Commentary on Scheibehenne, Greifeneder, and Todd
Choice Overload: Is There Anything to It?

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Can there ever be too many options? We argue that because choice overload has multiple antecedents, simply searching for a main effect across all conditions and a single "sufficient" condition that is likely to solely predict this effect is not informative. Moreover, because prior research has documented multiple instances in which an abundance of options leads to choice overload, the interesting question is not *whether* choice overload occurs but *when* it occurs. The answer to this question is unlikely to stem from testing for the presence of a single main effect using the traditional meta-analytic approach. Instead, research would benefit from a theory-based meta-analysis that tests the validity of a conceptual model of choice overload capturing the underlying psychological processes.

Can there ever be too many options? The question asked by Scheibehenne, Greifeneder, and Todd (2010, in this issue) is an important one, as evidenced by the numerous studies—both published and in progress—addressing this issue. In this context, aggregating the findings reported by multiple experiments using meta-regression methods is a commendable attempt to draw conclusions about the nature of the impact of assortment size on choice overload. The main findings of this meta-analysis include three key points: (1) the mean effect size of choice overload is "virtually zero," (2) several preconditions but no "sufficient conditions" for choice overload can be identified, and (3) no significant monotonically increasing relationship between assortment size and choice overload was observed. These results are interesting on at least two accounts. First, they appear to be (or at least can be interpreted as) inconsistent with prior research documenting choice overload. They are also an exception from the tendency of most empirical journals to publish only significant results (Nickerson 2000). Unfortunately, the authors do not go much beyond presenting their findings, thereby leaving it up to the reader to interpret the absence of significant choice overload effects. In this commentary we offer an interpretation of some of the key findings.

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INTERPRETING THE NONSIGNIFICANT OVERALL MEAN EFFECT SIZE

Searching for an overall mean effect, although very appealing, is most useful when comparing multiple studies aiming to confirm the likelihood of occurrence of a given effect (e.g., whether a particular drug leads to a reduction of symptoms associated with an illness). In this context, meta-analysis is particularly useful in cases in which individual experiments lack the power to document the significance of the focal effect. In contrast, studies examining constructs such as choice overload typically aim to identify conditions under which effects of these constructs are likely to occur, rather than to simply establish its presence. Such studies often include two conditions: one designed to show that the effect of the construct (e.g., choice overload) is present, and another one designed to document the directionally opposite (e.g., more-is-better) effect. This distinction is important because treating these conditions as interchangeable and combining their effect sizes to test their average effect leads to a potentially biased interpretation of the underlying effects.

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To illustrate, consider a study showing that the impact of assortment size on the strength of preferences is a function of whether consumers have an articulated ideal point (Chernev 2003, study 1). Respondents who were not asked to articulate their ideal point were less likely to switch from an initially selected option when choosing from a smaller set than when choosing from a larger set (9% of responses vs. 38% of responses; $p < .05$; $d = .71$). In contrast, respondents who articulated their ideal point were more likely to switch when asked to choose from a smaller rather than a larger set (27% vs. 13%; $p < .25$; $d = -.36$). Thus, the data in both scenarios lend support to the hypothesized effect of choice overload: in the no-ideal-point scenario by showing a significant effect of choice overload, and in the ideal-point scenario by showing the directionally opposite more-is-better effect. However, because the predicted effects are in opposite directions, simply averaging the two data points produces a null effect (18% vs. 21%; $p > .40$; $d = .16$). Thus, combining studies that are constructed to either demonstrate or reverse the choice overload effect will, not surprisingly, produce a nonsignificant main effect. Moreover, the variance of the combined effect sizes leads to an overestimation of the true heterogeneity observed in studies aiming to document the presence of choice overload.

CAN THERE EVER BE SUFFICIENT CONDITIONS?

Building on the finding that the overall mean effect size across experimental conditions was virtually zero, the meta-analysis reports that "no sufficient conditions could be identified that would lead to a reliable occurrence of choice overload." Two factors merit attention. First, it is important to note that the task of identifying conditions that *always* result in a given outcome sets a very high hurdle for the tested effect. Because the impact of even the most robust predictors can be reduced, eliminated, or even reversed in certain scenarios, there are very few (if any) behavioral phenomena for which sufficient conditions could be identified. Moreover, even if a solitary sufficient condition had been found by analyzing a certain set of studies, this does not exclude the possibility of it being moderated by another factor not included in the current meta-analysis. In this context, the inability to identify sufficient conditions for choice overload does not necessarily mean that the "adverse consequences due to having too much choice are not a robust phenomenon." Robustness implies that the phenomenon will reliably occur under a set of identifiable conditions and not necessarily that it will occur under all possible conditions. The more general point here is that the search for elusive sufficient factors should not overlook important moderators that produce significant outcomes under an identifiable set of conditions.

In general, the ability to identify preconditions for the existence of a given phenomenon is to a large extent a function of the conditions being considered in the first place. Many of the preconditions identified in the meta-analysis—such as the year of publication, whether the study was published or unpublished, and the geographic location of the experiment—are unlikely to unequivocally predict choice overload. In this context, the inability to identify sufficient preconditions of choice overload could be a natural consequence of the selection of inconsequential antecedents of choice overload. Interestingly, the data show that varying the degree to which individuals had already established preferences ("expertise"), a factor that could conceptually account for choice overload, was indeed significant. Thus, choice overload reliably occurred for respondents without established preferences, and the opposite—the more-is-better effect—occurred for those with established preferences. Given that this effect was documented across all experiments explicitly measuring or manipulating the degree to which individuals have already established preferences, it could be characterized as robust in the context of the current meta-analysis.

THE LACK OF A SIGNIFICANT MONOTONIC EFFECT

Should one be surprised by the lack of a significant monotonically increasing relationship between assortment size and choice overload? Although conceptually such a relationship should exist, the failure of a meta-analysis to document it should not be at all surprising, since there are a number of intervening factors (e.g., the decision maker's expertise, the composition and the organization of the assortment, and the nature of the decision task) that ultimately determine whether increasing assortment size will result in choice overload. As a result, overload can be observed across identically sized sets that vary in complexity and can be nonexistent across choice sets that vary in size. To illustrate, for rather complex stimuli (e.g., options that are described on multiple attributes), choice overload might be observed when comparing six versus 12 items, whereas for relatively simple stimuli (e.g., options described on a single attribute) the overload might be observed when comparing six versus 48 items but not when comparing six versus 12 items. Because the experiments included in the meta-analysis vary on a number of nonsize dimensions (e.g., option complexity, organization of the choice set, and product familiarity) that were likely to contribute to choice overload, the absence of a monotonic (linear or curvilinear) effect is not contradictory to the choice overload hypothesis.

CONCLUSION

Our discussion has several important implications for both interpreting the results from the present meta-analytic study of choice overload and developing further research in this area. We propose that a meaningful meta-analysis should reflect the following considerations.

Because there are a variety of factors that moderate the impact of assortment size on choice, the absence of a unidirectional effect of assortment size is not surprising. In the same vein, the absence of a sufficient condition that will

guarantee a reliable occurrence of choice overload across all possible scenarios is not very informative either. Analysis will benefit more from a focus on identifying conditions in which choice overload is likely to occur rather than simply on whether it occurs across all conditions.

The analysis of choice overload can also benefit from focusing on the theoretical drivers that determine the impact of assortment size on consumer choice. In this context, a model-driven meta-analytic approach (e.g., Becker 2001) rather than a typical quantitative approach—which is used to document the presence of a significant main effect across multiple studies reporting directionally consistent results—is likely to be more informative for analyzing the impact of assortment size on choice overload. This means that instead of simply looking for relationships between readily observable variables, the meta-analysis will focus on testing the validity of a conceptual model (or alternative models) likely to capture the underlying processes leading to choice overload.

A first step in developing a theory-driven meta-analytic review of choice overload involves articulating a general model of the impact of assortment size on choice overload. In this context, choice overload can be represented as a function of the fit between (1) the decision maker's ability to deal with complexity (e.g., preferences, expertise, and individual-difference factors) and (2) the complexity of the decision problem (e.g., number of attributes, number of attribute levels, and time pressure). Testing the validity of a model reflecting the above relationship across different experimental conditions can shed light on our understanding of the processes underlying choice overload and can stipulate conditions in which it is likely to occur.

Overall, we believe that the quest to understand the antecedents and the consequences of choice overload is not over and that further theory-guided research is necessary to identify the theoretical underpinnings of the impact of assortment size on consumer decision making and choice.

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