Cite as: Greifeneder, R., Scheibehenne, B., & Kleber, N. (2010). Less may be more when choosing is difficult: Choice complexity and too much choice. *Acta Psychologica, 133*, 45-50. doi:10.1016/j.actpsy.2009.08.005

Running head: CHOICE COMPLEXITY AND TOO MUCH CHOICE

Less may be more when choosing is difficult: Choice complexity and too much choice

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Abstract

Although consumers readily seek choice and abundance, the so-called too-much-choice effect suggests that having many alternatives to choose from eventually leads to negative consequences, such as decreased post-choice satisfaction. The present research extends this research by highlighting the role of choice complexity. It is argued that too-much-choice effects are associated with choice complexity, which is influenced not only by the number of alternatives, but also by other features of the choice set, such as the number of attributes that alternatives are differentiated upon. These other influences of choice complexity may propel or hinder the emergence of too-much-choice effects. Two experiments tested this hypothesis by orthogonally manipulating the number of alternatives and the number of attributes. Results revealed a too-much-choice effect when alternatives were differentiated on many attributes, but not when alternatives were differentiated on few attributes. Implications for theory and practice are discussed.

Word count: 143

Keywords (from Thesaurus of Psychological Index Terms): choice behavior, consumer behavior, consumer satisfaction, complexity

PsycINFO classifications: 3040 (Social Perception & Cognition)

3900 (Consumer Psychology)

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1. Introduction

The retail business across the United States and in most European countries trusts in choice and abundance. Supermarkets with thousands of products and ever-growing assortments have gained market share, while smaller retailers have disappeared. Where growth is not cost effective, abundance is often feigned by using mirrors or displays with false bottoms so that consumers at least believe they have plenty of options (Schwartz, 2004). One conclusion that may be drawn from this development is that consumers prefer variety and abundance. Moreover, given the fact that retail businesses are driven by economic goals, one may conclude that individuals consume more when more options are offered to them. In line with the first conclusion of heightened *preference*, Iyengar and Lepper (2000) reported that individuals prefer large over small assortments (see also Wänke & Greifeneder, 2007). Strongly contradicting the second conclusion of increased *consumption*, however, Iyengar and Lepper reported that having more choice was associated with less purchasing. Perhaps even more surprisingly, participants in their experiments who had more choice alternatives were less satisfied with the chosen alternative (see also Iyengar, Wells, & Schwartz, 2006). These and related negative consequences of extensive choice sets have been referred to as the effect of too-much-choice (Iyengar & Lepper, 2000), the paradox of choice (Schwartz, 2004), or hyperchoice (Mick, Broniarczyk, & Haidt, 2004), and continue to attract public and scientific interest.

The possibility of too much choice has important practical and theoretical implications. On a theoretical level, it challenges most choice models in psychology and economics, according to which expanding a choice set cannot make decision makers worse off (e.g., Rieskamp, Busemeyer, & Mellers, 2006). From an applied perspective, it strongly questions marketers' robust belief in abundance and ever-increasing assortments, because retailers could possibly boost their success by offering less. Given the potential significance of these implications, it is important to further investigate the possibility of too much choice, especially as the effect has not always replicated (e.g., Scheibehenne, 2007).

Researchers have suggested several mechanisms that contribute to too-much-choice effects (e.g., Scheibehenne, 2007). First, the more alternatives are offered, the more alternatives are foregone when choosing one. Extensive as compared to limited choice sets may thus entail higher opportunity costs and lower the satisfaction with the option that is eventually chosen. Second, with more alternatives, individuals incur higher search costs (e.g., time or money, see also Fasolo, Carmeci, & Misuraca, 2009). To the extent that satisfaction with the chosen alternative is a function of the choice process, higher search costs may also contribute to lower satisfaction. Third, the more alternatives individuals know of, the more uncertain they may feel about whether they have made a good choice, again lowering satisfaction with the chosen option. Different mechanisms are thus assumed to contribute to lower satisfaction when choosing from plentiful options, and the anticipation of this reduced satisfaction may decrease consumption.

Despite good reasons for the emergence of too-much-choice effects, extensive choice sets do not always result in less satisfaction, and a recent meta-analysis found that the effect size across studies is virtually zero (Scheibehenne, Greifeneder, & Todd, 2009a). However, this meta-analysis also revealed some heterogeneity in effect sizes, which may possibly stem from selective emergence of too-much-choice effects in some conditions but not others. In support of such an interpretation, a series of experiments by Scheibehenne, Greifeneder, and Todd (2009b) allows for the conclusion that too-much-choice effects can be observed when individuals need to justify their choice. Relatedly, suggesting a necessary precondition for the emergence of too much choice, Chernev (2003a, 2003b) observed that less is more when participants do not have prior preferences. Participants with clear prior preferences were more satisfied after choosing from larger assortments, presumably because the probability of matching one’s preferences increases with the number of alternatives (preference matching). Together, these findings suggest that the too-much-choice effect does not occur ubiquitously. In the spirit of understanding the “when” of too much choice, the present set of experiments focuses on the complexity of the choice set beyond the number of options.

It is interesting to note that assortment size—the central variable in too-much-choice research—may be only one among several variables triggering the three outlined mechanisms. For instance, the similarity between alternatives or the amount of information provided may also cause increases in opportunity costs, search costs, and uncertainty. Indeed, with very similar alternatives, opportunity costs are likely to be higher than for very dissimilar alternatives, independent of the number of options, and the same is true for search costs and uncertainty (see also Fasolo, Hertwig, Huber, & Ludwig, 2009). From a conceptual perspective, this proposed multi-causation of mechanisms triggering too much choice—by number of alternatives, similarity of alternatives, amount of information, etc.—is intriguing, as it may point to a common underlying variable. We suggest that choice complexity is a plausible candidate, because more alternatives, higher similarity of alternatives, and more attribute information all affect the complexity of choosing. From this perspective, what drives too-much-choice effects is not the increase in the number of alternatives as such, but associated increases in choice complexity. Interestingly, this perspective also suggests that too-much-choice effects may be facilitated or hindered by other variables that influence choice complexity. The present contribution explores this possibility.

To investigate the hypothesis that other variables influencing choice complexity may facilitate or hinder too-much-choice effects, the present contribution focuses on the number of attributes that alternatives are differentiated upon. It is hypothesized that increases in the number of attributes are associated with increases in choice complexity, because the difficulty of making a selection increases with the number of non-redundant pieces of information that need to be evaluated. If choice complexity is high due to alternatives being differentiated on many attributes, we expect a too-much-choice effect. In contrast, if choice complexity is low due to alternatives being differentiated on few attributes, choice satisfaction may not decrease with more alternatives to choose from; in fact, given that having more choice is also associated with advantages (e.g., higher chances of finding an ideal option), satisfaction may even increase the more alternatives are presented. Note that this moderation hypothesis is conceptually different from prior findings, as it does not focus on the evaluator (Chernev, 2003b, 2003a) or her or his motivation (Scheibehenne et al., 2009b), but on features of the choice set itself.

In sum, the present contribution extends prior research by suggesting that too-much-choice effects are driven by choice complexity. This extended perspective on too much choice allows for the prediction that other variables that likewise influence choice complexity, such as similarity of alternatives or amount of information, may propel or hinder the emergence of too-much-choice effects. The following two experiments investigate this moderation hypothesis by focusing on features of the choice set itself, namely the number of attributes that alternatives are differentiated on.

2. Experiment 1

Experiment 1 was designed to investigate whether a too-much-choice effect occurs when alternatives are differentiated on many attributes, but not when alternatives are differentiated only on few attributes. To this end, the standard too-much-choice design (Iyengar & Lepper, 2000), in which participants are offered a choice out of either few or many alternatives, was orthogonally crossed with a manipulation of the number of attributes that alternatives are differentiated upon.

2.1 Method

2.1.1 Participants

A sample of 121 University of Mannheim students participated in return for a payment of 1.50 euros (2 U.S. dollars at the time). Forty-three percent of participants were female and the average age was 22.3 years (*SD* = 2.8).

2.1.2 Design and manipulations

Participants were randomly assigned to a 3 (number of alternatives, 6 vs. 15 vs. 30) x 2 (number of attributes, 1 vs. 6) between-participants factorial design. The conditions of 6 and 30 alternatives were chosen to closely replicate the experiments reported by Iyengar and Lepper (2000). The conditions of 1 versus 6 attributes were chosen based on independent pre-testing, which revealed a considerable difference in perceived choice complexity.

2.1.3 Procedure and materials

After entering the laboratory, participants were greeted by the experimenter and thanked for their participation. Participants received a questionnaire and a paper chart on which several colored pens were displayed (the display). Pens were used as choice alternatives because both the number of alternatives and the number of choice attributes can easily be varied. Furthermore, we hypothesized that the likelihood of preference matching would be low for colored pens (for details on this reasoning, see Iyengar & Lepper, 2000). Participants only saw the displays and not real products.

Choice task. Participants' first task was to choose the one colored pen they liked best from a given display. They were asked to choose the pen as if they were shopping for it. Before seeing the display, participants were informed about the attributes on which the pens were differentiated, including a one-sentence description about what each attribute meant and what the different attribute levels were.

In the 1-attribute condition, pens varied in color only (6, 15, or 30 different colors); in the 6-attribute condition, pens varied in color, design (elegant, ergonomic, trendy, and sporty), pen width (four levels depicted on the display), ink color (aquamarine, azure-blue, ice-blue, and cobalt-blue), projected duration of use (10, 15, 20, or 25 hrs), and light resistance of the ink (2, 4, 6, or 8 years). The displays were created as random combinations of these attributes. In particular, we first created the 6–attribute–30-alternative (6–30) display by randomly drawing attribute combinations. The 30 hypothetical pens resulting from this draw were displayed on a sheet of paper, with 10 pens in a row and 3 pens in a column. For each pen, the six attributes were listed one below the other (in the above-listed order). Color and pen width were displayed iconographically, while the other attributes were presented semantically.

Based on the 6–30 display, we created two 6–15 displays by randomly assigning each pen to one of two versions. Also based on the 6–30 display, we created five 6–6 displays by randomly assigning each pen to one of five versions. This procedure ensured that every pen displayed in the 6–30 condition would also be displayed in a 6–15 or 6–6 display. Figure 1 offers an example of a 6–6 condition.

Based on the 6-attribute displays, we created the 1-attribute displays by eliminating all of the attribute information except color. Participants were randomly assigned to one of the six (2 x 3) conditions, and within the 6- or 15-alternative conditions, randomly to one of the different display versions.

After having chosen a pen from the respective display, participants were asked to write the number of the chosen pen on the questionnaire and then to turn the display upside down.

Control variables. Next, participants indicated the perceived complexity of the choice process by means of two 9-point Likert-scaled items. The items read: “How complex was it to make a choice?” (1, *not at all complex*, to 9, *very complex*), and “To what extent were you overtaxed by the choice task?” (1, *not at all overtaxed*, to 9, *very overtaxed*).

Furthermore, perceived *attractiveness* of the choice display was assessed to probe for unwanted differences in the attractiveness of the displays. The item read: “How attractive was the assortment?,” and it was scaled from 1, *not at all attractive*, to 9, *very attractive*.

Satisfaction. Participants’ satisfaction with the chosen pen was assessed as dependent variable by means of two 9-point Likert-scaled items. The items read: “How satisfied are you with your choice?,” and “What do you think: How satisfied would you be if you actually received this pen from us?,” both scaled from 1, *not at all satisfied*, to 9, *very satisfied*. The latter item was to reflect potential behavioral responses.

Demographic information. Age and gender were assessed. Neither of the two variables changed the subsequently presented results in a meaningful manner and will thus not be further reported.

2.2 Results

2.2.1 Control variables

Since the two items targeting perceived complexity were strongly interrelated ($r = .64$, $p < .01$) they were combined to form a single measure, with higher values indicating higher levels of perceived complexity. This measure was subjected to a 3 (number of alternatives) x 2 (number of attributes) between-participants analysis of variance (ANOVA). In line with the hypotheses, participants reported lower levels of complexity in the 6-alternatives condition compared to the 15- and 30-alternatives conditions, $M = 3.20$, $SD = 1.74$; $M = 4.62$, $SD = 1.99$; $M = 5.10$, $SD = 2.04$, respectively, $F(2, 115) = 11.71$, $p < .01$. Furthermore, participants reported lower complexity in the 1-attribute condition compared to the 6-attributes condition, $M = 3.78$, $SD = 2.01$; $M = 4.86$, $SD = 2.01$, respectively, $F(1, 115) = 10.39$, $p < .01$. These two main effects suggest that both the number of attributes and the number of alternatives influence choice complexity, with the highest level of complexity being achieved when participants chose out of 30 alternatives that were differentiated on six attributes (see Table 1). No interaction effect was observed ($F < 1$).

A potential alternative explanation for too-much-choice effects holds that smaller assortments are more attractive than larger ones and therefore produce higher levels of satisfaction. To refute such an alternative explanation, the item assessing attractiveness of the assortment was subjected to a 3 (number of alternatives) x 2 (number of attributes) between-participants ANOVA, yielding no effect of significance (all Fs < 1.41). It thus appears that display-generation successfully produced displays of similar attractiveness.

2.2.2 Satisfaction with choice

The two items assessing participants' satisfaction with the chosen alternative were averaged to form a single index (r = .62, p < .01), with higher values indicating higher experienced satisfaction. This measure was subjected to a 3 (number of alternatives) x 2 (number of attributes) between-participants ANOVA, yielding a marginally significant two-way interaction, $F(2, 115) = 2.90$, $p < .06$.[1] Both the main effect for number of alternatives, $F(2, 115) = 1.50$, $p > .22$, and the main effect for number of attributes, $F < 1$, were nonsignificant (see Table 1). To further explore this interaction, planned contrasts were computed. As expected, when the alternatives were differentiated on six attributes, satisfaction was less, the more alternatives were offered, reflecting a too-much-choice effect, $t(115) = 2.51$, $p < .02$ (for the comparison of 6 vs. 30 alternatives). In contrast, when alternatives were differentiated on one attribute only, satisfaction was similar regardless of the number of alternatives (all $p > .14$). This pattern of results supports the outlined hypothesis that too-much-choice effects are particularly likely when choosing is complex.

3. Experiment 2

In Experiment 1, more was less only when alternatives were differentiated on six attributes. In contrast, when alternatives were differentiated on one attribute, satisfaction was independent of the number of alternatives. While in line with the hypotheses, the interaction pattern was weaker than expected, potentially due to the hypothetical nature of the experimental set-up. To bolster confidence in the reported findings, Experiment 2 was designed to replicate the results of the first experiment by relying on a more engaging setting: the choice of an MP3-player that participants stood a chance to receive at the end of the experiment.

In addition, to refute alternative explanations, two major changes were implemented. *First,* as an alternative to the suggested explanation of choice complexity, one could argue that the 1- and 6-attributes conditions spontaneously triggered different decision strategies. For instance, the 1-attribute condition might have prompted participants to use a simple lexicographic decision rule, such as Take-The-Best (Gigerenzer & Goldstein, 1996), whereas the 6-attributes condition might have triggered the use of more elaborate decision strategies that integrate several pieces of information, such as the “weighted additive rule” (WADD, Bettman, Luce, & Payne, 1998). Such differences in cued strategies could likewise result in the observed interaction effect, regardless of choice complexity. To refute this alternative explanation, the 1-attribute condition was omitted in Experiment 2, and participants were subjected to either a 4- or a 9-attributes condition. Pre-testing ensured that the 4-attributes condition was perceived as less complex than the 9-attributes condition. Since both conditions include a series of attributes, the two conditions should trigger similar decision strategies.

Second, following general practices in the too-much-choice literature (e.g., Iyengar & Lepper, 2000), in Experiment 1, the displays were produced by first generating the biggest set (30 alternatives), and then randomly drawing from this set to produce the smaller sets (6 and 15 alternatives). Although unlikely, it is possible that this procedure results in unwanted differences between displays, such as differences in attractiveness or differences in the correlations between attributes. To counter this possibility, all the displays in Experiment 2 were generated by the same random algorithm, as detailed below.

3.1 Method

3.1.1 Participants

A sample of 108 University of Mannheim students participated in return for 1.50 euros (2 U.S. dollars at the time). Three participants were excluded from the analyses because they did not participate seriously and provided apparently random answers. Of the remaining participants, forty-five percent were female and the average age was 22.2 years (*SD* = 3.1).

3.1.2 Design and manipulations

Participants were randomly assigned to a 2 (number of alternatives, 6 vs. 30) x 2 (number of attributes, 4 vs. 9) between-participants factorial design. Four versus nine attribute levels were selected to ensure a reasonable difference between the levels, while at the same time triggering similarly elaborate decision strategies.

3.1.3 Procedure and materials

Procedure and materials were similar to Experiment 1, aside from changes to the choice task. First, with MP3-players, a more meaningful and expensive product was chosen. At the beginning of the experiment, participants were informed that they stood a chance of winning the MP3-player they choose (or a very similar one). This instruction was meant to render the experimental situation more engaging and real.[2] As in Experiment 1, participants received displays with descriptions of all alternatives on one single sheet of paper.

Second, new displays were generated. In the 9-attributes condition, MP3-players varied on memory capacity (512MB, 1024MB, 2048MB), weight (10g, 30g, 45g), runtime (10h, 20h, 30h), sound quality (+++, ++, +), user-friendliness (+++, ++, +), quality of earphones (+++, ++, +), microphone (yes, no), ID3-tag-display (yes, no), and warranty (2 or 3 years). Sound quality, user-friendliness, and quality of earphones were supposedly ratings from product tests. In the 4-attributes condition, MP3-players varied on the first four attributes only—memory capacity, weight, runtime, and sound quality. All values were meaningful at the time of study.

In contrast to Experiment 1, all displays were generated by means of a random algorithm that took the following restrictions into account: no identical alternatives within each display, no perfect correlations between attributes, the utility of every alternative (assuming equal weights) is between plus/minus one standard deviation from the expected value, the standard deviations of single-attribute utilities are similar across alternatives, and both the average utility and the standard deviation of utilities per display are similar across displays. This procedure was to ensure that displays did not “accidentally” differ in attractiveness or complexity.

3.2 Results

3.2.1 Control variables

Since the two items measuring perceived complexity were strongly interrelated ($r = .60$, $p < .01$), they were combined to form a single measure, with higher values indicating higher levels of perceived complexity. This measure was subjected to a 2 (number of alternatives) x 2 (number of attributes) between-participants ANOVA. Participants reported lower levels of complexity in the 6-alternatives condition compared to the 30-alternatives conditions, $M = 3.48$, $SD = 1.74$; $M = 5.08$, $SD = 2.05$, respectively, $F(1, 101) = 19.79$, $p < .01$. Furthermore, participants perceived the 4-attributes condition as less complex than the 9-attributes condition, $M = 3.81$, $SD = 1.91$; $M = 4.79$, $SD = 2.10$, respectively, $F(1, 101) = 7.36$, $p < .01$. Both the number of alternatives and the number of attributes thus influenced perceived complexity, with the highest level of complexity being reached when participants chose out of 30 alternatives that were differentiated on nine attributes. The interaction term was not significant, $F(1, 101) = 1.70$.

3.2.2 Satisfaction with choice

The two items assessing participants' satisfaction with the chosen alternative were averaged to form a single index ($r = .45$, $p < .01$), with higher values indicating higher experienced satisfaction. This measure was subjected to a 2 (number of alternatives) x 2 (number of attributes) between-participants ANOVA, yielding a significant two-way interaction, $F(1, 101) = 4.29$, $p < .05$ (all other effects, $p > .13$). Replicating Experiment 1, a too-much-choice effect emerged when alternatives were differentiated on many attributes, $t(101) = 1.95$, $p < .06$. In contrast, when alternatives were differentiated on few attributes, satisfaction was similar regardless of the number of alternatives, $t = 1.02$ (see Figure 2). Again, this pattern of results supports the outlined moderation hypothesis, suggesting that too-much-choice effects are particularly likely when choosing is complex.

4. General Discussion

In two experiments, the too-much-choice effect—less satisfaction after choosing from an extensive as compared to a limited choice set (Iyengar & Lepper, 2000)—was reliably observed when alternatives were differentiated on many attributes; however, when alternatives were differentiated on few attributes only, satisfaction was unrelated to choice set size. This pattern of results suggests that too-much-choice effects may occur once a certain level of choice complexity has been reached. Given the theoretical and practical significance of the too-much-choice effect, demonstrating this moderation may help to successfully design future research in order to further understand why more may sometimes be less.

Several aspects of the present research appear noteworthy. First, by pointing to the role of choice complexity, a broader conceptualization of too much choice is suggested. Such a broader perspective allows for predictions of which variables may facilitate or hinder the emergence of too-much-choice effects. As the too-much-choice effect has not always proven reliable (Scheibehenne et al., 2009a), understanding the "when" of its occurrence is of prime importance. In line with this, the present experiments revealed too-much-choice effects when alternatives were differentiated on many attributes. Note that this moderation result conceptually parallels findings by Chernev (2003b, 2003a) as well as Scheibehenne and colleagues (2009b), who also proposed variables that moderate the emergence of too-much-choice effects. Whereas prior research focused on variables external to the choice set, the present contribution highlights the importance of features inherent to the choice set.

Second, the lack of a too-much-choice effect in conditions of few attributes may appear to contradict findings reported by Iyengar and Lepper (2000, Exp. 1), who observed a too-much-choice effect even if alternatives were differentiated only on the attribute of jam-flavors. However, although the number of attributes was low in Iyengar and Lepper's jam-study, it may well be that other variables of the experimental setting, such as the particular arrangement of alternatives, unwittingly increased choice complexity. This assumption would reconcile prior findings with the present evidence. Moreover, this assumption underscores that choice complexity may be influenced in many ways. For instance, a choice set in which alternatives are ordered by attribute value rather than randomly may be perceived as less complex. Similarly, choosing may be less complex when the choice set includes dissimilar rather than very similar options (Fasolo, Hertwig et al., 2009). Also, a choice set with a clearly dominant alternative may be perceived as less complex than a choice set without such a star (e.g., Dhar, 1997; Dhar & Nowlis, 1999; Fasolo, McClelland, & Todd, 2006). Choosing may also be less complex when alternatives are presented sequentially rather than in parallel (Messner, DePino, Krämer, & Wänke, 2006), and when the sequential process starts from a small assortment and moves to progressively larger ones, rather than the reverse (Levav, Heitmann, Herrmann, & Iyengar, 2007). Finally, a choice set may be perceived as more complex when viewed for the first time as compared to repeated exposures. As this list of examples illustrates, many variables may be hypothesized to influence choice complexity, and are thus likely to affect the emergence of too much choice.

Third, the experiments reported in this contribution made use of a so-called moderation-by-aspect design—that is, an independent variable of interest is orthogonally crossed with a moderating factor (Spencer, Zanna, & Fong, 2005)—in order to further understand the conditions in which too-much-choice effects can be expected. Note, however, that the two independent variables investigated here (number of alternatives and number of attributes) are hypothesized to influence the same underlying variable, choice complexity. This suggests that the overall relationship between choice complexity and satisfaction is non-linear. Rather, one may hypothesize that the negative relationship between number of alternatives and satisfaction known as the too-much-choice effect is observed only after a certain threshold of choice complexity has been crossed. Although such a threshold model is currently speculative, it is worth pointing out that not only the present findings, but also prior research by Shah and Wolford (2007)—who observed a negative trend between the number of alternatives and satisfaction only for medium to high assortment sizes, that is, after a certain threshold of choice complexity had been crossed—is in line with such a perspective. Similarly, the very fact of contrasting 6 to 30 alternatives, which is standard in too-much-choice research, and not, for instance, 2 to 10, may hint at the existence of a threshold of choice complexity that needs to be crossed before increases in choice complexity result in lower satisfaction.

Fourth, the present findings conceptually map on to and extend previous research on information overload, where the amount of information was commonly defined as the number of alternatives multiplied by the number of attributes (Jacoby, Speller, & Kohn, 1974). The original information overload hypothesis states that the quality of a decision decreases with high amounts of information. Although this initial evidence was criticized on methodological and conceptual grounds, subsequent research confirmed that an overload of information may reduce decision quality (e.g., Malhotra, 1982; Van Herpen & Pieters, 2002). Notably, this research also took the distribution of attribute levels into account, which may appear as yet another aspect of the psychological concept of choice complexity suggested here. In combination, then, research on information overload and too much choice suggests that increases in choice complexity may be associated with negative consequences such as lower decision quality (information overload) or reduced satisfaction and consumption (too-much-choice effect).

Finally, with the present findings in mind, it is interesting to return to the retailing strategies mentioned in the introduction of offering more variety versus feigning abundance. Both strategies cater to consumers' preference for abundance and should thus equally attract consumers. However, the strategies differ in complexity. While increasing diversity by adding different products is likely to increase complexity, adding more of the same in the same location is not. In this way, offering more variety may trigger too-much-choice effects, whereas feigning ampleness—for instance with mirrors, false bottoms, or just by presenting every product twice—may not. In support of these speculations, Broniarczyk, Hoyer, and McAlister (1998) conducted a field study in which convenience stores reduced the variety of options while holding stock space constant. Compared to matched control stores, this strategic change did not impair assortment perceptions, but led to an increase in sales. Potentially, this was because offering less variety, while keeping the amount of goods constant, reduced choice complexity, thereby preventing the negative consequences of too much choice for satisfaction and consumption.

5. Conclusion

The present contribution extends prior research on the effect of having too much choice by highlighting the role of choice complexity. Based on two experiments, it is suggested that too-much-choice effects may be expected when choice complexity is high. Together with prior moderation findings, these results suggest that at least some of the heterogeneity in effect sizes across too-much-choice studies may be explained by moderating variables, so that more may at least sometimes be less.

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Footnotes

[1] The interaction is significant when focusing only on the conditions of 6 versus 30 alternatives—which is standard in the literature (e.g., Iyengar & Lepper, 2000)—in planned contrast analyses, $t(115) = 2.10$, $p < .04$.

[2] Given that all displayed MP3-players were generated randomly, none of the winners could receive the exact MP3-player that she or he had chosen. Rather, all winners received “a very similar one.” Care was taken, however, that all prizes were at least as good as the MP3-player participants had initially chosen.

Authors' note

This research was supported by a grant from the Deutsche Forschungsgemeinschaft within the SFB-504 of the University of Mannheim and by a grant from the Karin-Islinger-Stiftung. We thank two anonymous reviewers and Robert Hartsuiker for their valuable feedback on a previous version.

Tables

Table 1

Mean Choice complexity and Mean Satisfaction as a Function of Number of Alternatives and Number of Attributes in Experiment 1.

	Number of alternatives		
Number of attributes	6	15	30
		Choice complexity	
1	2.75 (1.65)	4.21 (2.12)	4.34 (1.93)
6	3.65 (1.75)	5.00 (1.83)	5.93 (1.86)
		Satisfaction	
1	6.88 (1.50)	7.55 (1.37)	7.07 (1.75)
6	7.68 (1.18)	7.00 (1.10)	6.53 (1.63)

Notes. Choice complexity and satisfaction were assessed on 9-point Likert-scaled items, with higher values indicating more choice complexity or satisfaction with the chosen pen, respectively. Standard deviations are provided in parentheses.

Figure Captions

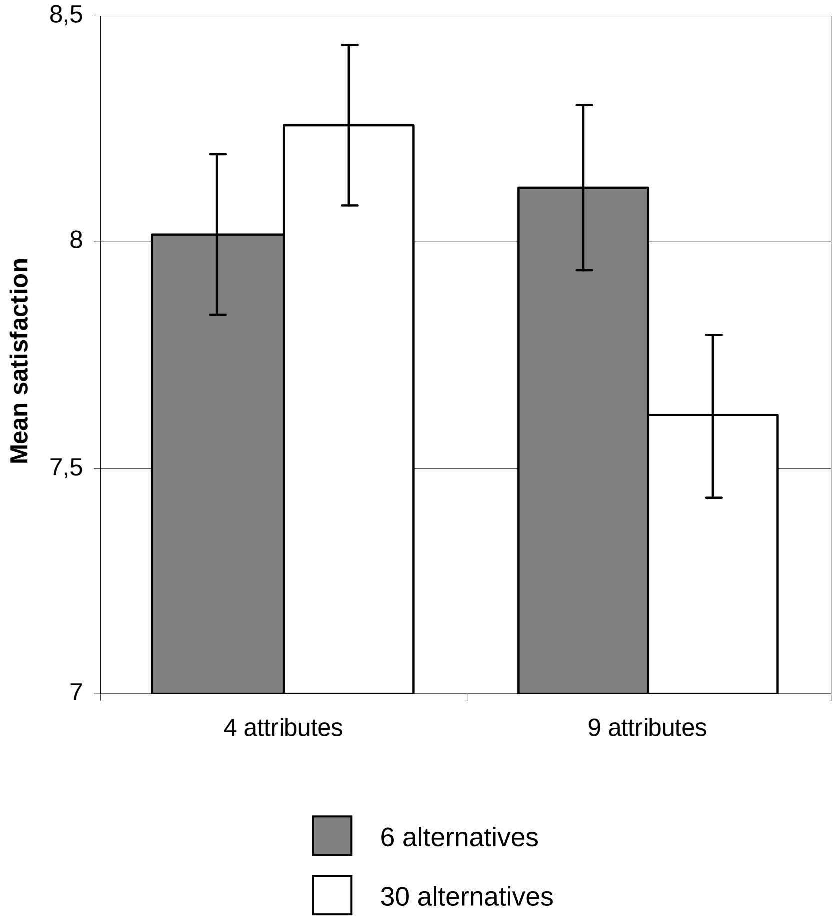
Figure 1. Sample pen display with six options differentiated on six attributes in Experiment 1. Pen colors were selected from the whole color spectrum, including, for instance, claret, grey, and mauve.

Figure 2. Mean satisfaction scores (with standard errors) in Experiment 2 as a function of number of alternatives (6, *grey bars*, 30, *white bars*) and number of attributes. Higher values indicate higher satisfaction on a scale from 1 to 9.

Figure 1

Pen number	(1)	(2)	(3)	(4)	(5)	(6)
Color						
Design	ergonomic	elegant	trendy	elegant	sporty	trendy
Pen width						
Ink color	aquamarine	aquamarine	cobalt blue	aquamarine	azure blue	cobalt blue
Projected duration of use	10 hrs	25 hrs	20 hrs	15 hrs	15 hrs	15 hrs
Light resistance of ink	8 years	2 years	4 years	4 years	6 years	8 years

Figure 2


8,5
8
7,5
7
Mean satisfaction
4 attributes
9 attributes
6 alternatives
30 alternatives