44

HOW MUCH CHOICE IS "GOOD ENOUGH"?

Moderators of information and choice overload

Raffaella Misuraca, Elena Reutskaja, Barbara Fasolo, and Sheena Iyengar

Introduction

In today's world, people face an abundance of information and a great number of choices both in important domains, such as health care, retirement, and education, and in less important domains, such as the choice of breakfast cereal or chocolate. Choice overload and information overload have strong negative effects on many important decision-making aspects such as processing and using information, the motivation to act, the quality of choices, and post-choice feelings, which are discussed in Chapter 43 in this volume in more detail. However, small choice and information sets are not always optimal either. Several variables—such as information usage, decision accuracy, motivation to choose, and satisfaction with choice are "inverted-U" functions of the amount of information and the number of choice alternatives available. In other words, choosing from sets of an intermediate size usually brings more net benefits to the decision-maker than choosing from large or small choice sets (Grant & Schwartz, 2011; Reutskaja & Hogarth, 2009; Shah & Wolford, 2007). Indeed, in line with the assumptions of bounded rationality, intermediate sizes are preferable when they do not entail the same high, cognitively unmanageable load that large sets do, and simultaneously possess the benefits of variety that small sets lack. However, exactly how much choice is enough, or, as Herbert A. Simon would say, "good enough"? The size of the intermediate set is not always clear or universal, and is often influenced by a variety of factors. The aim of this chapter is to set out the factors which most affect and moderate the experience of too much choice, influencing feelings of how much is "enough." Broadly, there are two categories of moderators: one pertaining to the choice environment and one pertaining to the characteristics of the decision-making actor. This division is in line with Simon's scissors analogy (Simon, 1990), which views bounded rationality as the interplay between the two blades: the context or choice environment, on the one hand, and the capabilities and characteristics of decision-makers, on the other.

Context and choice environment

Within this first category, pertaining to the choice environment, we review the most critical moderators: perceptual attributes of the information, the complexity of the set of alternatives,

decision accountability, the physical arrangement of the options, and general contextual characteristics, such as the time and money involved.

Perceptual characteristics of the information presented

The first important moderator pertains to the perceptual nature of the choice presented, that is, the *perceptual attributes*. Miller (1956) suggests that the "channel capacity" for information processing is different for different stimuli: for tastes, it is four; for tones, it is six; and for visual stimuli, it reaches 10–15 items.

Visual presentation is one of the most important perceptual characteristics. Regardless of assortment size, consumers tend to prefer a visual rather than verbal representation of choice options (the "visual preference heuristic", Townsend & Kahn, 2013). Despite being preferred by consumers, visual depictions of large assortments lead to suboptimal decisions compared to verbal presentations, since visual presentation activates a less systematic approach. Visual depictions in large choice sets also result in greater perceptions of complexity and in a reduction of the likelihood to choose. With small assortments, however, visual representations of options seem to be preferable, as they increase consumers' perception of variety, improve the likelihood of making a choice, and speed up the time spent examining options.

Choice set complexity, decision accountability, and the presence of a brand

The notion of choice complexity directly pertains to choice overload. It comes from the important meta-analysis by Chernev, Böckenholt, and Goodman (2015) of choice overload studies and concerns all the aspects of a decision task that affect the *value* of the available choice options (Payne, Bettman, & Johnson, 1993). Choice set complexity, therefore, is not about the structural characteristics of the decision problem, such as the number of options, number of attributes of each option, or format in which the information is presented. Rather, choice complexity involves the following four factors:

1 the level of attractiveness of the options;
2 the presence or the absence of a dominant (or ideal) option;
3 the alignability of the options' attributes;
4 the complementarity of the choice options.

In terms of the first factor, choice-set complexity is higher when the assortment includes higher-quality, more attractive options (for example, an assortment of sandwiches made with premium, instead of average, ingredients; Chernev & Hamilton, 2009). Overall, when the variability in the relative attractiveness of the choice alternatives increases, the probability of a correct choice (if possible), the certainty about the choice, and the satisfaction with the task increase (Malhotra, 1982). More choice leads to a decline in consumer satisfaction if the number of attractive options is increased but it leads to an improvement in satisfaction if the number of unattractive options is increased. This effect occurs because more choice generally highlights the weaknesses of attractive choices and the strengths of unattractive choices (Chan, 2015).

In addition, when the attribute levels of a good are distributed unequally (i.e., the choice-set contains alternatives that are not equally attractive), the probability of choosing the correct option typically increases (Lee & Lee, 2004), whereas, people are less confident when attribute levels are distributed equally. Items with similar attractiveness may lead people to defer choice or simply choose a default option (Dhar, 1997).

Turning to the second factor of complexity, the presence of the ideal point simplifies large sets and therefore leads to a stronger preference for the chosen alternative. However, the presence of the ideal alternative in smaller sets leads to weaker preferences for the selected item (Chernev, 2003). Moreover, a brain-imaging experiment, where subjects chose from different-sized sets of landscape images, demonstrated that large sets were not always "bad" or "overwhelming" (Reutskaja, Lindner, Nagel, Andersen, & Camerer, 2018). Choosing from the sets containing an "ideal" item (e.g., those containing an image most preferred by participants) was associated with greater brain activity in the striatum and the anterior cingulate cortex (the areas involved in reward and value processing as well as in the integration of costs and benefits) compared to choosing from those sets with no item regarded as ideal. That is, the benefits of having an ideal item in the set might compensate for the costs of overwhelming set size in the bounded rational mind of humans.

The fact that large sets are not always more complex than small sets has been shown in other research. For example, Fasolo, Hertwig, Huber, and Ludwig (2009) measured the level of complexity due to the attractiveness of options in terms of assortment entropy, or the number of attribute levels and the distribution of products on the attribute levels within the assortment (Hoch, Bradlow, & Wansink, 2002; Lurie, 2004) and found that consumers considered it more difficult to choose from an assortment with higher entropy. For example, in an assortment of jams, for the same attribute (such as carb content), each jar can have different levels (such as 12 g, 15 g, or 7 g). Furthermore, in the same assortment, the distribution of jams on a given attribute level can be even or uneven. If the number of attribute levels is large and products are evenly distributed in attractiveness across the attribute levels, the assortment entropy is high. Entropy can be higher in a smaller set than in a larger set, which suggests that a small set can be more complex and difficult to choose from and can lead to poorer decisions than a large choice set.

Third, choice complexity is also a function of the alignability and complementarity of the attributes that differentiate the options available to the chooser (Chernev et al., 2015). Complexity and choice overload increase when the options have attributes that cannot be aligned (meaning that not all of options have attribute values for all attributes, as some options have unique attributes). For instance, a choice between a shirt that "keeps in heat" and a jacket that is "waterproof" might be said to contain non-aligned features. The shirt and jacket do different things in different ways and therefore a comparison of value becomes difficult (e.g., apples and oranges). Similarly, "complementary" (meaning that they have additive utility and need to be co-present to fully satisfy the consumer's need) can increase complexity. For example, gloves and scarves have complementary features, in that they provide warmth to different parts of the body.

Besides choice complexity, another important factor that affects the extent to which a wide choice causes overload is decision accountability, which can be defined as the requirement (often due to the context) for decision-makers to justify their choices. With greater accountability, the preference for larger sets increases (Chernev et al., 2015).

Finally, the presence or absence of brand names in the choice sets can strongly influence the level of satisfaction with the chosen option. One study has shown that choice overload disappeared when the choice options contained brand names. Subjects showed the same level of satisfaction when choosing from small and large sets of branded cellphones. However, when the same cellphones were presented without brand names, a higher level of dissatisfaction was observed for larger sets compared to smaller sets (Misuraca, Ceresia, Teuscher, & Faraci, 2019).

Physical arrangement of assortment and option organization

The physical arrangement of information and the presentation format of options affect information perception, processing, and decision-making and are factors of choice difficulty, which is known to moderate the effect of choice overload (Chernev et al., 2015). The location of any alternatives in a space and the information structure embedded in their display allow people to retrieve additional information about the options, affecting choosers' abilities to distinguish among options, and helping in the evaluation of each option's attributes (see, for example, Chandon, Hutchinson, Bradlow, & Young, 2009). There is a vast amount of evidence that the order in which information is presented results in strong primacy and recency effects (Reutskaja, Nagel, Camerer, & Rangel, 2011). The order also affects the attention paid to the products in the store: products on the top and middle shelves attract more attention than those on lower shelves (Chandon et al., 2009). However, greater attention does not necessarily translate directly into more sales.

The order of attributes also affects the perception of choice overload by changing people's preferences about diverse goods (suits, cars, etc.). For example, when attributes are presented starting with the attribute for which there are the most options (such as 56 car interior colors) and ending with the one for which there are the least number of options (such as four gearshift knob styles), participants are more likely to accept default options and to be less satisfied with their final products than when participants face the opposite order of attributes (Levav, Heitmann, Herrmann, & Iyengar, 2010). Overall, the organization and presentation of information can be used as a tool to simplify information processing and therefore to let decision-makers deal with a greater information load without too much cost (see Anderson & Misuraca, 2017). For example, the organization of information into "chunks" or sequences facilitates information processing (Miller, 1956). In addition, the perceived variety is greater if the large sets are organized, and the smaller sets are disorganized (Kahn & Wansink, 2004). For highly varied sets, consumers are more satisfied (in terms of learning their own preferences), perceive less complexity, and are more willing to make choices when information about the product category is presented by attribute (e.g., consumers are asked how expensive or comfortable they want their sofa), compared to presentation by alternative (e.g., consumers are shown many sofas next to each other in a showroom) (Huffman & Kahn, 1998).

The alignment of the external organization of the information (the way the products are displayed by retailers) with decision-makers' internal schemes (that is, how decision-makers categorize those products in their mind) is extremely important for the perception of variety. In particular, for familiar product categories, consumers are likely to perceive more variety and be more satisfied when the external organization of an assortment matches their internal organizational schemas. However, for unfamiliar product categories, consumers feel more satisfied and perceive more variety if the assortment is arranged in a way that makes it easier to satisfy specific shopping goals (such as buying a backpack to carry a laptop) (Morales, Kahn, McAlister, & Broniarczyk, 2005).

Finally, presenting options either simultaneously (all at once) or sequentially (one at a time) strongly affects individuals' decisions and their subsequent satisfaction. Specifically, consumers are less satisfied with their choice when the options are presented sequentially rather than simultaneously (Mogilner, Shiv, & Iyengar, 2012). This happens because, in the simultaneous format, decision-makers tend to stay focused on the given set of options while, in the sequential format, decision-makers tend to evaluate each option by comparing it with an internal reference point, such as an imagined better option. This hope of finding the ideal option translates into a lower level of satisfaction with the chosen option.

Context specificity

Preferences are constructed by the context (Lichtenstein & Slovic, 2006; Payne et al., 1993; Tversky & Kahneman, 1974, 1981). The context, or domain, in which the decision is to be made plays an important role in the experience of choice overload. While people tend to like choice in a consumer context, they might not like choice in the context of making an unpleasant and stressful medical decision or choosing from a set of undesirable alternatives. In unpleasant choice domains, people often feel increased negative affect when they are personally responsible for the choice and decreased negative emotions when they are allowed to delegate the choice to someone else (Botti & Iyengar, 2006; Botti, Orfali, & Iyengar, 2009).

Whether the choice is presented online or offline is another important consideration. For instance, satisfaction with the choice of chocolate was not affected by the size of the assortment when the choice was presented online because e-commerce users expect larger choice sets compared to shoppers in physical retail spaces (Moser, Phelan, Resnick, Schoenebeck, & Reinecke, 2017).

Another important contextual factor is time pressure, which has been shown to affect the quality of decisions and the strategies people utilize when making decisions in two possible ways (Maule & Edland, 1997; Payne et al., 1993). First, people respond to time pressure by attempting to speed up processing and/or by eliminating breaks (Payne et al., 1993; Pieters & Warlop, 1999; Reutskaja et al., 2011). Second, decision-makers become more selective about the type of information they choose to process and use. This may be reflected in filtering (giving greater priority to the important information) or in omission (ignoring part of the information entirely and looking at lower proportion of the items in the choice set) (Payne et al., 1993; Reutskaja et al., 2011). People may also react to time pressure by choosing at random or avoiding making choices. One study found that people defer choices less often when high-conflict decisions were being made under time pressure, compared to the absence of time pressure. In low-conflict decisions, however, time pressure has no effect on choice deferral. Furthermore, under time pressure, people use more non-compensatory strategies, which partially mediate the influence of time pressure on choice deferral (Dhar & Nowlis, 1999).

Among the "negative" consequences of time stress that have been mentioned are forgetting important data, the neglect and denial of important data, and inaccurate judgments and evaluations (Zakay, 1993). However, time stress also has adaptive benefits (Gigerenzer & Garcia-Retamero, 2017). There is also an inverted-U relationship between information load and decision quality under conditions of time pressure, and no such relationship when the time pressure is removed (Hahn, Lawson, & Lee, 1992).

Monetary incentives have also been shown to affect the amount of information used and the response times. When the information load increases, individuals provided with monetary incentives use more information and take more time than those who are not offered such incentives. However, there is a limit to the amount of information that can be processed per time unit, and incentives do not affect information usage for decisions constrained by time (Tuttle & Burton, 1999).

Individual characteristics of the decision-maker

Within this second category pertaining to the decision-maker's characteristics, we review the most critical moderators: decision goal, knowledge and experience, preference uncertainty and mindset, affective state, decision style, and demographic variables such as age, gender, and culture.

Decision goal

The term "decision goal" refers to the extent to which a decision-maker seeks to minimize the amount of cognitive resources being spent on making a decision (Chernev et al., 2015). This has been operationalized in the form of decision intent—buying (or the goal of making a decision among the available options), versus browsing (or the goal of learning more about the options)—and decision focus (choosing an option from an assortment versus choosing an assortment). Concerning the decision intent, when consumers approach assortments with the goal of browsing, cognitive overload is less likely to occur than when consumers approach the assortments with the goal of buying. In the latter case, consumers need to make trade-offs among the pros and cons of the options, something that demands more cognitive resources. Accordingly, consumers whose goal is browsing, rather than buying, are less likely to experience cognitive overload when facing large assortments (Chernev & Hamilton, 2009).

The difference between browsing and choosing is also reflected in the brain activity of decision-makers who are choosing from different size of sets. When they were *choosing*, the activity in the striatum and the anterior cingulate cortex reflected the inverted-U-shaped function of the number of alternatives people chose from. This suggests that neither too much nor too little choice provides optimal cognitive net benefits. Whereas activity associated with *browsing* intent has been observed as an increasing function of the set size in those areas because the costs of choice were removed when subjects simply browse rather than when subjects were faced with the effort of choosing (Reutskaja et al., 2018).

With regard to the decision focus (Chernev et al., 2015), when consumers approach the assortments with the goal of choosing one of those assortments, rather than choosing an item from a given assortment, cognitive overload is less likely to occur because the task does not involve any process of evaluating the individual options or any trade-off among those options. As a consequence, consumers focusing their attention on choosing an assortment tend to prefer larger assortments, since they gain the benefit of variety without paying the cognitive costs associated with the difficult trade-offs involved in choosing an item. In contrast, consumers focusing their attention on choosing an option from one assortment experience greater decision difficulty and, as a consequence, tend to prefer smaller assortments (Chernev, 2006).

In addition, the order in which consumers decide whether to buy and which option to choose moderates the purchasing likelihood under choice overload (Scheibehenne, Greifeneder, & Todd, 2010). Large assortments are associated with a greater purchase likelihood when consumers first decide whether to buy from an assortment, rather than choosing an option from the set.

Knowledge and experience

Knowledge and experience play an important role when someone chooses from sets with multiple alternatives. For example, greater knowledge and experience are associated with increased brand processing (Bettman & Park, 1980), while moderate prior knowledge of a product is associated with processing more available information than either low or high levels of previous knowledge or experience of the subject. Low-knowledge individuals tend to give up when facing complex data, because it is hard for them to make sense of the data. People with high prior knowledge can process the information but have no motivation to do so, preferring to use

the information they already possess. Moderate prior knowledge on the subject gives people both the ability and the motivation to engage in further information processing.

In addition, decision-makers with a greater need for cognition (Cacioppo & Petty, 1982) are less affected by choice overload and defer choice less than decision-makers with a lower need for cognition (Pilli & Mazzon, 2016). Consumers who are more cognitively complex (those who refer to a larger number of dimensions to interpret and evaluate the environment) also use more information. However, such consumers are significantly less likely to experience information overload with an optimizing goal than those who are more cognitively simple (Malhotra, 1982).

Preference uncertainty and assessment orientation

Bounded rationality can mean that individuals do not know what they prefer, before they choose, something Chernev et al. (2015) called "preference uncertainty." In these cases, articulating preferences and making trade-offs between alternatives before choosing can lead to stronger preferences when choosing from *large* sets but weaker preferences when choosing from small sets. Similarly, articulating one's ideal product can simplify the choice from large sets if the set contains this ideal product.

Assessment orientation or the motivation to evaluate and compare all the available options, in order to choose the one with the best attributes, is another factor that influences choice from large sets (Mathmann, Chylinski, de Ruyter, & Higgins, 2017). Customers with a high assessment orientation perceive greater value in products chosen from large assortments, compared to those who feel comfortable without many comparisons to make among the options.

Positive affect

Positive affect has a strong influence on consumer satisfaction when people are choosing from different sizes of sets. For example, one study discovered that individuals experiencing positive affect did not also experience dissatisfaction when choosing from larger choice sets (as though momentarily inoculating them), whereas individuals in neutral affect were more satisfied when choosing from a smaller choice set (Spassova & Isen, 2013). Positive affect, then, is likely to shift attention away from the difficulty of the task toward the quality of the assortment. The role of positive affect in choice satisfaction is in line with research on the affect heuristic, which is a mental shortcut that enables quick and efficient decisions, based on the immediate emotional response to a stimulus (Slovic, Finucane, Peters, & MacGregor, 2007).

Decision-making tendencies

Drawing on Simon's terminology, Schwartz et al. (2002) have argued that satisfaction with an extensive choice depends on whether one is a "maximizer," who actively seeks the best possible result, or a "satisficer," who is content with the first result that is "good enough." The authors observed that maximizers reported less satisfaction, happiness, and optimism with life in general, and, when facing choices, they engaged in more social comparisons, experienced more regret, and were less satisfied with their choices. Even while doing better (e.g., obtaining a higher salary for a job), maximizers may feel worse because of them "not always wanting what

they get" (Iyengar, Wells, & Schwartz, 2006). However, it is important to note, that the literature on maximizing is controversial on account of the proliferation and use of several different maximization scales (e.g., Diab, Gillespie, & Highhouse, 2008; Misuraca Faraci, Gangemi, Carmeci, & Miceli, 2015; Turner, Rim, Betz, & Nygren, 2012), each of which is based on different definitions of the core maximizing construct (Misuraca & Fasolo, 2018).

Choosing for others versus oneself

The negative effects of choice overload are not replicated when individuals make choices for others rather than for themselves (Polman, 2012). Individuals making choices for others (about wines, ice-cream flavors, school courses, etc.) reported greater satisfaction when choosing from larger rather than smaller assortments. Conversely, when choosing for themselves, people reported higher satisfaction levels after choosing from smaller rather than larger assortments. This may occur because, when choosing for others, people are typically oriented toward positive outcomes and positive information whereas, when they are choosing for themselves, individuals' attention is directed to negative information and they are oriented away from negative outcomes (see regulatory focus theory for details, Higgins, 1997).

Gender

There are gender differences in reaction to choice overload, in part, because men and women may often employ different information-processing strategies. For example, one study has demonstrated that, while ad information is encoded and is equally available to both women and men, females are more likely to pay attention to the details, whereas males are less likely to access or use this information (Meyers-Levy & Maheswaran, 1991). Advertisements with many images are often more effective at targeting females, while male customers prefer simple images and information that will lead to quick decisions. However, gender differences in the desire for variety can depend on the type of choice. When choosing from different sizes of sets of gift boxes, women were shown to be more satisfied with their choices over the entire range of alternatives than men (Reutskaja, 2008). However, when choosing a potential mate from a set of online date options, women perceived 20 profiles as being close to the ideal set size, whereas men perceived this as being too limited (Lenton, Fasolo, & Todd, 2008). In addition, women were generally more selective than men when they searched for a potential mate during speed-dating events, which varied in size of potential mates (Fisman, Iyengar, Kamenica, & Simonson, 2006). The selectivity of males was similar between groups of different sizes, while women became much more selective when the speed-dating group size was increased to more than 15.

Age

The choice overload experience depends greatly on the age of the decision-maker. For example, when choosing from an extensive array of options, adolescents and adults suffer similar negative consequences (i.e., greater difficulty and dissatisfaction), while children and seniors suffer fewer negative consequences (i.e., less difficulty and dissatisfaction than adolescents and adults) (Misuraca, Teuscher, & Faraci, 2016). In domains where risk is not involved, adults and adolescents seem to adopt very similar decision-making processes (Furby & Beyth-Marom, 1992): a maximizing approach. This would explain their greater perceived

difficulty and post-choice dissatisfaction when facing a high number of options (see Iyengar et al., 2006). Children, on the other hand, tend to approach decisions in a more intuitive manner and quickly develop strong preferences (Schlottmann & Wilkening, 2011). This mitigates the negative consequences of choice overload for this age group. Seniors tend to be overconfident in their judgments (Stankov & Crawford, 1996), demonstrating a pronounced focus on positive information (Mather & Carstensen, 2005), and they adopt a satisficing approach when making decisions (Tanius, Wood, Hanoch, & Rice, 2009). These tendencies would explain why the negative consequences of too many choices were milder among seniors.

Cultural background

People of different cultures have different preferences for variety (for further discussion, see Iyengar, 2010). For example, Anglo-Americans were shown to be more motivated by choice, especially by personal choice, and rated having choice as more important than Asian Americans did (Iyengar & Lepper, 1999). People from Eastern Europe were more satisfied with larger choice sets than their Western European counterparts, which could be explained by the fact that choice was limited in Eastern European countries for a long time (Reutskaja, 2008). Choice provision might have different effect on people from different cultures, because freedom and choice might not have the same meaning for Westerners and non-Westerners (Markus & Schwartz, 2010). In addition, Western and non-Western cultures seem to have different patterns of perception: while Asians tend to focus more on contextual information, Americans tend to focus on salient foreground objects (Miyamoto, Nisbett, & Masuda, 2006). This difference is due to the distinctive characteristics of each culture's perceptual environment, which afford distinctive ways to perceive information (see also Viale, 2012). Though there are cultural differences in choice perception, most of the research on choice overload to date has focused on university-educated samples from Western societies and should be taken with a grain of salt as freedom of choice may not be a universal aspiration.

Conclusion

In an interview in Pittsburgh, Herbert Simon was asked whether simple decision-making could be achieved by presenting a smaller number of alternatives. His response was: "Partly. I think the difficulty of decision-making centers very much around the degree of uncertainty and the gaps in our knowledge" (UBS, 1992). We agree with his statement: attempting to gird ourselves against the effects of choice overload, either by pursuing or presenting an "ideal" number of options, is an admirable goal but an incredibly challenging one. Previous research has shown that both too much and too little information and choice are bad. For more than half a century, researchers have tried to answer the question of how much information and choice are enough and what is the "ideal" number of alternatives to present to consumers and the public. As this chapter has demonstrated, the ideal number of choices depends greatly on many contextual and demographic factors, such as the availability of an ideal alternative in the choice set, the existence of time constraints, knowledge and expertise, and the gender, age, and culture of the decision-makers. Nevertheless, finding the ideal choice set may ultimately be worth the trouble when decisions are recurrent or strategic, such as pension schemes, health plans, or career options. This review has covered a substantial amount of research that can be utilized to mitigate these distinct challenges.

We believe that the most promising directions for offering long-lasting solutions against choice overload lie in understanding the roles of preference certainty, focused attention, and generated self-knowledge. As Simon (1971, p. 40) put it:

> In an information-rich world, the wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes. What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it.

Smart and ethical choice architecture should be designed based on goals, needs, and personal preferences by using apps, reminders, checklists, websites, buddy systems, and alerts (Johnson et al., 2012; Thaler & Sunstein, 2008) that direct and hold decision-makers' attention and respect decision-makers' freedom. How people's attention is managed in the ever more information-rich world will ultimately dictate their future.

References

Anderson, B. F., & Misuraca, R. (2017). Perceptual commensuration in decision tables. *Quarterly Journal of Experimental Psychology*, 70(3), 544-553.

Bettman, J. R., & Park, C. W. (1980). Effects of prior knowledge and experience and phase of the choice process on consumer decision processes: A protocol analysis. *Journal of Consumer Research*, 7(3), 234–248.

Botti, S., & Iyengar, S. S. (2006). The dark side of choice: When choice impairs social welfare. *Journal of Public Policy & Marketing*, 25(1), 24–38.

Botti, S., Orfali, K., & Iyengar, S. S. (2009). Tragic choices: Autonomy and emotional responses to medical decisions. *Journal of Consumer Research*, 36, 337–352.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42(1), 116–131.

Chan, E. Y. (2015). Attractiveness of options moderates the effect of choice overload. *International Journal of Research in Marketing*, 32(4), 425–427.

Chandon, P., Hutchinson, J. W., Bradlow, E. T., & Young, S. H. (2009). Does in-store marketing work? Effects of the number and position of shelf facings on brand attention and evaluation at the point of purchase. *Journal of Marketing*, 73(6), 1–17.

Chernev, A. (2003). When more is less and less is more: The role of ideal point availability and assortment in consumer choice. *Journal of Consumer Research*, 30(2), 170–183.

Chernev, A. (2006). Decision focus and consumer choice among assortments. *Journal of Consumer Research*, 33(1), 50–59.

Chernev, A., Böckenholt, U., & Goodman, J. (2015). Choice overload: A conceptual review and meta-analysis. *Journal of Consumer Psychology*, 25(2), 333–358.

Chernev, A., & Hamilton, R. (2009). Assortment size and option attractiveness in consumer choice among retailers. *Journal of Marketing Research*, 46(3), 410–420.

Dhar, R. (1997). Consumer preference for a no-choice option. *Journal of Consumer Research*, 24(2), 215–231.

Dhar, R., & Nowlis, S. M. (1999). The effect of time pressure on consumer choice deferral. *Journal of Consumer Research*, 25(4), 369–384.

Diab, D. L., Gillespie, M. A., & Highhouse, S. E. (2008). Are maximizers really unhappy? The measurement of maximizing tendency. *Judgment and Decision Making*, 3(5), 364–370.

Fasolo, B., Hertwig, R., Huber, M., & Ludwig, M. (2009). Size, entropy, and density: What is the difference that makes the difference between small and large real world assortments? *Psychology & Marketing*, 26(3), 254–279.

Fisman, R., Iyengar, S. S., Kamenica, E., & Simonson, I. (2006). Gender differences in mate selection: Evidence from a speed dating experiment. *The Quarterly Journal of Economics*, 121(2), 673–697.

Furby, L., & Beyth-Marom, R. (1992). Risk taking in adolescence: A decision-making perspective. *Developmental Review*, 12(1), 1–44.

Gigerenzer, G., & García-Retamero, R. (2017). Cassandra's regret: The psychology of not wanting to know. *Psychological Review*, 124(2), 179–196.

Grant, A. M., & Schwartz, B. (2011). Too much of a good thing: The challenge and opportunity of the inverted U. *Perspectives on Psychological Science*, 6(1), 61–76.

Hahn, M., Lawson, R., & Lee, Y. G. (1992). The effects of time pressure and information load on decision quality. *Psychology & Marketing*, 9(5), 365–378.

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, 52(12), 1280–1300.

Hoch, S. J., Bradlow, E., & Wansink, B. (2002). Rejoinder to "The variety of an assortment: An extension to the attribute-based approach". *Marketing Science*, 21(3), 342–346.

Huffman, C., & Kahn, B. E. (1998). Variety for sale: Mass customization or mass confusion? *Journal of Retailing*, 74(4), 491–513.

Iyengar, S. S. (2010). *The art of choosing*. London: Little Brown.

Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology*, 76(3), 349–366.

Iyengar, S. S., Wells, R. E., & Schwartz, B. (2006). Doing better but feeling worse: Looking for the "best" job undermines satisfaction. *Psychological Science*, 17(2), 143–150.

Johnson, E. J., Shu, S. B., Dellaert, B. G. C., Fox, C., Goldstein, D., Häubl, G., ... Weber, E.U., 2012. Beyond nudges: Tools of a choice architecture. *Marketing Letters*, 23(2), 487–504.

Kahn, B. E., & Wansink, B. (2004). The influence of assortment structure on perceived variety and consumption quantities. *Journal of Consumer Research*, 30(4), 519–533.

Lee, B. K., & Lee, W. N. (2004). The effect of information overload on consumer choice quality in an on-line environment. *Psychology & Marketing*, 21(3), 159–183.

Lenton, A. P., Fasolo, B., & Todd, P. M. (2008). "Shopping" for a mate: Expected versus experienced preferences in online mate choice. *IEEE Transactions on Professional Communication*, 51(2), 169–182.

Levav, J., Heitmann, M., Herrmann, A., & Iyengar, S. S. (2010). Order in product customization decisions: Evidence from field experiments. *Journal of Political Economy*, 118(2), 274–299.

Lichtenstein, S., & Slovic, P. (Eds.) (2006). *The construction of preference*. New York: Cambridge University Press.

Lurie, N. H. (2004). Decision making in information-rich environments: The role of information structure. *Journal of Consumer Research*, 30(4), 473–486.

Malhotra, N. K. (1982). Information load and consumer decision-making. *Journal of Consumer Research*, 8(4), 419–430.

Markus, H. R., & Schwartz, B. (2010). Does choice mean freedom and well-being? *Journal of Consumer Research*, 37(2), 344–355.

Mather, M., & Carstensen, L. L. (2005). Aging and motivated cognition: The positivity effect in attention and memory. *Trends in Cognitive Sciences*, 9(10), 496–502.

Mathmann, F., Chylinski, M., de Ruyter, K., & Higgins, E. T. (2017). When plentiful platforms pay off: Assessment orientation moderates the effect of assortment size on choice engagement and product valuation. *Journal of Retailing*, 93(2), 212–227.

Maule, A. J., & Edland, A. C. (1997). The effects of time pressure on human judgment and decision making. In R. Ranyard, W. R. Crozier, & O. Svenson (Eds.), *Decision making: Cognitive models and explanations* (pp. 189–204). London: Routledge.

Meyers-Levy, J., & Maheswaran, D. (1991). Exploring differences in males' and females' processing strategies. *Journal of Consumer Research*, 18(1), 63–70.

Miller, G. A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review*, 63(2), 81–97.

Misuraca, R., Ceresia, F., Teuscher, U., & Faraci, P. (2019). The role of the brand on choice overload. *Mind & Society*, 18(1), 57–76

Misuraca, R., Faraci, P., Gangemi, A., Carmeci, F.A., & Miceli, S. (2015). The Decision Making Tendency Inventory: A new measure to assess maximizing, satisficing, and minimizing. *Personality and Individual Differences*, 85, 111–116.

Misuraca, R., & Fasolo, B. (2018). Maximizing versus satisficing in the digital age: disjoint scales and the case for "construct consensus". *Personality and Individual Differences*, 121, 152–160.

Misuraca, R., Teuscher, U., & Faraci, P. (2016). Is more choice always worse? Age differences in the overchoice effect. *Journal of Cognitive Psychology*, 28(2), 242–255.

Miyamoto, Y., Nisbett, R. E., & Masuda, T. (2006). Culture and the physical environment. Holistic versus analytic perceptual affordances. *Psychological Science*, 17(2), 113–119.

Mogilner, C., Shiv, B., & Iyengar, S. S. (2012). Eternal quest for the best: Sequential (vs. simultaneous) option presentation undermines choice commitment. *Journal of Consumer Research*, 39(6), 1300–1312.

Morales, A., Kahn, B. E., McAlister, L., & Broniarczyk, S. M. (2005). Perceptions of assortment variety: The effects of congruency between consumers' internal and retailers' external organization. *Journal of Retailing*, 81(2), 159–169.

Moser, C., Phelan, C., Resnick, P., Schoenebeck, S. Y., & Reinecke, K. (2017). No such thing as too much chocolate: Evidence against choice overload in e-commerce. In Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (pp. 4358–4369). ACM.

Payne, J. W., Bettman, J. R., & Johnson, E. J. (Eds.) (1993). *The adaptive decision-maker*. New York: Cambridge University Press.

Pieters, R., & Warlop, L. (1999). Visual attention during brand choice: The impact of time pressure and task motivation. *International Journal of Research in Marketing*, 16(1), 1–16.

Pilli, L. E., & Mazzon, J. A. (2016). Information overload, choice deferral, and moderating role of need for cognition. *Empirica*: *Revista de Administração*, 51(1), 36–55.

Polman, E. (2012). Self–other decision making and loss aversion. *Organizational Behavior and Human Decision Processes*, 119(2), 141–150.

Reutskaja, E. (2008). Experiments on the role of the number of alternatives in choice. thesis. Pompeu Fabra University, Spain.

Reutskaja, E., & Hogarth, R. M. (2009). Satisfaction in choice as a function of the number of alternatives: When "goods satiate". *Psychology & Marketing*, 26(3), 197–203.

Reutskaja, E., Lindner, A., Nagel, R., Andersen, R. A., & Camerer, C. F. (2018). Choice overload reduces neural signatures of choice set value in dorsal striatum and anterior cingulate cortex. *Nature Human Behaviour*, 2, 925–935.

Reutskaja, E., Nagel, R., Camerer, C. F., & Rangel, A. (2011). Search dynamics in consumer choice under time pressure: An eye-tracking study. *American Economic Review*, 101(2), 900–926.

Scheibehenne, B., Greifeneder, R., & Todd, P. M. (2010). Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research*, 37(3), 409–425.

Schlottmann, A., & Wilkening, F. (2011). Judgment and decision making in young children. In M. Dhami, A. Schlottmann, & M. Waldmann (Eds.), *Judgment and decision making as a skill* (pp. 55–83). New York: Cambridge University Press.

Schwartz, B., Ward, A., Monterosso, J., Lyubomirsky, S., White, K., & Lehman, D. R. (2002). Maximizing versus satisficing: Happiness is a matter of choice. *Journal of Personality and Social Psychology*, 83(5), 1178–1197.

Shah, A. M., & Wolford, G. (2007). Buying as a function of parametric variation of number of choices. *Psychological Science*, 18(5), 369–370.

Simon, H. A. (1971). Designing organizations for an information-rich world. In M. Greenberger (Ed.), *Computers, communication, and the public interest* (pp. 37–72). Baltimore: MD: Johns Hopkins University Press.

Simon, H. A. (1990). Invariants of human behavior. *Annual Review of Psychology*, 41, 1–19.

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2007). The affect heuristic. *European Journal of Operational Research*, 177, 1333–1352.

Spassova, G., & Isen, A. M. (2013). Positive affect moderates the impact of assortment size on choice satisfaction. *Journal of Retailing*, 89(4), 397–408.

Stankov, L., & Crawford, J. D. (1996). Confidence judgments in studies of individual differences. *Personality and Individual Differences*, 21(6), 971–986.

Tanius, B. E., Wood, S., Hanoch, Y., & Rice, T. (2009). Aging and choice: Applications to Medicare Part 500. *Judgment and Decision Making*, 4(1), 92–101.

Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. New York: Penguin Books.

Townsend, C., & Kahn, B. E. (2013). The "visual preference heuristic": The influence of visual versus verbal depiction on assortment processing, perceived variety, and choice overload. *Journal of Consumer Research*, 40(5), 993–1015.

Turner, B. M., Rim, H. B., Betz, N. E., & Nygren, T. E. (2012). The maximization inventory. *Judgment and Decision Making*, 7(1), 48–60.

Tuttle, B, & Burton, F. G. (1999). The effects of a modest incentive on information overload in an investment analysis task. *Accounting, Organizations and Society*, 24(8), 673–687.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185(4157), 1124–1131.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211(4481), 453–458.

UBS (1992). Video recording. Available at: www.ubs.com/HerbertSimon

Viale, R. (2012). Cognitive diversity in Western and Eastern thinking. In R. Viale (Ed.), *Methodological Cognitivism*, vol. I: *Mind, Rationality and Society* (pp. 295–308). Berlin: Springer.

Zakay, D. (1993). The impact of time perception processes on decision making under time stress. In O. Svenson & A. J. Maule (Eds.), *Time pressure and stress in human judgment and decision making* (pp. 59–72). New York: Plenum Press.