cognitive bias created by the attraction effect.

A survey experiment was conducted on a relatively large sample of participants. The results of the experiment demonstrate that reference price advertising is associated with a stronger attraction effect. The effect is more robust when the savings information is presented in an absolute ($-off) format than when it is presented in a relative (%-off) format. However, the findings showed that the association between advertised reference price display and attraction effect is not as strong as anticipated. It is likely that the reason underlying this weak association is attributable to an increase in perceived task complexity when ARP information is displayed. A greater exhibited perceived task complexity not only rules out the suggestion that ARP information facilitates decision making, but it might also be the root cause of a chain of events leading to the counteraction and partial neutralization of the attraction effect. Simply put, a greater perceived task complexity elicits a negative mood from the chooser, which activates a vigilant mindset. The vigilant mindset in turn leads the choice maker to pay more attention to the details and to the attributes of the alternatives in the choice set. This may involve a reconsideration of the “competitor” alternative, which might have been previously ignored due to the attraction effect. Therefore, while the ARP display may increase the choice probability of the target alternative, since its biasing power operates in conjunction

with the one of the attraction effect, the increased perceived task complexity may concurrently attenuate the impact of ARP display on the attraction effect.

Despite the debatable statistical significance of some of the findings, the results of this analysis not only prove that it is largely improbable that reference price advertising reduces the strength of the attraction effect, thus validating the findings of this research, but also address an extremely relevant paradoxical instance that had been left unresearched in the literature. While the extant research has focused on the moderators and boundary conditions for the attraction effect, there seems to be no trace of research on those instances of information that can, in theory, simultaneously increase and decrease the intensity of the attraction effect. This thesis set out to fill this gap by focusing on advertised reference price display as a specific situation in which a piece of information can concurrently make the asymmetric dominance relation easier to identify and facilitate decision making, thus at the same time increasing and decreasing, respectively, the strength of the attraction effect.

This thesis contributes new understanding and advances past research on the topic of the attraction effect. In addition to providing specific and useful managerial implications and applications for product and pricing strategies, this research provides a further perspective on this highly debated and controversial subject. A particularly critical, yet prominent, stream of research has generated a tremendous amount of literature contesting the robustness and relevance of the attraction effect in realistic settings. The critics have pointed primarily to the lack of ecological validity in the experimental designs on which the attraction effect literature is largely based. This study, by contrast, is based on an experimental design that is rich in ecological validity, and it provides evidence for yet another moderator, which interacts with the attraction effect, modifying its strength. More generally, this thesis provides further support to the constructive idea that preferences are highly context-dependent, and that choice often deviates substantially from rationality and is heavily influenced by the information environment. Put another way, changing the way information is presented to the decision maker—such as showing or hiding advertised reference price information—has an impact on people's choices, even though, from a rational perspective, that should not have any impact whatsoever on their evaluations and decisions.

6.1 Limitations

While this study advances and refines research in the field, it is vital to acknowledge that it also carries several limitations that may potentially affect the validity of the findings. To begin with, the sampling method to recruit participants was a convenience sample, or a voluntary response sample, in that it essentially included either people who were easy to reach, or who had chosen to include themselves in the study. Although it could be argued that, in the constructive choice paradigm, choice is largely dependent on the context and not so much on the subject's rationality, and therefore respondents' characteristics are unlikely to affect choice, it is worth recognizing that the sample was not particularly heterogenous in terms of gender, age and occupation. Furthermore, while no material incentive was offered to participants, the subjects recruited from the online panel were offered credits that they could use to get respondents for their own surveys. It could be claimed that participants from an online panel, who mostly look for a reward, may not be fully involved in the experimental task and may answer misleadingly to the questions posed by the researcher. There is therefore a possibility that this may have compromised the validity of the results.

Secondly, responses were largely taken at face value. Especially when participants were asked to evaluate the realism and the complexity of the task, the data that was generated was based on self-reports. There could possibly be a gap between how people express the way they perceive a task, and how they actually perceive it. While it would not necessarily address the issue at the root, it would have been helpful and informing to ask participants to give the reasons why they made a specific judgement about the task's realism and complexity.

Moreover, in retrospect, including additional questions in the survey would have helped conduct a more thorough analysis of the results, increase the internal validity of the research, and address a particular issue that emerged later in the study, namely the considerable unevenness in choice proportions across the choice sets. For instance, participants could have been asked to justify why they picked a specific option in a choice set, so that random choice and straightlining would have been spotted more easily, or—even better—avoided completely. Additionally, respondents could have been asked to rate their degree of

knowledge about the product category, as it appears that consumers with low levels of familiarity with the product category are more inclined to be influenced by how the alternatives are presented in the choice set. Another revealing insight could have emerged by asking participants to rank the importance of different attributes (e.g., price and quality) in their buying behavior; this would have enabled to verify whether the average degree of price consciousness was the same in the experimental and in the control condition. Including such questions, however, would have increased significantly the time required to complete the survey; hence, this would have required a considerable reduction in the number of choice sets in the experiment.

And finally, as pointed out earlier in the discussion section, some elements, which were purposefully included in the choice sets to enhance the ecological validity of this study, might have reduced the internal validity of the findings. Such elements included pictures, brand names and other qualitative information that future studies should attempt to isolate in their research designs.

6.2 Suggestions for Further Research

Future research could focus on addressing the limitations of this study and on further expanding the research problem. There are especially two negative, unexpected results that may form the basis for future research. The first one is the noticeable unevenness of choice proportions across the choice sets. In some of the choice sets, the strength of the attraction effect differed significantly between the experimental and the control condition, whereas in others it did not. This result supports the idea that other factors may moderate the relationship between advertised reference price display and attraction effect. Such factors include, but may not be limited to, brand name, product category, retail channel (online vs. offline), price range (the distance in price between the competitor, the target and the decoy), and other visual characteristics, such as website design, packaging design, the arrangement of items on the store shelves, the placement of the target, competitor and decoy options, the visual prominence of the advertised reference price, of the saving presentation format, and of

the product attributes. This all suggests that a deeper, more insightful understanding of moderators is needed.

The second unanticipated result is the significantly greater perceived task complexity resulting from the display of advertised reference price information. The findings suggest that, although advertised reference prices increase the attractiveness of an offering, as they raise the internal reference price for that item, consumers tend to perceive a choice task as more complex when advertised reference price information is present. This study suggests that perceived task complexity is inversely correlated with the strength of the attraction effect, because it evokes a negative mood from the chooser, activates a more vigilant mindset and leads the choice-maker to reconsider the previously ignored “competitor” option. Investigating whether advertised reference price information represents value to consumers, and helps them make a decision, as well as empirically establishing the link between perceived task complexity and attraction effect, could be an interesting topic for further research.

These opportunities for future research suggest that further new approaches and other ways of thinking about this research problem are needed to expand knowledge in this field. But they also prove—alongside this very thesis—that the conditions that limit or amplify the intensity of the attraction effect, and which have been proposed by the literature thus far, only provide a narrow picture on the factors that moderate asymmetric dominance, and only set a few of the boundaries for this highly debated effect.

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Appendix A The Economist's Pricing Structure

Figure 16 The Economist's pricing structure (as it appears in Ariely [2008])

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Figure 17 The Economist's pricing structure – altered version (as it appears in Ariely [2008])

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Appendix B Survey Experiment

Test group

Section 1 of 7

Consumer research survey

* Required

In which language do you wish to complete this survey? / In quale lingua desidera compilare il questionario? *

Mark only one answer.

- ○ English → *Skip to section 2*
- ○ Italiano → *Skip to section 3*

Section 2 of 7

Hello there

My name is Alessandro. I am a Master student in Brand and Communications Management at Copenhagen Business School. This survey is part of my master's thesis on consumer psychology. My study is designed to collect information about consumer choice.

This survey is completely confidential. The questions do not ask you to identify yourself. Results will be presented in aggregated form only.

The survey should take you about six minutes to complete. Your participation in this research is voluntary. You are free to take part and may stop taking part at any time. Some of the questions you will be asked are optional.

I hope you will find this questionnaire enjoyable. If you wish to provide any comments, there will be a dedicated space at the end of this survey. If you have any questions about the research, please email me at alco14ae@student.cbs.dk.

So let's get a few basic things out of the way

I'd like to ask you a couple of personal questions to make sure I am talking to a diverse group of people.

How do you identify your gender?
Please tick one or more boxes.
Check all that apply.

☐ Female
☐ Male
☐ Gender diverse (gender non-conforming and/or transgender)

What is your age?
Age is just a number, so please enter your age as a number.

_____

What is your main occupation?
If you are in doubt, simply choose the option that describes you the most. Alternatively, choose 'other' to specify your occupation.
Mark only one answer.

○ Full-time college/university student
○ High school student
○ Full-time employee/worker
○ Retired
○ Unemployed
○ Other: _____

→ Skip to section 4

Section 3 of 7

Benvenuti

Il mio nome è Alessandro. Sono uno studente di Brand and Communications Management alla Copenhagen Business School. Questo sondaggio fa parte della mia tesi magistrale in psicologia del consumatore. Il questionario è progettato per raccogliere informazioni riguardo alle scelte dei consumatori.

Questo sondaggio è completamente confidenziale. Le domande poste non Le chiederanno di identificarsi. I risultati verranno presentati solamente in forma aggregata.

Per rispondere al sondaggio, Le dovrebbero occorrere circa sei minuti. La Sua partecipazione in questa ricerca è volontaria. È libera/o di rispondere a e abbandonare il questionario in qualunque momento. Alcune delle domande che Le verranno poste sono facoltative.

Mi auguro che troverà il questionario piacevole. Se desidera fornire dei commenti, ci sarà uno spazio dedicato alla fine del questionario. Se ha delle domande sul progetto di ricerca, La prego di contattarmi via email ad alco14ae@student.cbs.dk

Per cominciare, La prego di rispondere a queste domande preliminari

Le porrò tre semplici domande su di lei per assicurarmi che i dati raccolti rappresentino un gruppo variegato di partecipanti.

In quale genere si identifica?
Scelga una o più opzioni.
Segnare tutte le opzioni pertinenti.

☐ Donna
☐ Uomo
☐ Genere non-binario (genere non conforme e/o transgender)

Qual è la Sua età?
L'età è solo un numero. Quindi, per favore, inserisca la Sua età in cifre.

_____

Qual è la Sua occupazione principale?
Se è in dubbio, scelga l'opzione che La descrive al meglio. In alternativa, scelga 'altro' per specificare la Sua occupazione.
Segnare soltanto una risposta.

○ Studente universitario a tempo pieno
○ Studente di scuola superiore
○ Impiegato/lavoratore a tempo pieno
○ Pensionato
○ Disoccupato
○ Altro: _____

→ Skip to section 5

Section 4 of 7

You will now be asked to select your preferred option in eight different purchase situations.

When making your choices, imagine you are facing the choice task in real life, and rely solely on the information that you are given.

There is no right or wrong answer; I am merely interested in your own preferences.

1. Air fares

Imagine that you are planning to book a flight from London to Vancouver. You've chosen to fly with 'FlyHigh', a new airline that offers daily connections between Europe and North America. On the day you've selected (10th July), the airline gives you the following three options.

Which of the following options would you choose? *
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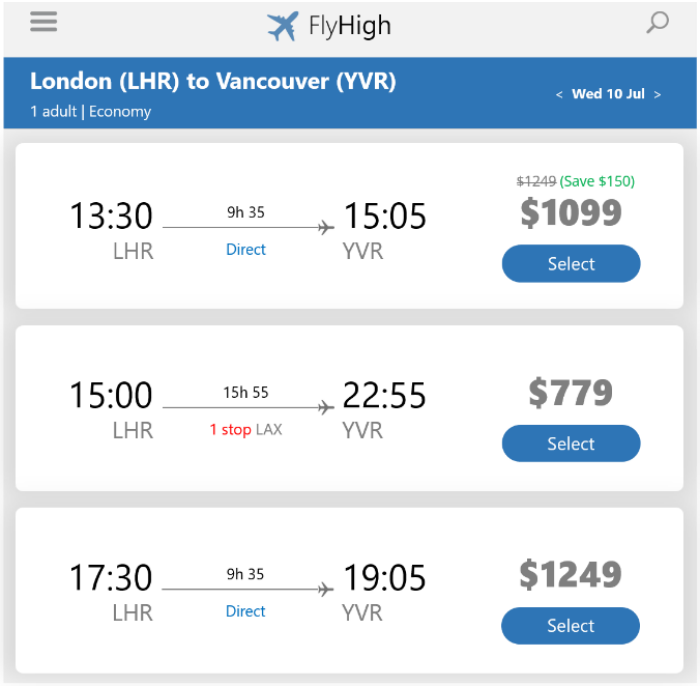

- ○ Flight departing at 13:30
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Imagine that you are planning to purchase a new TV. You have been recommended to buy it from an online retailer called 'UltraVision'. You have narrowed your choice down to the following three options, which differ in terms of price and screen resolution (i.e. the clarity of the text and images displayed on the screen; a higher value indicates a higher resolution).

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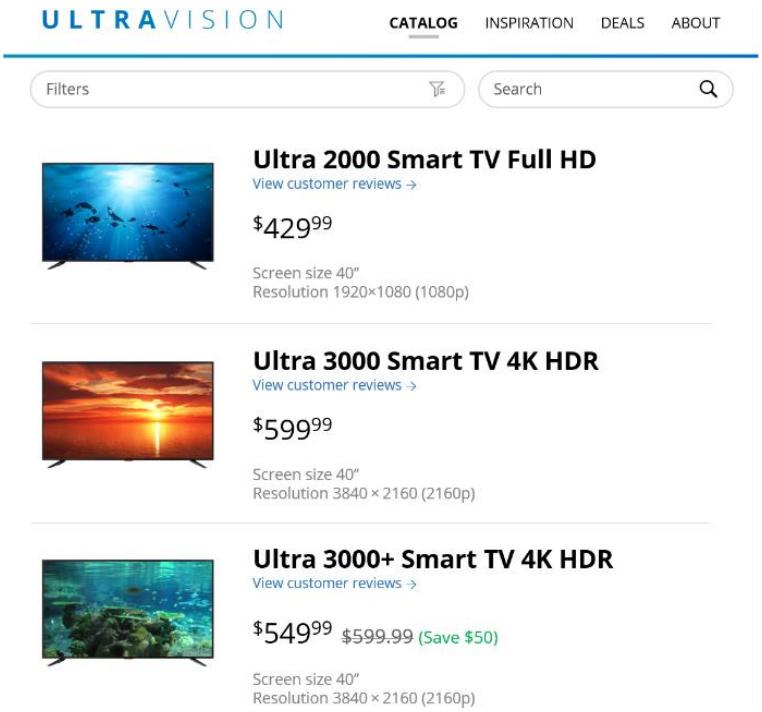

- ○ Ultra 2000 Smart TV Full HD
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3. Dish soaps

Imagine that you are in a grocery store and need to buy some dish soap. You have narrowed your choice down to the following three brands, which differ in terms of price and size.

Which of the following brands would you choose? *
Mark only one answer.

- ○ OK! clean
- ○ Ultra
- ○ Extra Action

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Imagine that you are planning to buy a new carry-on luggage for your upcoming trip to Vancouver. 'LuggageSupply' is an online retailer that specializes in lightweight travel gear. You have narrowed your choice down to the following three options.

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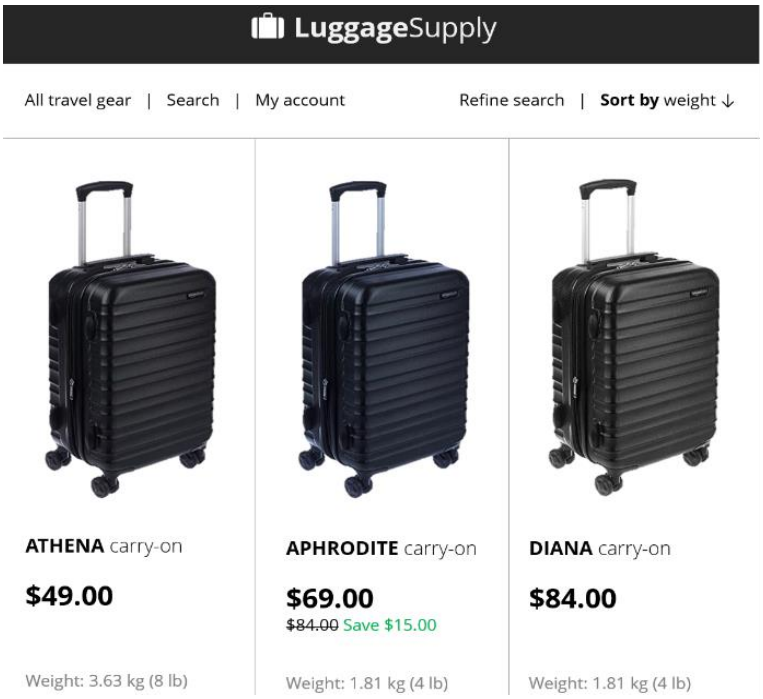

- ○ Athena
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5. Smartphones

Imagine that you are planning to purchase a new smartphone. You're going to get it on 'EZbuy.com' and you have narrowed your choice down to the following three options from the same brand. The options differ in terms of price and internal storage (i.e. the amount of space to store your files and applications; a higher value means a higher storage).

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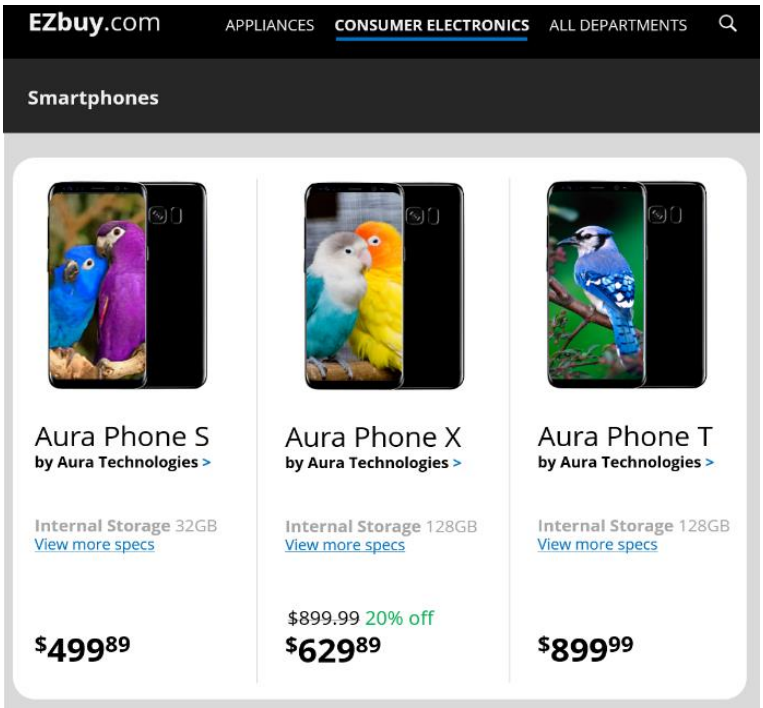

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'Sunshine Hotels' is an internationally-recognized chain of hotels. Imagine you're planning to spend a weekend in Paris. Based on the filters that you've set, 'Sunshine Hotels' has three options for you. For each option, you are given the price and the customer rating.

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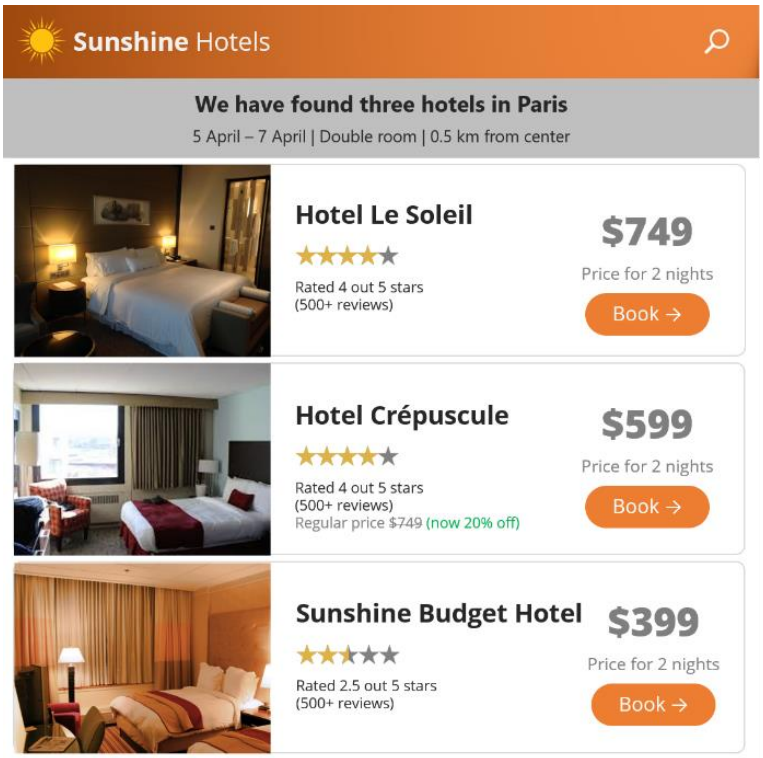

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7. Washing machines

Imagine that you are planning to buy a new washing machine. Some friends recommended you to check out 'Spin.com', an online and physical retailer selling home appliances. You have narrowed your choice down to the following three options. The three options differ in terms of price and energy efficiency (labelled on a scale from A+ to G, A+ being the most energy efficient, G the least efficient).

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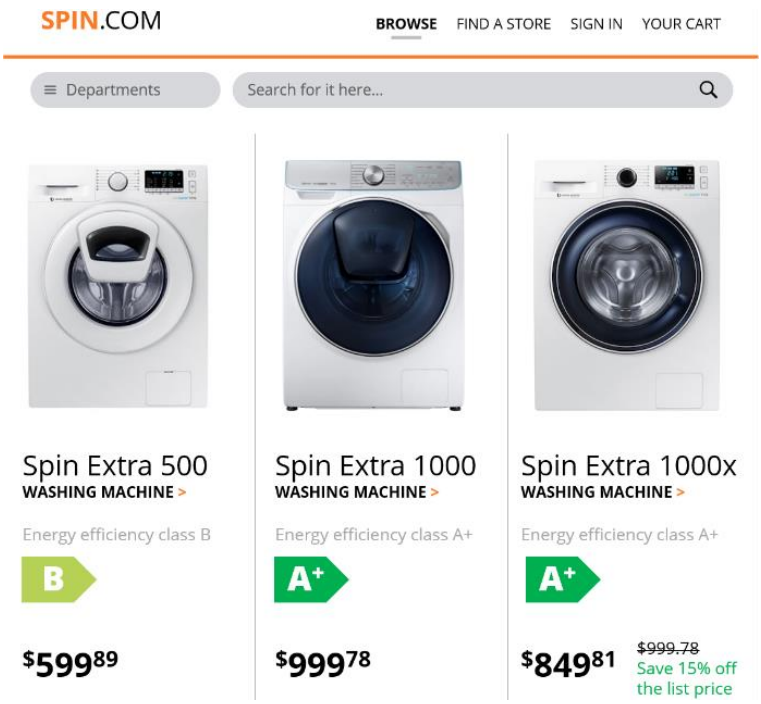

- ○ Spin Extra 500
- ○ Spin Extra 1000
- ○ Spin Extra 1000x

8. Laptops

Imagine that you are planning to purchase a new laptop, and you intend to buy it from 'Coral Electronics', a new and rising online retailer. You have narrowed your choice down to the following three options. The options differ in terms of price and RAM (a higher RAM means a faster laptop).

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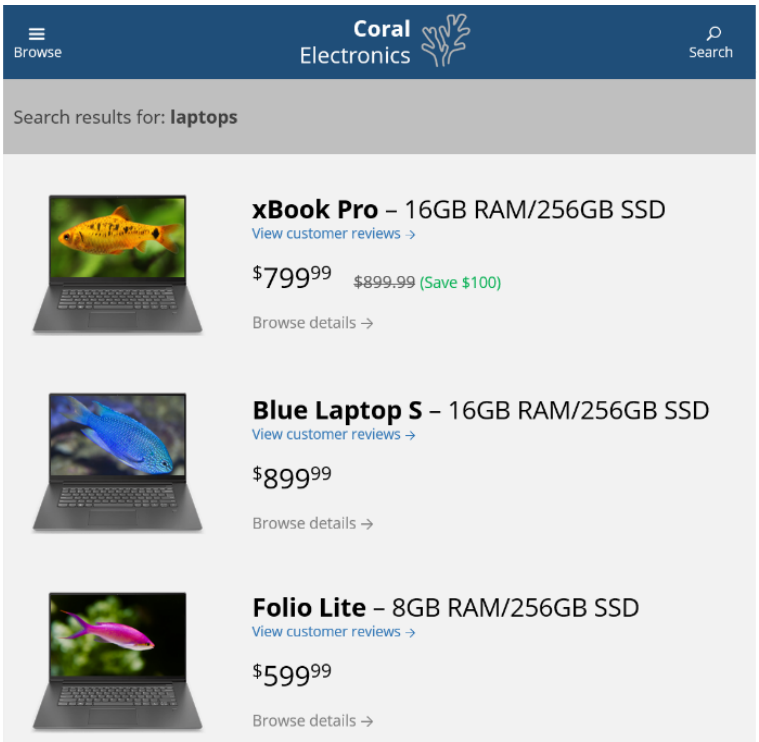

- ○ xBook Pro
- ○ Blue Laptop S
- ○ Folio Lite

→ *Skip to section 6*

Section 5 of 7

Adesso le chiederò di scegliere l'opzione da Lei preferita in ciascuna delle otto situazioni qui di seguito.

Nel fare le Sue scelte, immagini di affrontare la decisione come se fosse nella vita reale, e si basi esclusivamente sulle informazioni che Le vengono fornite.

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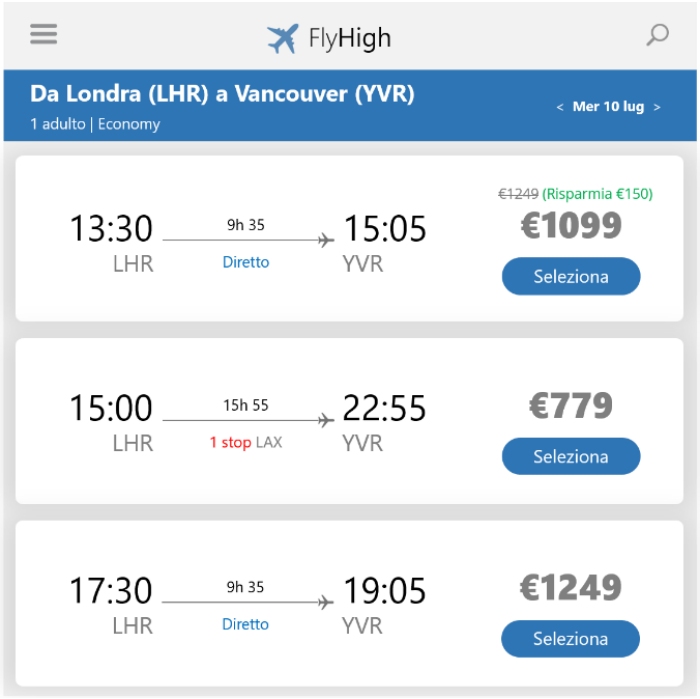
Immagini di avere intenzione di prenotare un volo di sola andata da Londra a Vancouver. Ha scelto di volare con 'FlyHigh', una nuova compagnia aerea che offre connessioni giornaliere tra l'Europa e il Nord America. Nel giorno che ha selezionato (10 luglio), la compagnia aerea Le offre le seguenti opzioni.

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



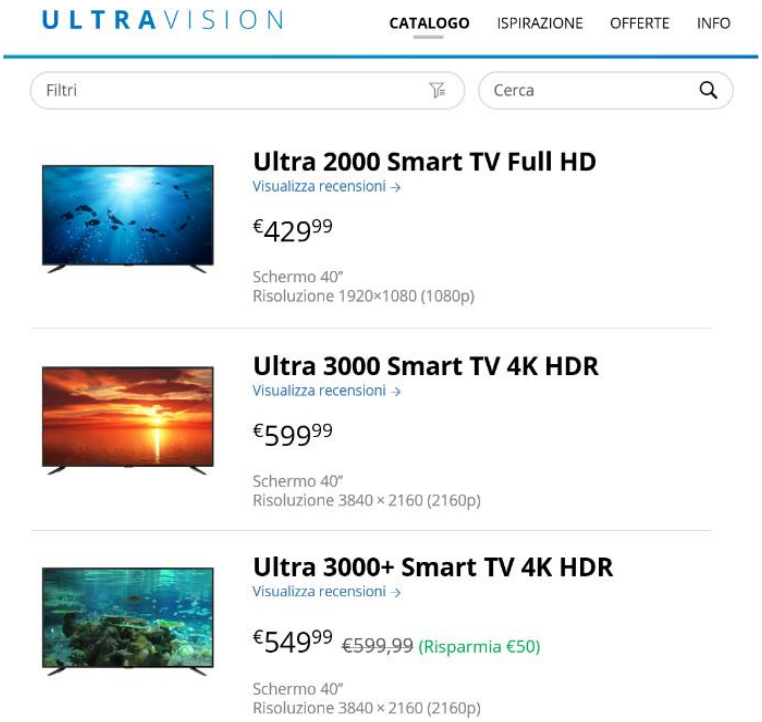
- ○ Il volo delle 13:30
- ○ Il volo delle 15:00
- ○ Il volo delle 17:30

2. Televisori

Di recente, ha pensato di comprare un nuovo televisore. Le è stato raccomandato il sito di shopping online 'UltraVision'. Al momento ha ristretto la Sua scelta alle tre opzioni qui di seguito, che differiscono in base al prezzo e alla risoluzione (ossia la chiarezza del testo e delle immagini mostrati sullo schermo; un valore più alto indica una risoluzione più elevata).

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



- ○ Ultra 2000 Smart TV Full HD
- ○ Ultra 3000 Smart TV 4K HDR
- ○ Ultra 3000+ Smart TV 4K HDR

3. Detersivi per piatti

Immagini di essere in un supermercato e di dover comprare del detersivo per piatti. Ha limitato la Sua scelta alle tre opzioni mostrate in basso, che differiscono in base al prezzo e alla dimensione.

Quale dei seguenti marchi sceglierebbe? *

Segnare soltanto una risposta.

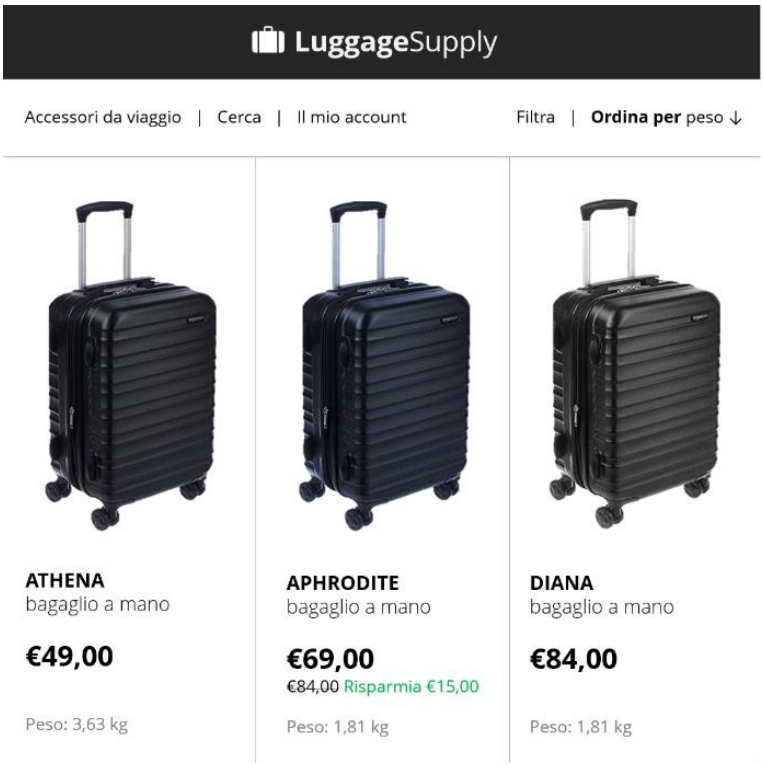
- ○ OK! clean
- ○ Ultra
- ○ Extra Action

4. Valigie

Per il Suo viaggio a Vancouver, immagini di aver bisogno di acquistare un nuovo bagaglio a mano. 'LuggageSupply' è un sito di shopping online specializzato nella vendita di valigeria leggera e accessori da viaggio. Al momento ha ristretto la Sua scelta alle tre opzioni qui di seguito.

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



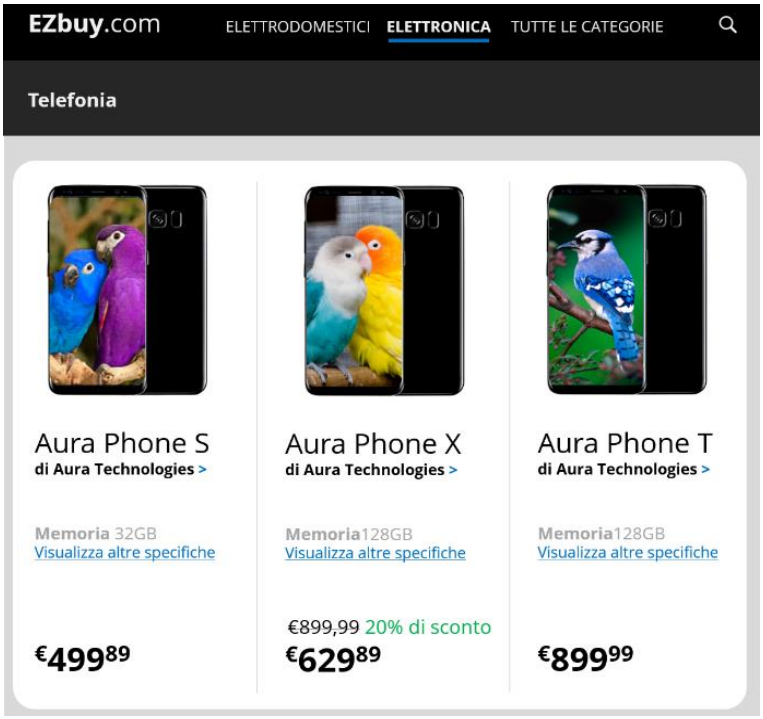
- ○ Athena
- ○ Aphrodite
- ○ Diana

5. Smartphone

Immagini di aver intenzione di comprare un nuovo smartphone. Lo comprerà su 'EZbuy.com' e ha già ristretto la Sua scelta ai seguenti articoli offerti dal marchio 'Aura'. Le opzioni differiscono in termini di prezzo e memoria (ossia la capacità del telefono di archiviare dati e applicazioni; un valore più elevato indica un maggior spazio di archiviazione).

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



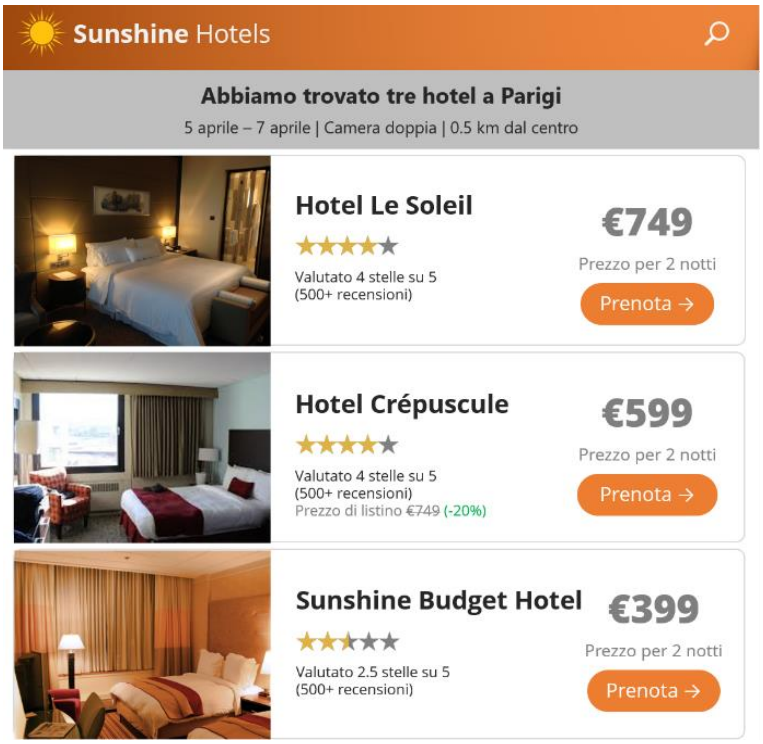
- ○ Aura Phone S
- ○ Aura Phone X
- ○ Aura Phone T

6. Hotel

'Sunshine Hotels' è una famosa catena di hotel. Immagini di aver pianificato di trascorrere un fine settimana a Parigi. In base ai filtri che ha impostato, 'Sunshine Hotels' Le mostra tre opzioni. Per ogni opzione, Le è stato fornito il prezzo e la media delle recensioni dei clienti.

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



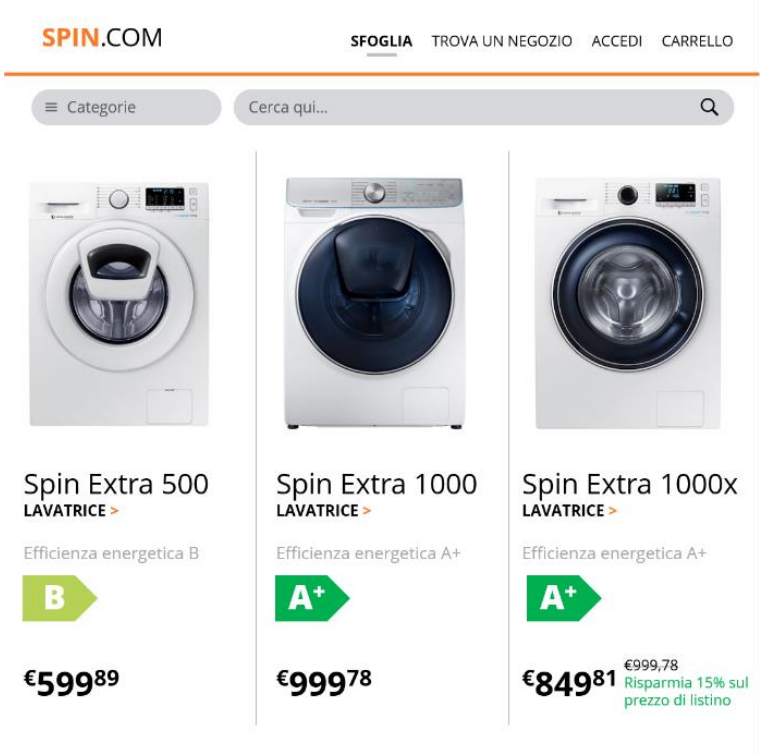
- ○ Hotel Le Soleil
- ○ Hotel Crépuscule
- ○ Sunshine Budget Hotel

7. Lavatrici

Immagini di aver intenzione di comprare una nuova lavatrice. Degli amici Le hanno consigliato di dare un'occhiata a 'Spin.com', un negozio fisico e online specializzato nella vendita di elettrodomestici. Al momento ha limitato la Sua scelta alle seguenti opzioni. Le tre lavatrici qui di seguito differiscono in termini di prezzo ed efficienza energetica (rappresentata su una scala da A+ a G, laddove A+ indica massima efficienza e G indica minima efficienza).

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



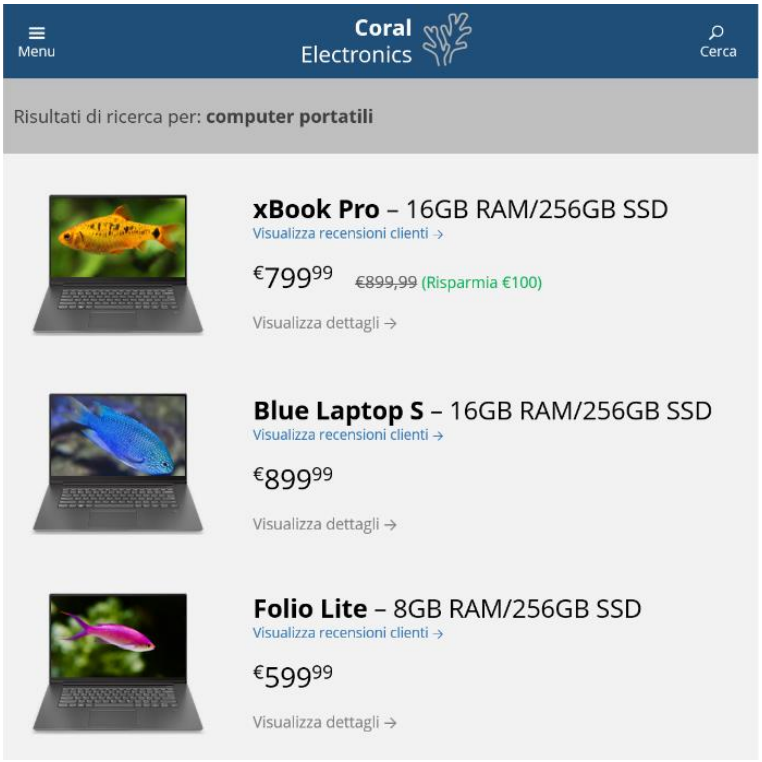
- ○ Spin Extra 500
- ○ Spin Extra 1000
- ○ Spin Extra 1000x

8. Computer portatili

Immagini di voler comprare un nuovo computer portatile e di aver intenzione di acquistarlo su 'Coral Electronics', un nuovo ed emergente sito di vendita online. Al momento, ha ristretto la Sua scelta alle seguenti opzioni. Le tre opzioni differiscono per prezzo e RAM (una RAM più elevata indica un PC più veloce).

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



- ○ xBook Pro
- ○ Blue Laptop S
- ○ Folio Lite

→ Skip to section 7

Section 6 of 7

Almost done

Only three more questions to go!

Please rate how much you agree or disagree with the following statements *

Mark only one answer per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I perceived the choice tasks as realistic (the proposed shopping environments, while fictitious, accurately represented real online and physical stores)	○	○	○	○	○
I found the choice tasks to be complex and mentally challenging (they required a lot of thought)	○	○	○	○	○

Advertised reference price

An advertised reference price is the price against which consumers compare the actual sale price of a product. Advertised reference price information is typically presented as “was $X, now $Y”, “list price $X, our price $Y”, “X% off”, “save $X”, and so on.

In the choice sets shown earlier, did you encounter any options whose price was presented alongside an advertised reference price? *

This is NOT a memory test. Try not to look back at the choice sets to answer this question.
Mark only one answer.

- ○ Yes
- ○ No
- ○ I don't remember

Thank you!

If you have any comments on the survey or the project you'd like to share, please do so here. Please note that your answers to questions in this survey (including this question) are anonymous. This has been done to protect the confidentiality of respondents. Therefore, I cannot respond individually to comments or queries you include here. If you would like an individual response, please send me an email to alco14ae@student.cbs.dk

_____

_____

_____

→ *Submit form*

Thank you! Your response has been recorded.

The brand names used in this experiment are meant to be fictitious and are the product of the researcher's imagination. Any resemblance to actual brands or companies, operating or not, is entirely coincidental.

Section 7 of 7

Abbiamo quasi finito

Mancano soltanto tre domande!

In quale misura si trova in accordo o disaccordo con le seguenti dichiarazioni? *

Segnare soltanto una risposta per riga.

	Fortemente in disaccordo	In disaccordo	Né d'accordo né in disaccordo	D'accordo	Fortemente d'accordo
Ho trovato gli scenari proposti realistici (le situazioni proposte, seppur fittizie, rappresentavano in modo accurato reali negozi online e fisici)	○	○	○	○	○
Ho trovato gli scenari proposti complessi e mentalmente impegnativi (hanno richiesto un grande sforzo di concentrazione)	○	○	○	○	○

Prezzo di riferimento

Il prezzo di riferimento (o prezzo di listino) è il prezzo con il quale i consumatori confrontano l'effettivo prezzo di vendita di un articolo. Esso è generalmente riportato sulla targhetta come il prezzo "originale", al quale è stato apportato un ribasso (ad esempio, "€Y, anziché €X", "X% di sconto", "risparmia €X", ecc.).

Nelle situazioni incontrate in questo sondaggio, erano presenti alcune opzioni il cui prezzo di vendita era mostrato insieme al prezzo di riferimento? *

Questo NON è un test di memoria. Cerchi di non tornare alla pagina precedente per rispondere accuratamente a questa domanda.
Segnare soltanto una risposta.

- ○ Sì
- ○ No
- ○ Non ricordo

Grazie!
Se ha dei commenti da condividere sul questionario o sul progetto, lo faccia pure qui. La prego di notare che le Sue risposte in questo sondaggio (inclusa questa) sono anonime. Questo è stato fatto per proteggere la confidenzialità dei partecipanti. Pertanto, non mi è possibile rispondere individualmente a commenti o domande che includerà qui di seguito. Se desidera ottenere una risposta personale, La invito ad inviarmi un'email a alco14ae@student.cbs.dk

_____
_____
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Control group

(Only sections 4 and 5 differ across the test group and the control group; advertised reference price information has been hidden in the control group)

Section 4 of 7

You will now be asked to select your preferred option in eight different purchase situations.

When making your choices, imagine you are facing the choice task in real life, and rely solely on the information that you are given.

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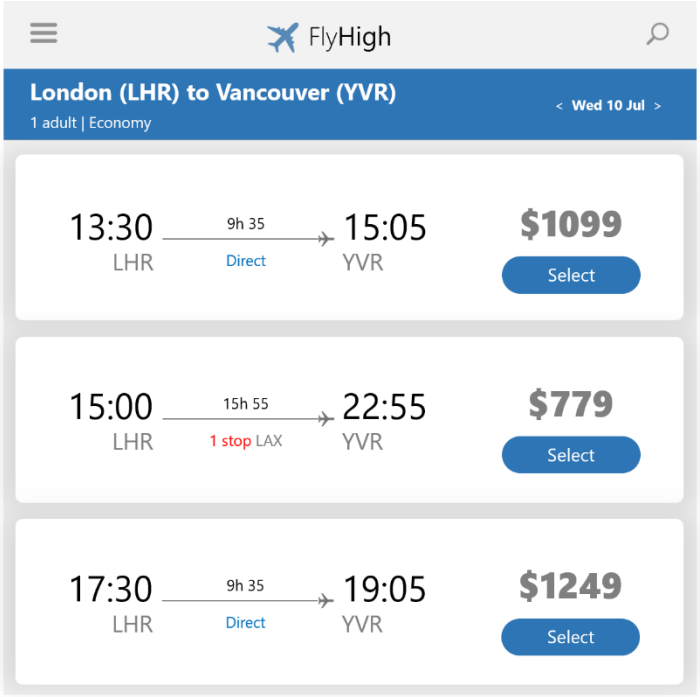

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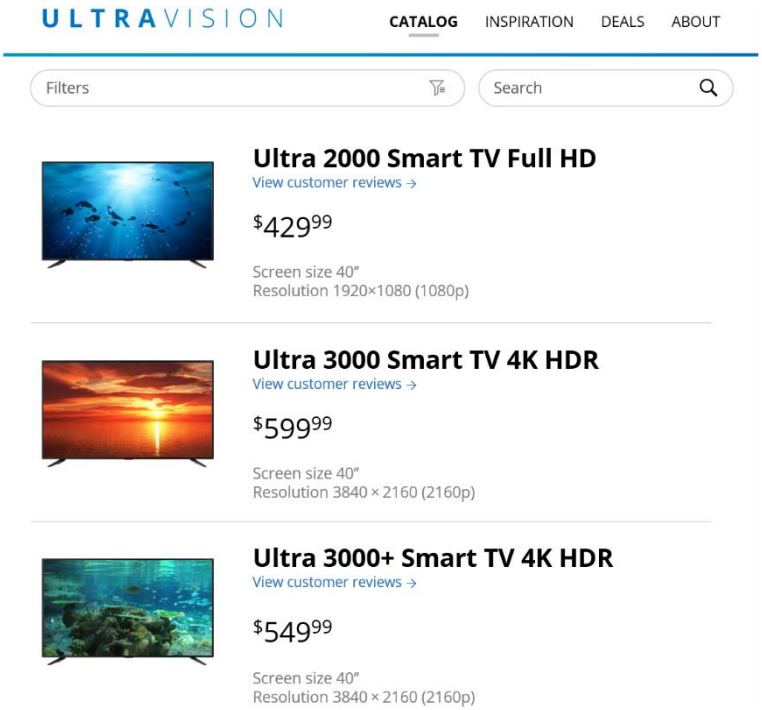

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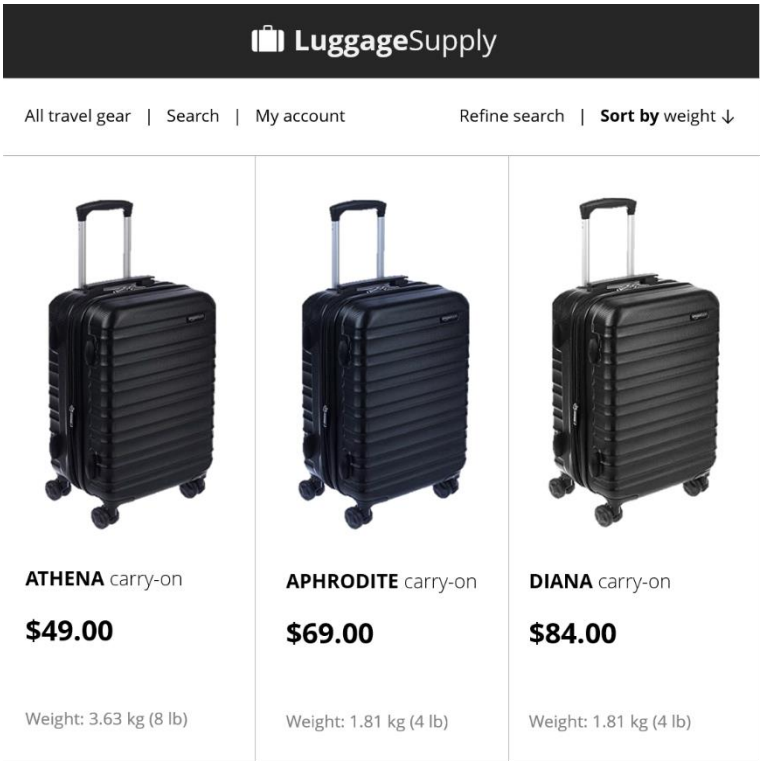

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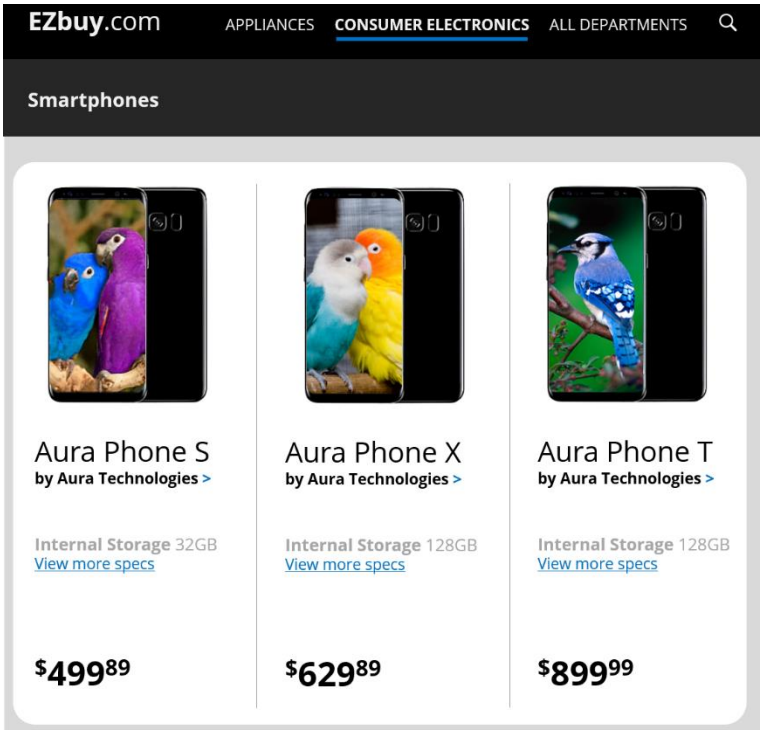

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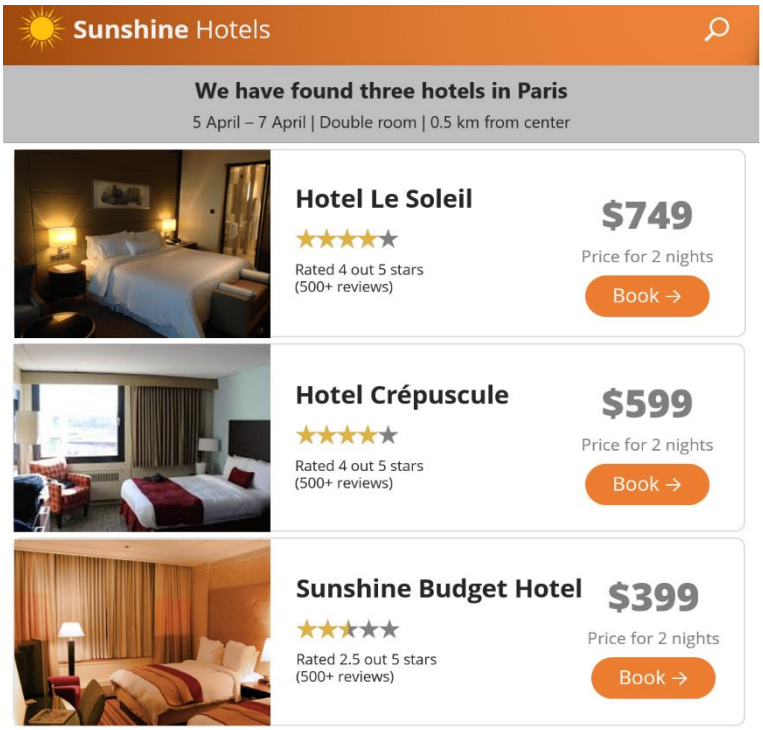

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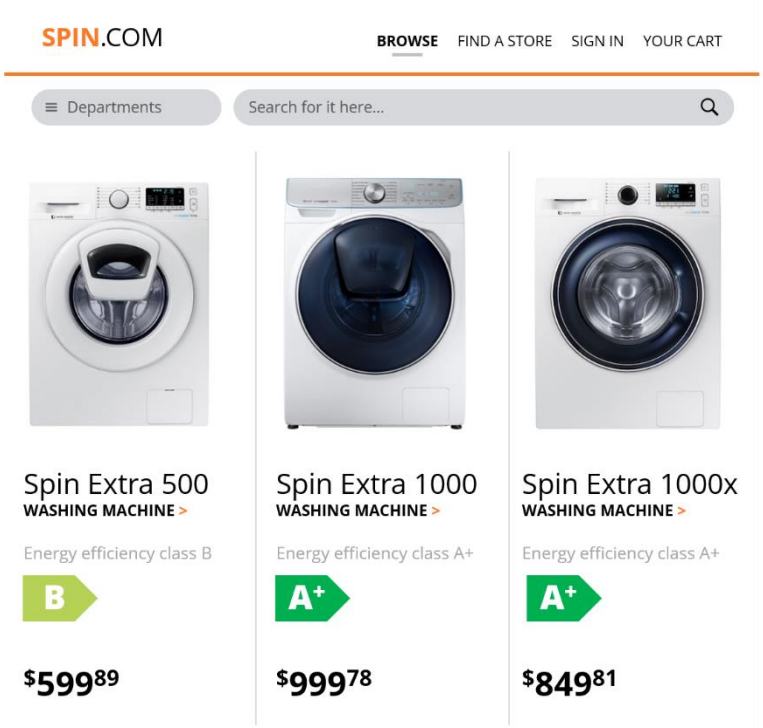

- ○ Spin Extra 500
- ○ Spin Extra 1000
- ○ Spin Extra 1000x

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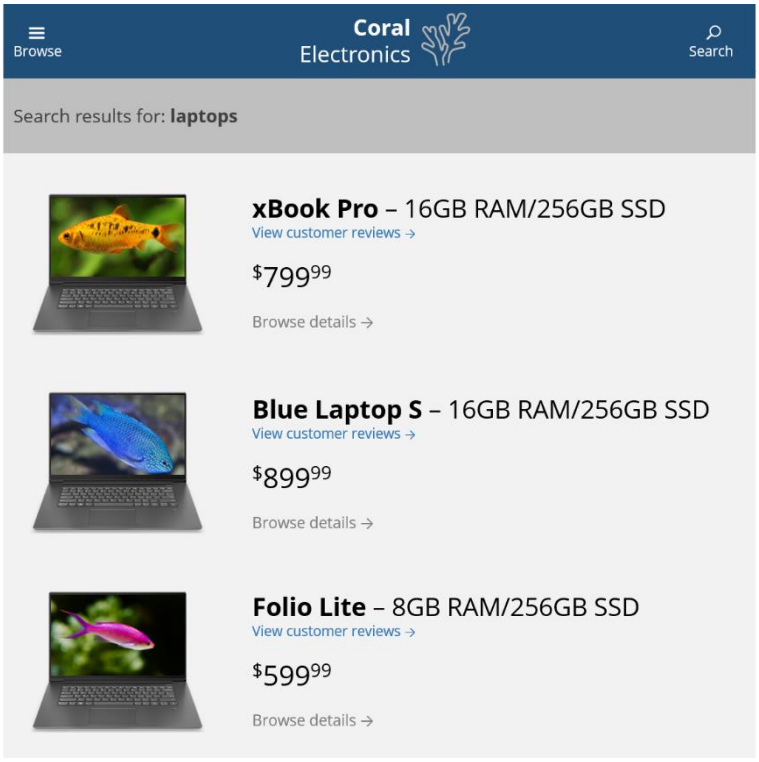

- ○ xBook Pro
- ○ Blue Laptop S
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Section 5 of 7

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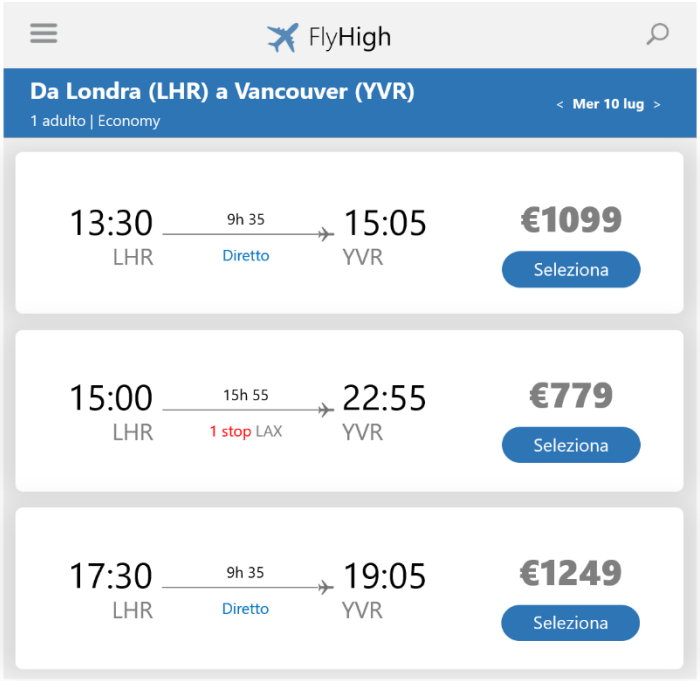
Segnare soltanto una risposta.



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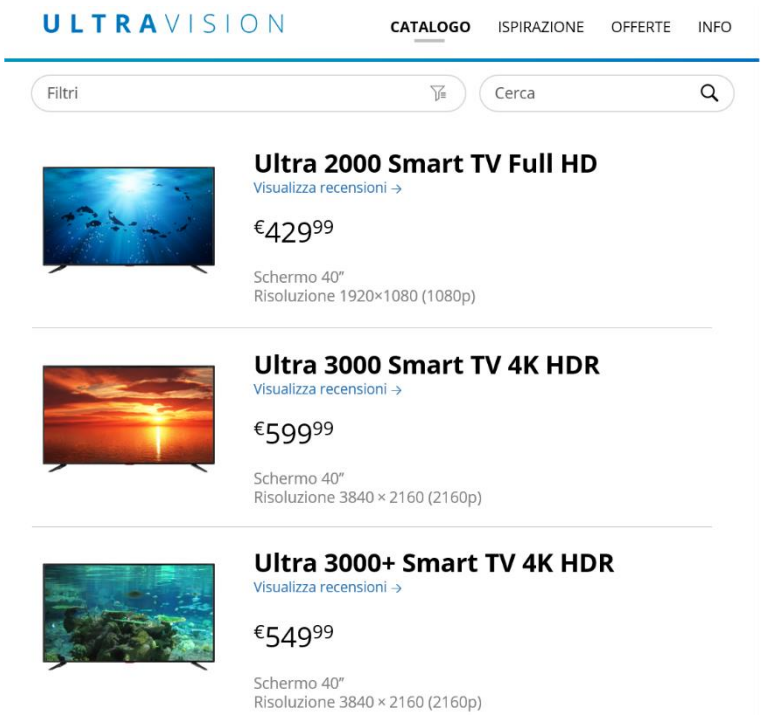
Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



- ○ Ultra 2000 Smart TV Full HD
- ○ Ultra 3000 Smart TV 4K HDR
- ○ Ultra 3000+ Smart TV 4K HDR

3. Detersivi per piatti

Immagini di essere in un supermercato e di dover comprare del detersivo per piatti. Ha limitato la Sua scelta alle tre opzioni mostrate in basso, che differiscono in base al prezzo e alla dimensione.

Quale dei seguenti marchi sceglierebbe? *

Segnare soltanto una risposta.

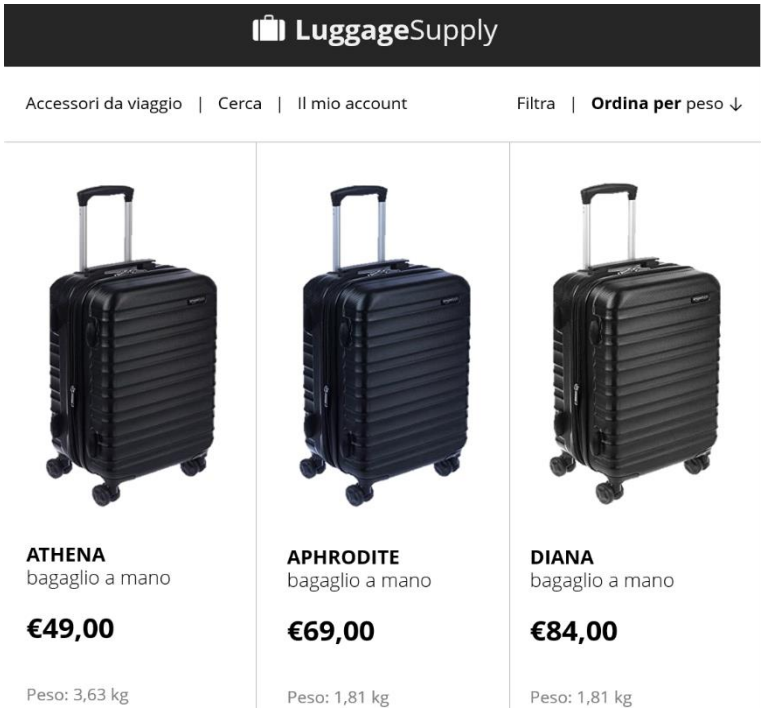
- ○ OK! clean
- ○ Ultra
- ○ Extra Action

4. Valigie

Per il Suo viaggio a Vancouver, immagini di aver bisogno di acquistare un nuovo bagaglio a mano. 'LuggageSupply' è un sito di shopping online specializzato nella vendita di valigeria leggera e accessori da viaggio. Al momento ha ristretto la Sua scelta alle tre opzioni qui di seguito.

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



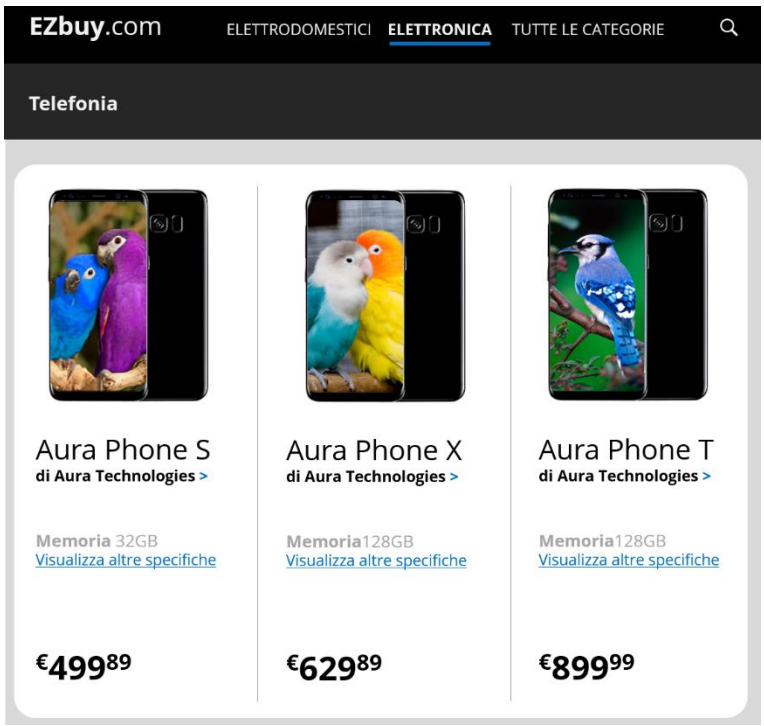
- ○ Athena
- ○ Aphrodite
- ○ Diana

5. Smartphone

Immagini di aver intenzione di comprare un nuovo smartphone. Lo comprerà su 'EZbuy.com' e ha già ristretto la Sua scelta ai seguenti articoli offerti dal marchio 'Aura'. Le opzioni differiscono in termini di prezzo e memoria (ossia la capacità del telefono di archiviare dati e applicazioni; un valore più elevato indica un maggior spazio di archiviazione).

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



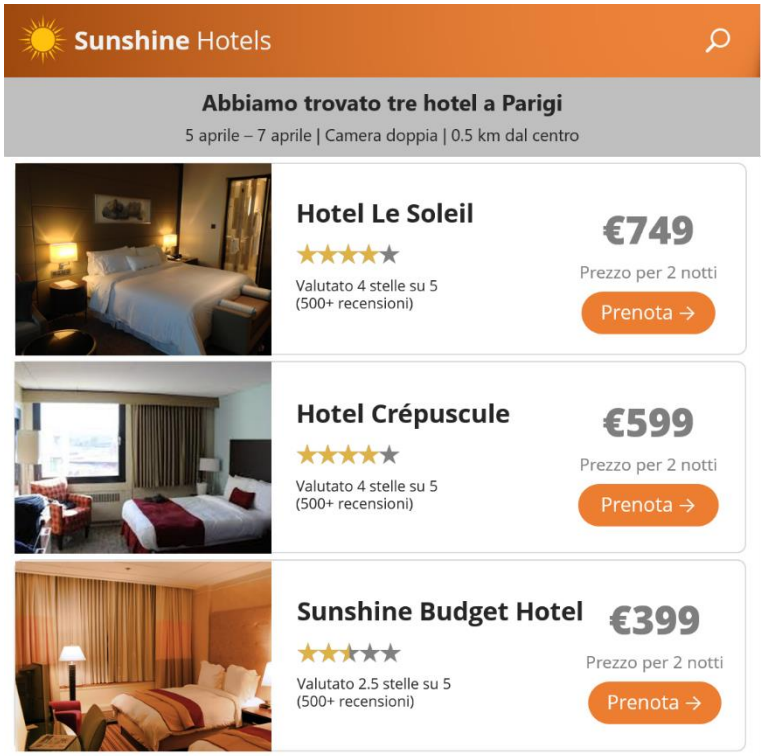
- ○ Aura Phone S
- ○ Aura Phone X
- ○ Aura Phone T

6. Hotel

'Sunshine Hotels' è una famosa catena di hotel. Immagini di aver pianificato di trascorrere un fine settimana a Parigi. In base ai filtri che ha impostato, 'Sunshine Hotels' Le mostra tre opzioni. Per ogni opzione, Le è stato fornito il prezzo e la media delle recensioni dei clienti.

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



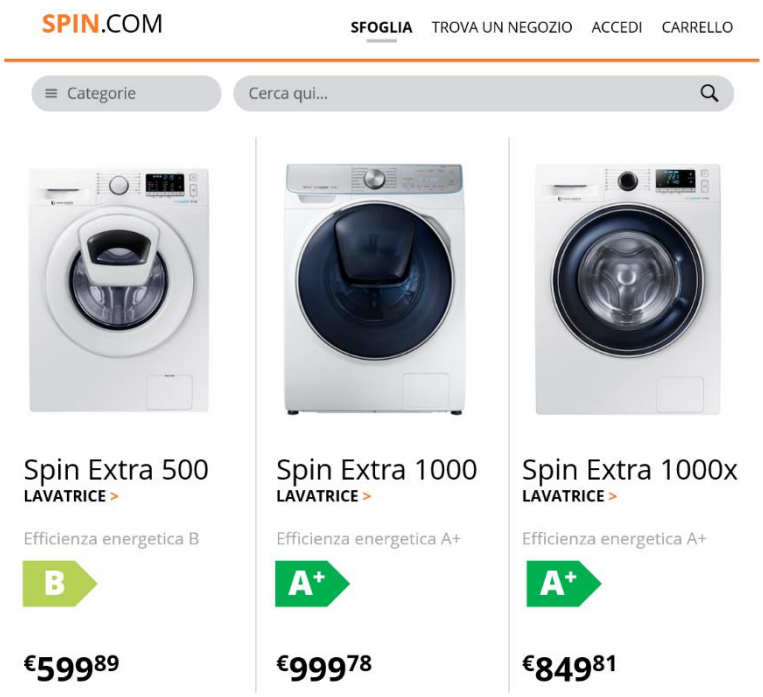
- ○ Hotel Le Soleil
- ○ Hotel Crépuscule
- ○ Sunshine Budget Hotel

7. Lavatrici

Immagini di aver intenzione di comprare una nuova lavatrice. Degli amici Le hanno consigliato di dare un'occhiata a 'Spin.com', un negozio fisico e online specializzato nella vendita di elettrodomestici. Al momento ha limitato la Sua scelta alle seguenti opzioni. Le tre lavatrici qui di seguito differiscono in termini di prezzo ed efficienza energetica (rappresentata su una scala da A+ a G, laddove A+ indica massima efficienza e G indica minima efficienza).

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



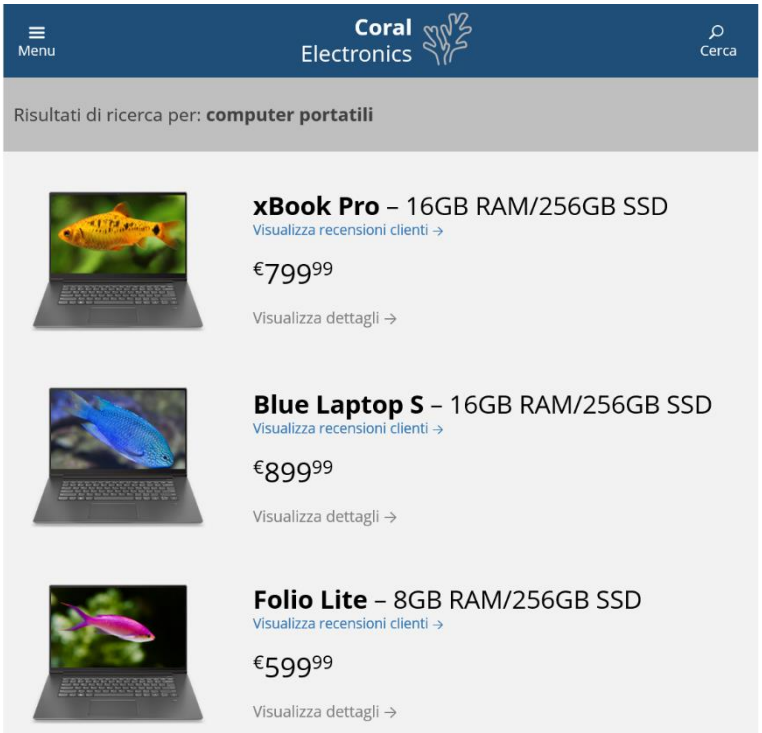
- ○ Spin Extra 500
- ○ Spin Extra 1000
- ○ Spin Extra 1000x

8. Computer portatili

Immagini di voler comprare un nuovo computer portatile e di aver intenzione di acquistarlo su 'Coral Electronics', un nuovo ed emergente sito di vendita online. Al momento, ha ristretto la Sua scelta alle seguenti opzioni. Le tre opzioni differiscono per prezzo e RAM (una RAM più elevata indica un PC più veloce).

Quale delle seguenti opzioni sceglierebbe? *

Segnare soltanto una risposta.



- ○ xBook Pro
- ○ Blue Laptop S
- ○ Folio Lite

→ *Skip to section 7*

Appendix C Survey Responses & Statistical Analyses

Raw data tables (Excel sheets and JMP data sets) are available at this link:
https://1drv.ms/u/s!An85oVikUQ5fl8lR99zlVUX8RvnZHg

In which language do you wish to complete this survey?

Figure 18 Distribution of participants by language of completion (both groups)

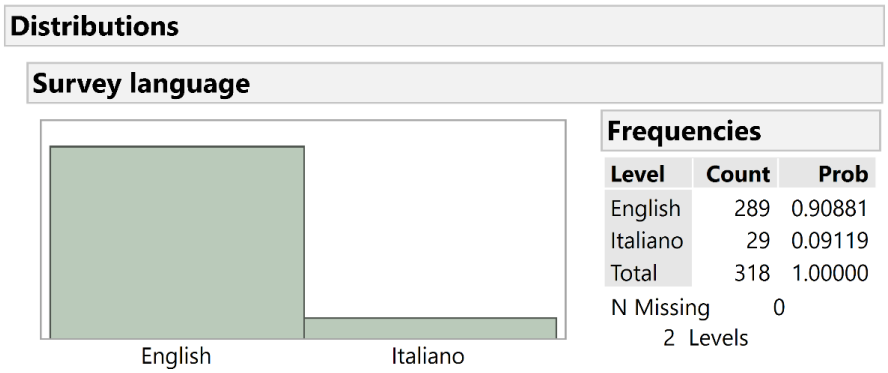
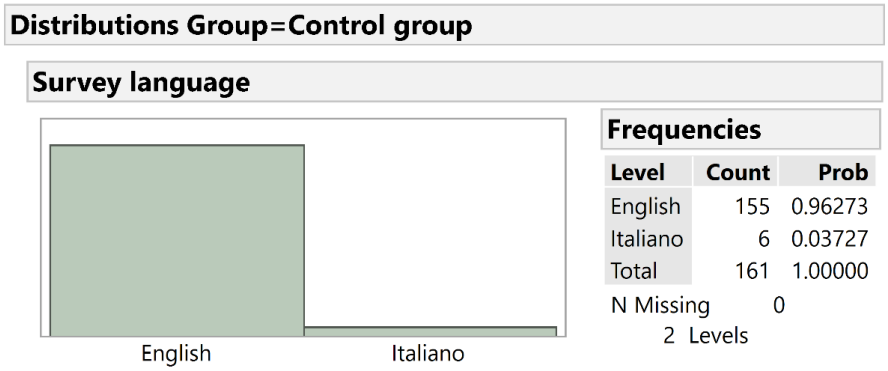
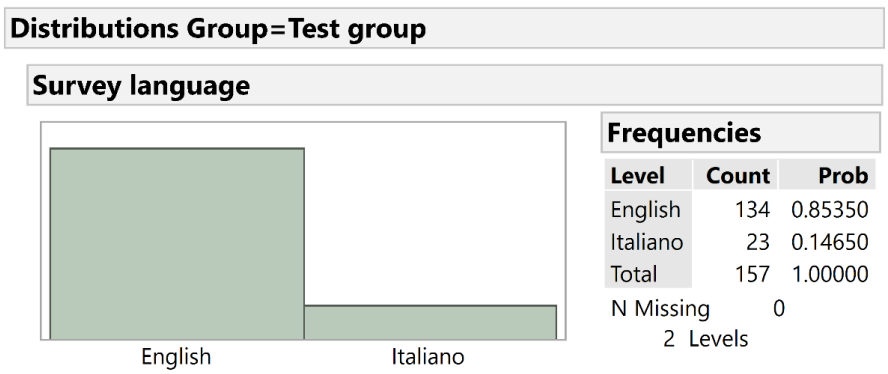


Figure 19 Distribution of participants by language of completion (control vs. test group)





How do you identify your gender?

Figure 20 Distribution of participants by gender (both groups)

Distributions

Gender

Frequencies

Level	Count	Prob
Female	206	0.65397
Gender diverse (gender non-conforming and/or transgender)	3	0.00952
Male	106	0.33651
Total	315	1.00000

N Missing 3
3 Levels

Figure 21 Distribution of participants by gender (control vs. test group)

Distributions Group=Control group

Gender

Frequencies

Level	Count	Prob
Female	104	0.65409
Gender diverse (gender non-conforming and/or transgender)	1	0.00629
Male	54	0.33962
Total	159	1.00000

N Missing 2
3 Levels

Distributions Group=Test group

Gender

Frequencies

Level	Count	Prob
Female	102	0.65385
Gender diverse (gender non-conforming and/or transgender)	2	0.01282
Male	52	0.33333
Total	156	1.00000

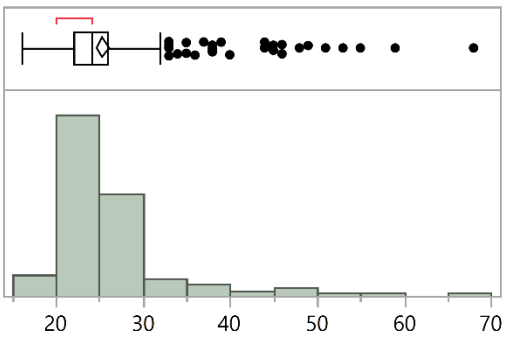
N Missing 1
3 Levels

What is your age?

Figure 22 Distribution of participants by age (both groups)

Distributions

Age



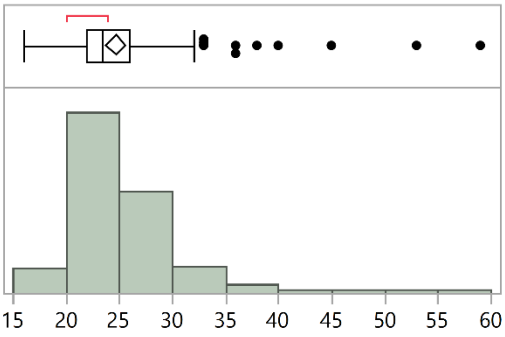
Quantiles		
100.0%	maximum	68
99.5%		63.23
97.5%		46.7
90.0%		32.4
75.0%	quartile	26
50.0%	median	24
25.0%	quartile	22
10.0%		20
2.5%		18
0.5%		16
0.0%	minimum	16

Summary Statistics	
Mean	25.396721
Std Dev	6.7975897
Std Err Mean	0.3892289
Upper 95% Mean	26.162645
Lower 95% Mean	24.630797
N	305

Figure 23 Distribution of participants by age (control vs. test group)

Distributions Group=Control group

Age

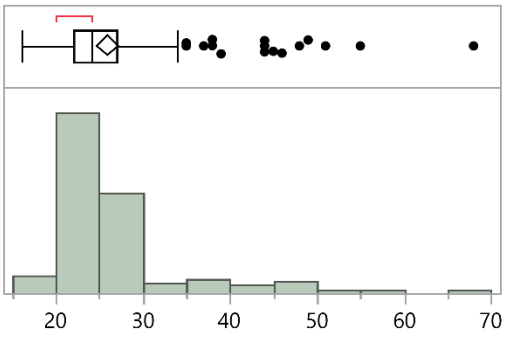


Quantiles		
100.0%	maximum	59
99.5%		59
97.5%		41.125
90.0%		30
75.0%	quartile	26
50.0%	median	23.5
25.0%	quartile	22
10.0%		20
2.5%		17.775
0.5%		16
0.0%	minimum	16

Summary Statistics	
Mean	24.746667
Std Dev	5.7031566
Std Err Mean	0.4656608
Upper 95% Mean	25.666819
Lower 95% Mean	23.826515
N	150

Distributions Group=Test group

Age

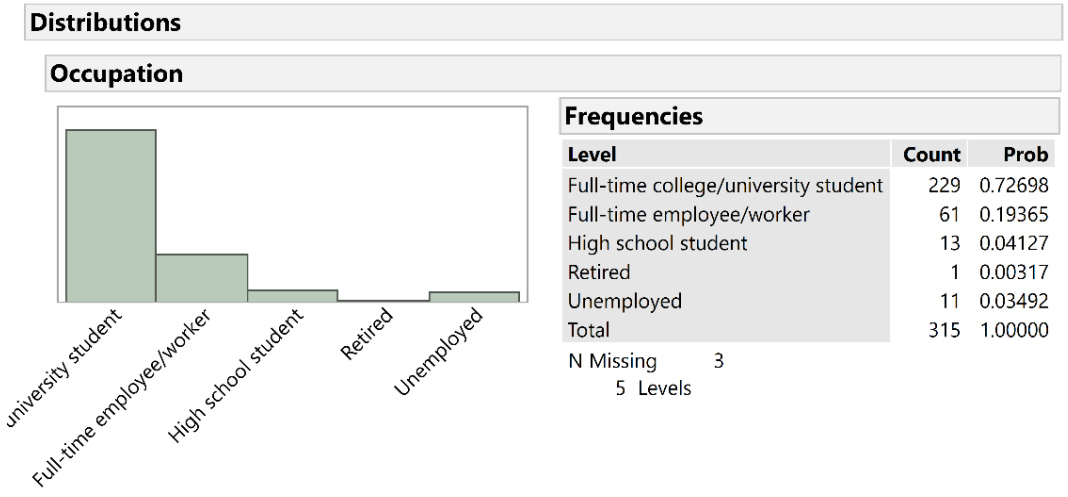


Quantiles		
100.0%	maximum	68
99.5%		68
97.5%		49.2
90.0%		35.8
75.0%	quartile	27
50.0%	median	24
25.0%	quartile	22
10.0%		20.6
2.5%		17.9
0.5%		16
0.0%	minimum	16

Summary Statistics	
Mean	26.025806
Std Dev	7.676874
Std Err Mean	0.6166214
Upper 95% Mean	27.243935
Lower 95% Mean	24.807678
N	155

What is your main occupation?

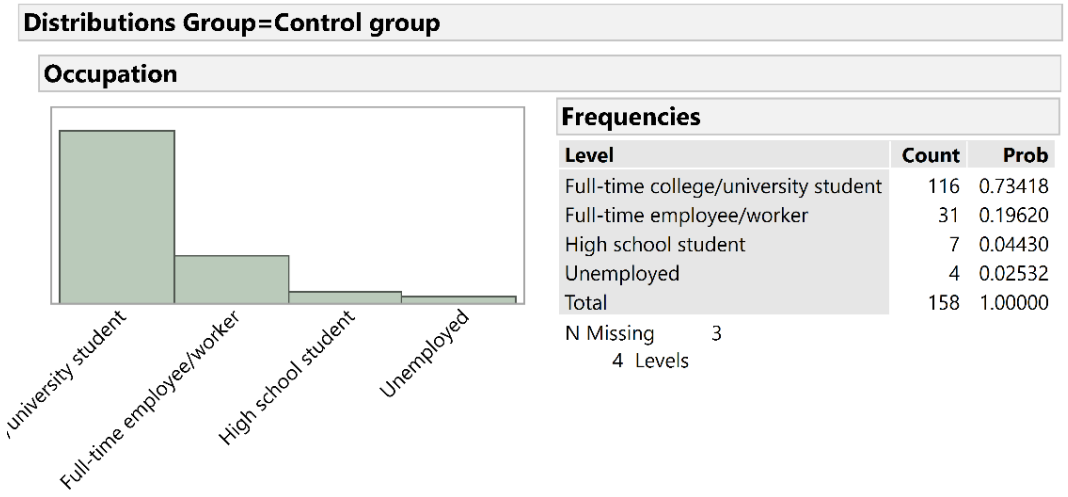
Figure 24 Distribution of participants by occupation (both groups)



Level	Count	Prob
Full-time college/university student	229	0.72698
Full-time employee/worker	61	0.19365
High school student	13	0.04127
Retired	1	0.00317
Unemployed	11	0.03492
Total	315	1.00000

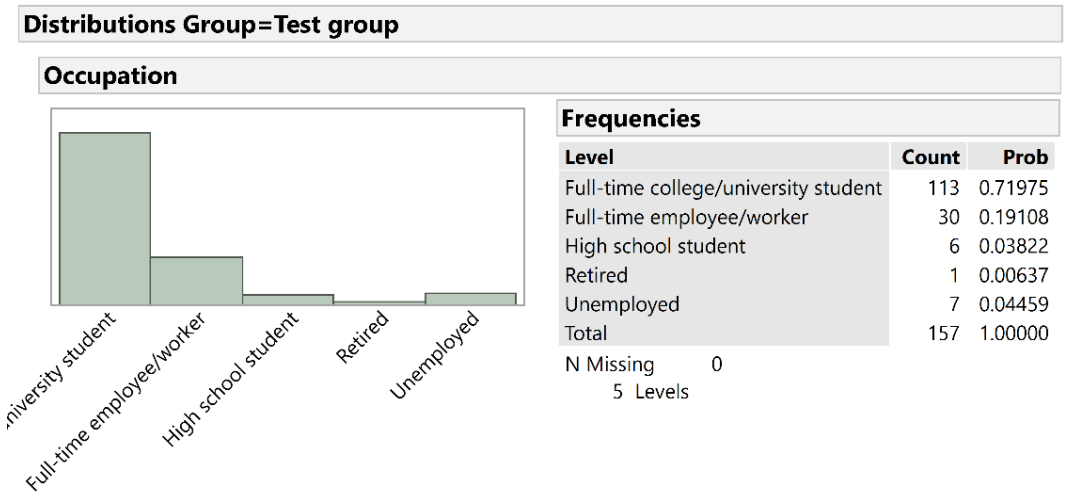
N Missing 3
5 Levels

Figure 25 Distribution of participants by occupation (control vs. test group)



Level	Count	Prob
Full-time college/university student	116	0.73418
Full-time employee/worker	31	0.19620
High school student	7	0.04430
Unemployed	4	0.02532
Total	158	1.00000

N Missing 3
4 Levels



Level	Count	Prob
Full-time college/university student	113	0.71975
Full-time employee/worker	30	0.19108
High school student	6	0.03822
Retired	1	0.00637
Unemployed	7	0.04459
Total	157	1.00000

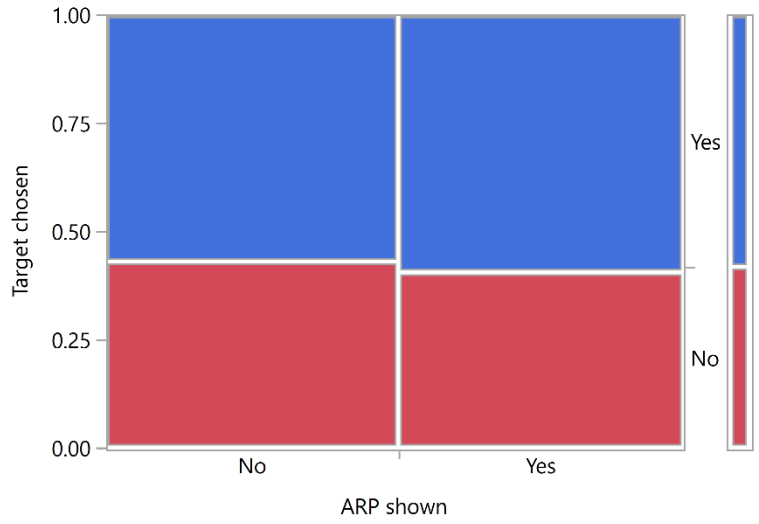
N Missing 0
5 Levels

Which of the following options would you choose?

Figure 26 Association between ARP display and attraction effect (all choice sets)

Contingency Analysis of Target chosen By ARP shown

Mosaic Plot



Freq: Count (total)

Contingency Table

ARP shown	Count / Total % / Col % / Row %	Target chosen: No	Target chosen: Yes	Total
No	Count	555	733	1288
	Total %	21.82	28.81	50.63
	Col %	52.11	49.56	
	Row %	43.09	56.91	
Yes	Count	510	746	1256
	Total %	20.05	29.32	49.37
	Col %	47.89	50.44	
	Row %	40.61	59.39	
Total	Count	1065	1479	2544
	Total %	41.86	58.14	

Tests

N	DF	-LogLike	RSquare (U)
2544	1	0.80685808	0.0005

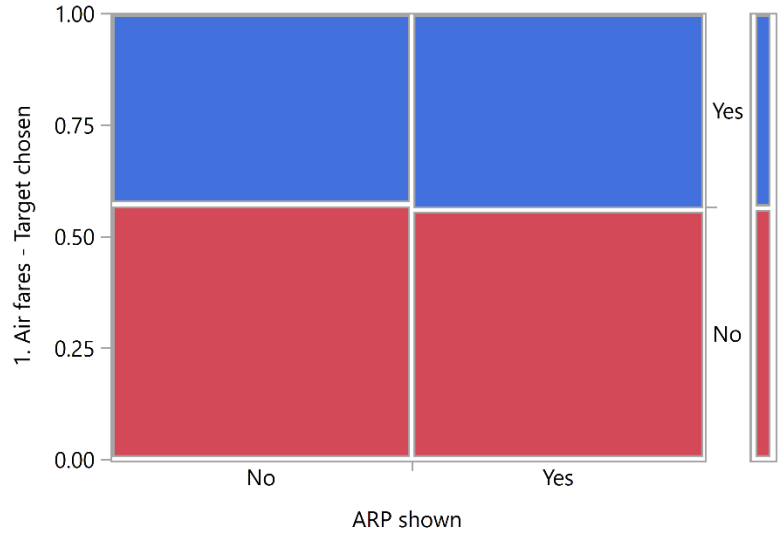
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	1.614	0.2040
Pearson	1.613	0.2040

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.9050	Prob(Target chosen=Yes) is greater for ARP shown=No than Yes
Right	0.1093	Prob(Target chosen=Yes) is greater for ARP shown=Yes than No
2-Tail	0.2128	Prob(Target chosen=Yes) is different across ARP shown

Figure 27 Association between ARP display and attraction effect (1. Air fares)

Contingency Analysis of 1. Air fares - Target chosen By ARP shown

Mosaic Plot



Contingency Table

1. Air fares - Target chosen

ARP shown	Count / Total % / Col % / Row %	No	Yes	Total
	No	92	69	161
		28.93	21.70	50.63
		51.11	50.00	
		57.14	42.86	
	Yes	88	69	157
		27.67	21.70	49.37
		48.89	50.00	
		56.05	43.95	
	Total	180	138	318
		56.60	43.40	

Tests

N	DF	-LogLike	RSquare (U)
318	1	0.01929021	0.0001

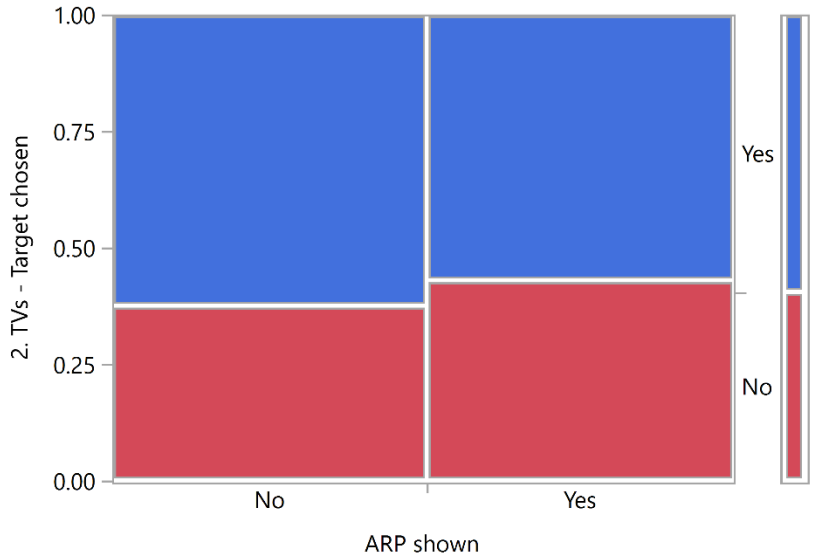
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.039	0.8443
Pearson	0.039	0.8443

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.6215	Prob(1. Air fares - Target chosen=Yes) is greater for ARP shown=No than Yes
Right	0.4668	Prob(1. Air fares - Target chosen=Yes) is greater for ARP shown=Yes than No
2-Tail	0.9100	Prob(1. Air fares - Target chosen=Yes) is different across ARP shown

Figure 28 Association between ARP display and attraction effect (2. TVs)

Contingency Analysis of 2. TVs - Target chosen By ARP shown

Mosaic Plot



Contingency Table

2. TVs - Target chosen

ARP shown	Count / Total % / Col % / Row %	No	Yes	Total
No		61	100	161
		19.18	31.45	50.63
		47.29	52.91	
		37.89	62.11	
Yes		68	89	157
		21.38	27.99	49.37
		52.71	47.09	
		43.31	56.69	
Total		129	189	318
		40.57	59.43	

Tests

N	DF	-LogLike	RSquare (U)
318	1	0.48514468	0.0023

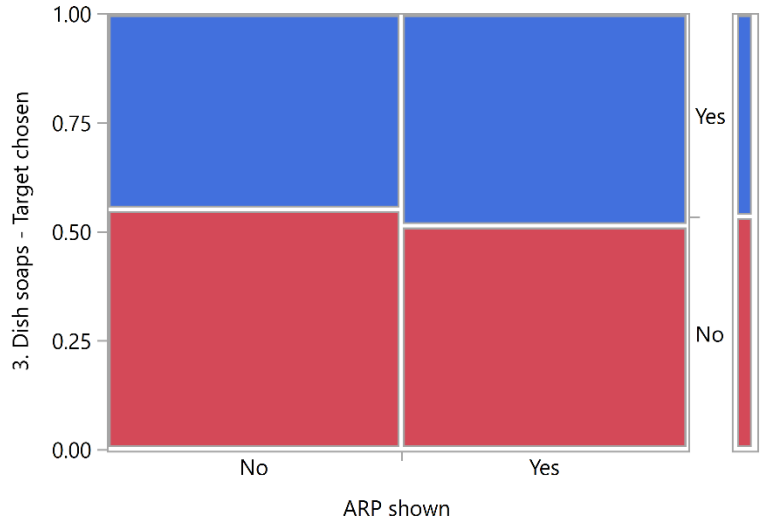
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.970	0.3246
Pearson	0.970	0.3247

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.1920	Prob(2. TVs - Target chosen=Yes) is greater for ARP shown=No than Yes
Right	0.8641	Prob(2. TVs - Target chosen=Yes) is greater for ARP shown=Yes than No
2-Tail	0.3613	Prob(2. TVs - Target chosen=Yes) is different across ARP shown

Figure 29 Association between ARP display and attraction effect (3. Dish soaps)

Contingency Analysis of 3. Dish soaps - Target chosen By ARP shown

Mosaic Plot



Contingency Table

3. Dish soaps - Target chosen

ARP shown	Count / Total % / Col % / Row %	No	Yes	Total
No		89	72	161
		27.99	22.64	50.63
		52.35	48.65	
		55.28	44.72	
Yes		81	76	157
		25.47	23.90	49.37
		47.65	51.35	
		51.59	48.41	
Total		170	148	318
		53.46	46.54	

Tests

N	DF	-LogLike	RSquare (U)
318	1	0.21720757	0.0010

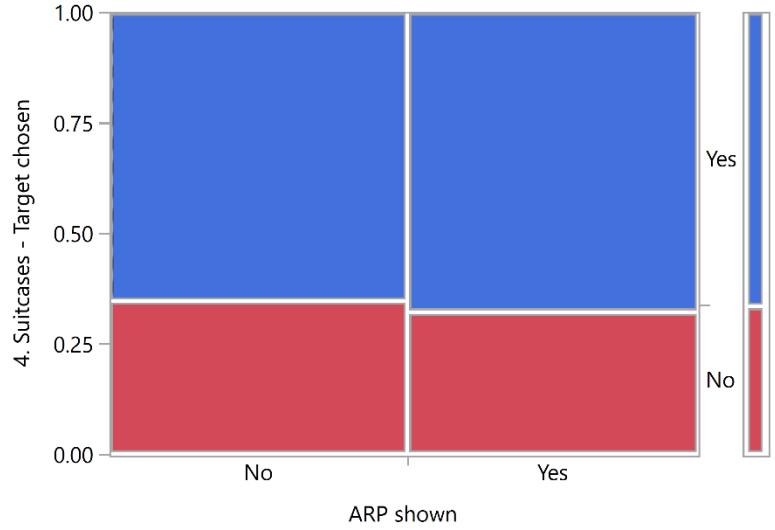
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.434	0.5098
Pearson	0.434	0.5099

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.7798	Prob(3. Dish soaps - Target chosen=Yes) is greater for ARP shown=No than Yes
Right	0.2924	Prob(3. Dish soaps - Target chosen=Yes) is greater for ARP shown=Yes than No
2-Tail	0.5741	Prob(3. Dish soaps - Target chosen=Yes) is different across ARP shown

Figure 30 Association between ARP display and attraction effect (4. Suitcases)

Contingency Analysis of 4. Suitcases - Target chosen By ARP shown

Mosaic Plot



Contingency Table

4. Suitcases - Target chosen

ARP shown	Count / Total % / Col % / Row %	No	Yes	Total
No		56	105	161
		17.61	33.02	50.63
		52.34	49.76	
		34.78	65.22	
Yes		51	106	157
		16.04	33.33	49.37
		47.66	50.24	
		32.48	67.52	
Total		107	211	318
		33.65	66.35	

Tests

N	DF	-LogLike	RSquare (U)
318	1	0.09407676	0.0005

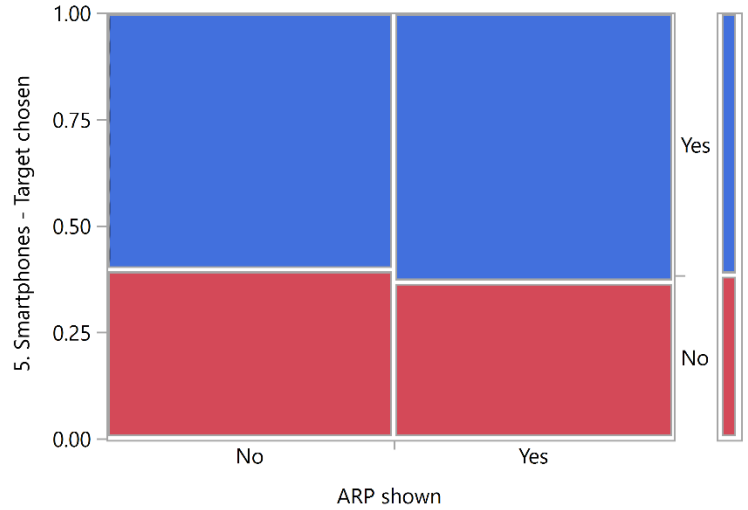
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.188	0.6645
Pearson	0.188	0.6645

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.7096	Prob(4. Suitcases - Target chosen=Yes) is greater for ARP shown=No than Yes
Right	0.3765	Prob(4. Suitcases - Target chosen=Yes) is greater for ARP shown=Yes than No
2-Tail	0.7221	Prob(4. Suitcases - Target chosen=Yes) is different across ARP shown

Figure 31 Association between ARP display and attraction effect (5. Smartphones)

Contingency Analysis of 5. Smartphones - Target chosen By ARP shown

Mosaic Plot



Contingency Table

5. Smartphones - Target chosen

ARP shown	Count / Total % / Col % / Row %	No	Yes	Total
No		64	97	161
		20.13	30.50	50.63
		52.46	49.49	
		39.75	60.25	
Yes		58	99	157
		18.24	31.13	49.37
		47.54	50.51	
		36.94	63.06	
Total		122	196	318
		38.36	61.64	

Tests

N	DF	-LogLike	RSquare (U)
318	1	0.13264688	0.0006

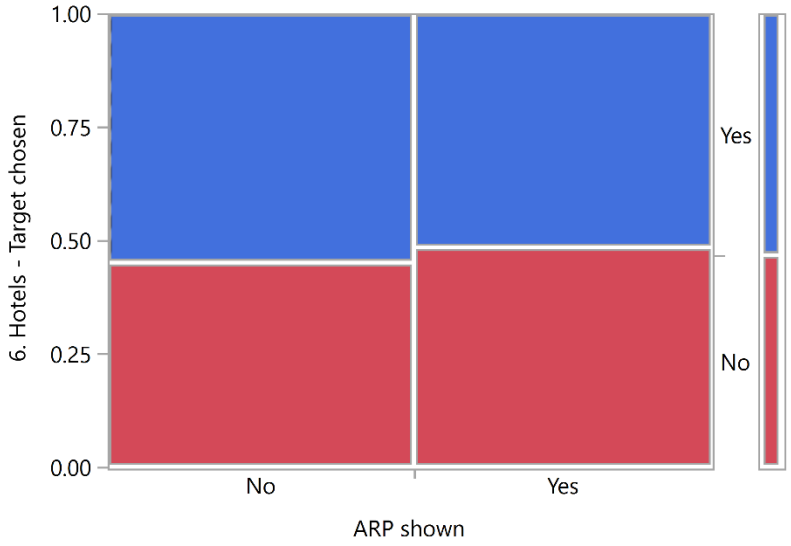
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.265	0.6065
Pearson	0.265	0.6066

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.7357	Prob(5. Smartphones - Target chosen=Yes) is greater for ARP shown=No than Yes
Right	0.3448	Prob(5. Smartphones - Target chosen=Yes) is greater for ARP shown=Yes than No
2-Tail	0.6453	Prob(5. Smartphones - Target chosen=Yes) is different across ARP shown

Figure 32 Association between ARP display and attraction effect (6. Hotels)

Contingency Analysis of 6. Hotels - Target chosen By ARP shown

Mosaic Plot



Contingency Table

6. Hotels - Target chosen

ARP shown	Count / Total % / Col % / Row %	No	Yes	Total
	No	73	88	161
		22.96	27.67	50.63
		48.99	52.07	
		45.34	54.66	
	Yes	76	81	157
		23.90	25.47	49.37
		51.01	47.93	
		48.41	51.59	
	Total	149	169	318
		46.86	53.14	

Tests

N	DF	-LogLike	RSquare (U)
318	1	0.15005738	0.0007

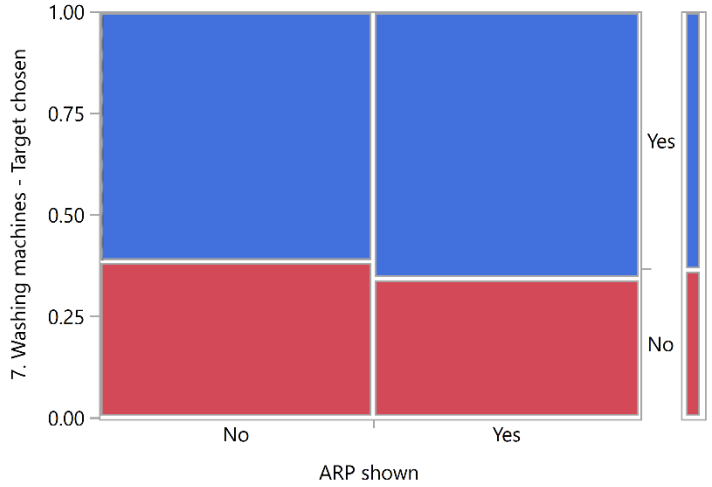
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.300	0.5838
Pearson	0.300	0.5838

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.3317	Prob(6. Hotels - Target chosen=Yes) is greater for ARP shown=No than Yes
Right	0.7454	Prob(6. Hotels - Target chosen=Yes) is greater for ARP shown=Yes than No
2-Tail	0.6531	Prob(6. Hotels - Target chosen=Yes) is different across ARP shown

Figure 33 Association between ARP display and attraction effect (7. Washing machines)

Contingency Analysis of 7. Washing machines - Target chosen By ARP shown

Mosaic Plot



Contingency Table

7. Washing machines - Target chosen

ARP shown	Count / Total % / Col % / Row %	No	Yes	Total
No		62	99	161
		19.50	31.13	50.63
		53.45	49.01	
		38.51	61.49	
Yes		54	103	157
		16.98	32.39	49.37
		46.55	50.99	
		34.39	65.61	
Total		116	202	318
		36.48	63.52	

Tests

N	DF	-LogLike	RSquare (U)
318	1	0.29052982	0.0014

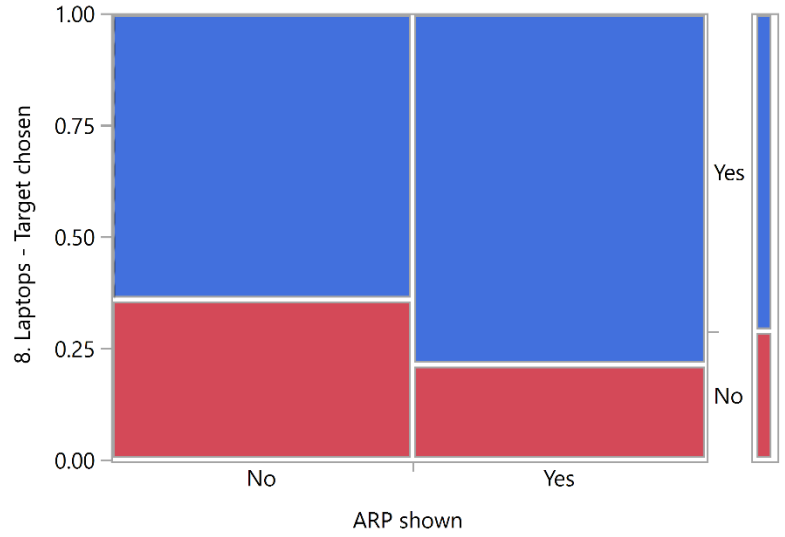
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	0.581	0.4459
Pearson	0.581	0.4460

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.8101	Prob(7. Washing machines - Target chosen=Yes) is greater for ARP shown=No than Yes
Right	0.2594	Prob(7. Washing machines - Target chosen=Yes) is greater for ARP shown=Yes than No
2-Tail	0.4852	Prob(7. Washing machines - Target chosen=Yes) is different across ARP shown

Figure 34 Association between ARP display and attraction effect (8. Laptops)

Contingency Analysis of 8. Laptops - Target chosen By ARP shown

Mosaic Plot



Contingency Table

8. Laptops - Target chosen

ARP shown	Count / Total % / Col % / Row %	No	Yes	Total
No		58	103	161
		18.24	32.39	50.63
		63.04	45.58	
		36.02	63.98	
Yes		34	123	157
		10.69	38.68	49.37
		36.96	54.42	
		21.66	78.34	
Total		92	226	318
		28.93	71.07	

Tests

N	DF	-LogLike	RSquare (U)
318	1	4.0279005	0.0211

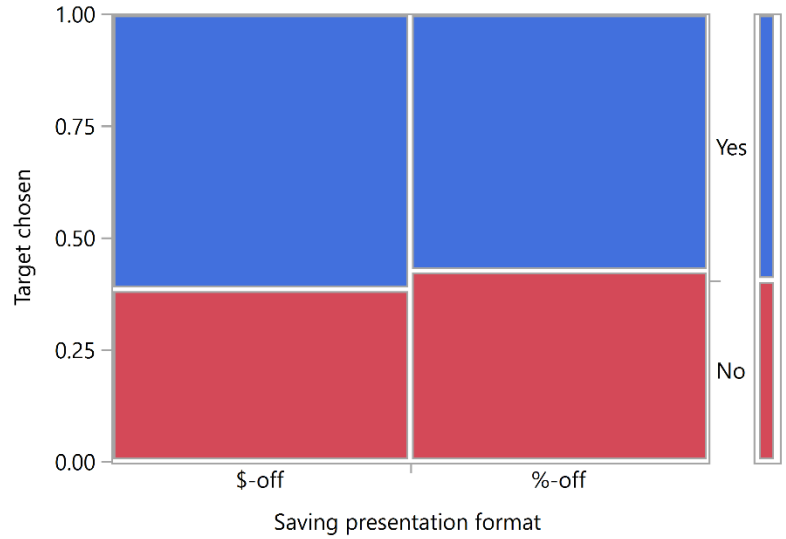
Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	8.056	0.0045*
Pearson	7.982	0.0047*

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.9985	Prob(8. Laptops - Target chosen=Yes) is greater for ARP shown=No than Yes
Right	0.0034*	Prob(8. Laptops - Target chosen=Yes) is greater for ARP shown=Yes than No
2-Tail	0.0063*	Prob(8. Laptops - Target chosen=Yes) is different across ARP shown

Figure 35 Association between saving presentation format and attraction effect (extend.)

Contingency Analysis of Target chosen By Saving presentation format

Mosaic Plot



Freq: Count

Contingency Table

Saving presentation format	Count / Total % / Col % / Row %	Target chosen: No	Target chosen: Yes	Total
$-off	Count	241	387	628
	Total %	19.19	30.81	50.00
	Col %	47.25	51.88	
	Row %	38.38	61.62	
%-off	Count	269	359	628
	Total %	21.42	28.58	50.00
	Col %	52.75	48.12	
	Row %	42.83	57.17	
Total	Count	510	746	1256
	Total %	40.61	59.39	

Tests

N	DF	-LogLike	RSquare (U)
1256	1	1.2946067	0.0015

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	2.589	0.1076
Pearson	2.588	0.1077

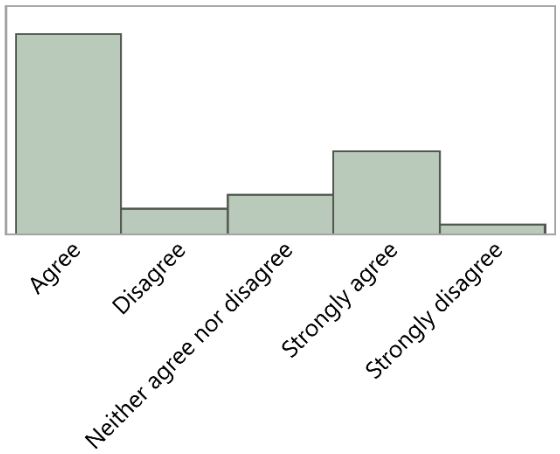
Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.0604	Prob(Target chosen=Yes) is greater for Saving presentation format=$-off than %-off
Right	0.9522	Prob(Target chosen=Yes) is greater for Saving presentation format=%-off than $-off
2-Tail	0.1208	Prob(Target chosen=Yes) is different across Saving presentation format

Please rate how much you agree or disagree with the following statement: I perceived the choice tasks as realistic (the proposed shopping environments, while fictitious, accurately represented real online and physical stores)

Figure 36 Perception of mundane realism (extended)

Distributions

Tasks were realistic



Frequencies

Level	Count	Prob
Agree	181	0.56918
Disagree	21	0.06604
Neither agree nor disagree	35	0.11006
Strongly agree	74	0.23270
Strongly disagree	7	0.02201
Total	318	1.00000

N Missing 0

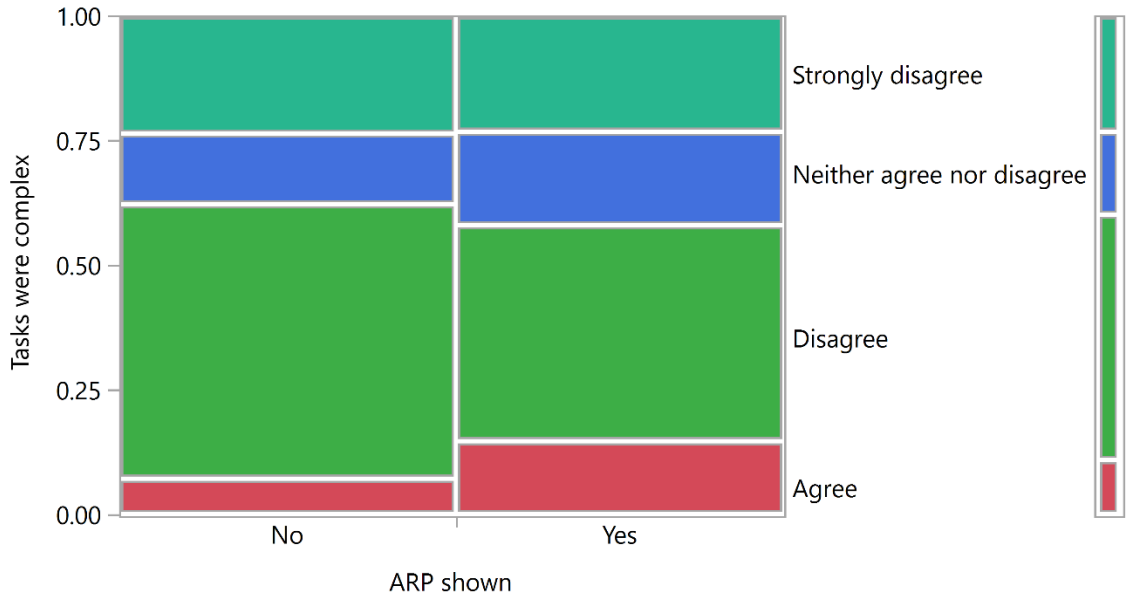
5 Levels

Please rate how much you agree or disagree with the following statement: I found the choice tasks to be complex and mentally challenging (they required a lot of thought)

Figure 37 Association between ARP display and perceived task complexity (categorical)

Contingency Analysis of Tasks were complex By ARP shown

Mosaic Plot



Freq: Count

Contingency Table

ARP shown	Count / Total % / Col % / Row %	Agree	Disagree	Neither agree nor disagree	Strongly agree	Strongly disagree	Total
		Tasks were complex					
No		12	88	23	0	38	161
		3.77	27.67	7.23	0.00	11.95	50.63
		34.29	56.41	43.40	.	51.35	
		7.45	54.66	14.29	0.00	23.60	
Yes		23	68	30	0	36	157
		7.23	21.38	9.43	0.00	11.32	49.37
		65.71	43.59	56.60	.	48.65	
		14.65	43.31	19.11	0.00	22.93	
Total		35	156	53	0	74	318
		11.01	49.06	16.67	0.00	23.27	

Tests

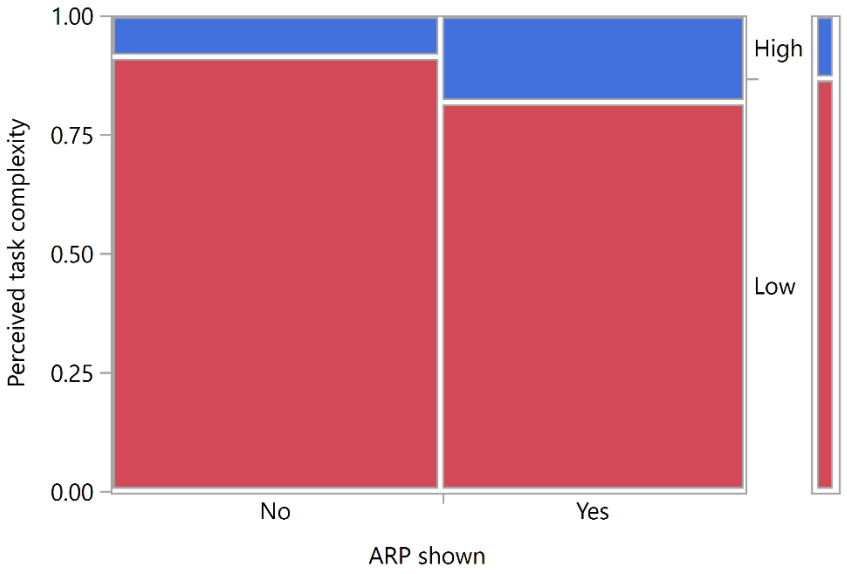
N	DF	-LogLike	RSquare (U)
318	3	3.5092926	0.0090

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	7.019	0.0713
Pearson	6.951	0.0735

Figure 38 Association between ARP display and perceived task complexity (high vs. low)

Contingency Analysis of Perceived task complexity By ARP shown

Mosaic Plot



Freq: Count (2)

Contingency Table

ARP shown	Perceived task complexity	Low	High	Total
	Count			
	Total %			
	Col %			
	Row %			
No		126	12	138
		47.55	4.53	52.08
		54.78	34.29	
		91.30	8.70	
Yes		104	23	127
		39.25	8.68	47.92
		45.22	65.71	
		81.89	18.11	
Total		230	35	265
		86.79	13.21	

Tests

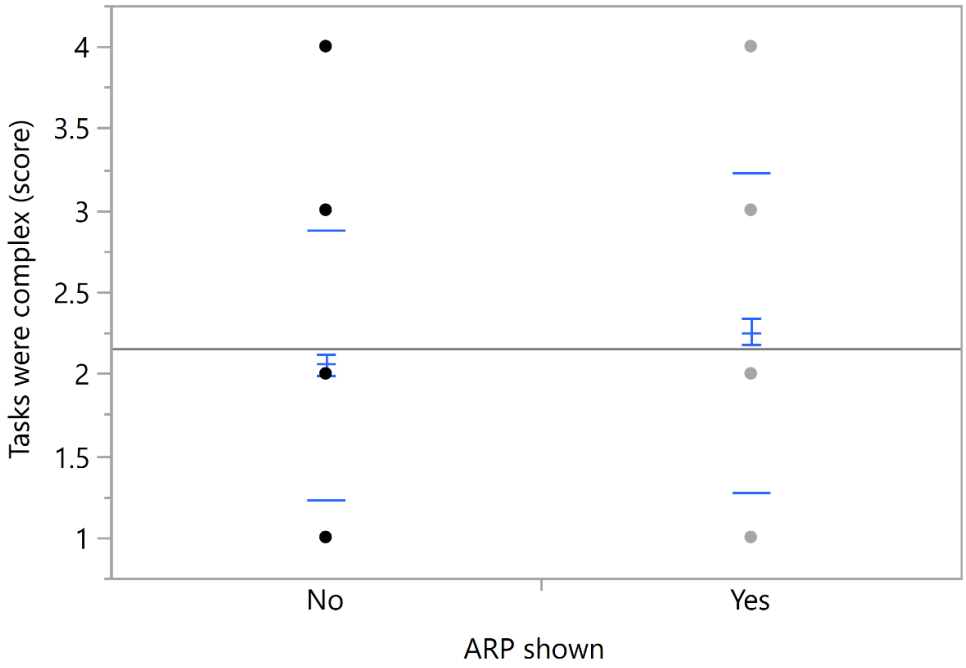
N	DF	-LogLike	RSquare (U)
265	1	2.5836327	0.0250

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	5.167	0.0230*
Pearson	5.114	0.0237*

Fisher's Exact Test	Prob	Alternative Hypothesis
Left	0.9930	Prob(Perceived task complexity=High) is greater for ARP shown=No than Yes
Right	0.0185*	Prob(Perceived task complexity=High) is greater for ARP shown=Yes than No
2-Tail	0.0291*	Prob(Perceived task complexity=High) is different across ARP shown

Figure 39 Association between ARP display and perceived task complexity (measurement)

Oneway Analysis of Tasks were complex (score) By ARP shown



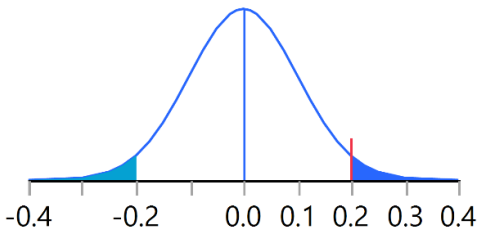
Means and Std Deviations

Level	Number	Mean	Std Dev	Std Err Mean	Lower 95%	Upper 95%
No	161	2.0559006	0.8234717	0.0648987	1.9277322	2.1840691
Yes	157	2.2547771	0.9733926	0.0776852	2.1013265	2.4082276

t Test

Yes-No
Assuming unequal variances

Difference	0.19888	t Ratio	1.964666
Std Err Dif	0.10123	DF	304.923
Upper CL Dif	0.39807	Prob > |t|	0.0504
Lower CL Dif	-0.00031	Prob > t	0.0252*
Confidence	0.95	Prob < t	0.9748



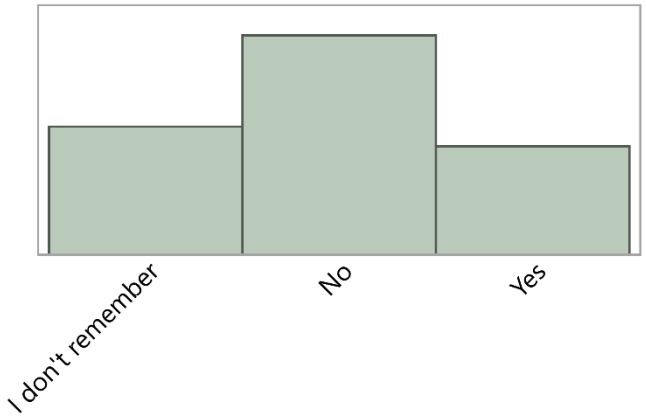
Excluded Rows 8

In the choice sets shown earlier, did you encounter any options whose price was presented alongside an advertised reference price?

Figure 40 Manipulation check (extended)

Distributions Group=Control group

ARP present?



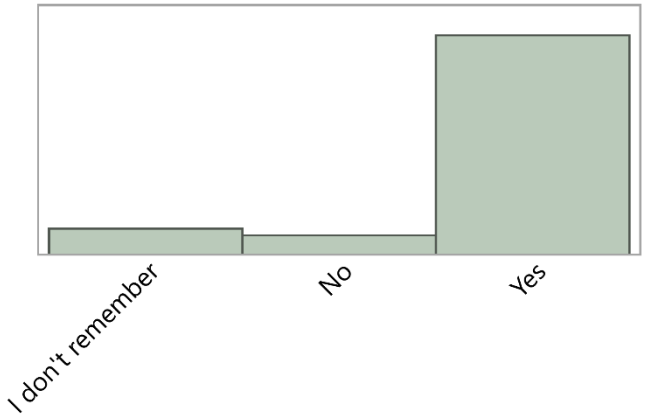
Frequencies

Level	Count	Prob
I don't remember	45	0.27950
No	78	0.48447
Yes	38	0.23602
Total	161	1.00000

N Missing 0
3 Levels

Distributions Group=Test group

ARP present?



Frequencies

Level	Count	Prob
I don't remember	15	0.09554
No	10	0.06369
Yes	132	0.84076
Total	157	1.00000

N Missing 0
3 Levels