

Do Binary Choices Create More Choice Regret?

Zi-Fei Song

2030 F Street NW, Washington DC, 20006, United States

coco.22s22@gmail.com

Keywords: Research proposal, Assortment size, Binary choice, Choice overload, Choice regret, Choice satisfaction, Cognitive overload.

Abstract. Knowing how to apply the relationship between choice making under different assortment sizes and choice regret is very significant, to both customers and marketers. Choice overload has been studied widely after Sheena Iyengar and Mark Lepper's seminal research on the assortment size with choice overload – a demotivating state when there are overwhelming number of options. However, there are not very much existing research considered extremely small assortment size (binary) as small and assortment sizes with 6 as large. There is a gap on emphasizing on choice regret and choice satisfaction on binary decisions. The purpose of this research proposal is to establish the main finding of limited assortment sizes (i.e., binary choice) creating greater choice regret compared to larger assortment sizes, and to justify the moderating effect of cognitive load as a distractor based on the main effect and the mediating effect it impacts on the attention paid to the unchosen option(s) through predictive results.

1. Introduction

Imagine entering a French gourmet during restaurant week, and you are given two entrée options that are priced similarly. The lamb stew and the marinated salmon. You choose the stew for the main course and your friend orders the salmon. As you start to enjoy your meal, you regret choosing the lamb stew for the entrée and suddenly the salmon looks appealing to you. You become less and less satisfied about the choice you made earlier when you were given only one alternative. In another case, you are still facing an entrée decision in the same French gourmet, only this time there are 5 different entrée options available for you to choose. After deliberating on your entrée options, you order the lamb stew and your friend takes the salmon. This time you are a lot more satisfied with your lamb stew than you were than you only had two choices since you spend more time thinking about the salmon, the unchosen entrée, when you are making a binary decision.

The old saying goes, “the grass is always greener on the other side”. Likewise, there are similar proverbs in other cultures as well, for example, in China the old saying goes “zhe shan wang zhe na shan gao,” meaning that the next mountain looks taller. Although objectively this may not be always true, these old sayings seem to all share the similar idea that people are more jealous and are drawn to the alternative. However, what is the case if there are more than just one alternative is given? What if people can make choices among three options, five options, or even more? Will people become more satisfied about the choice they made compared to the scenario when they are making a binary decision? Intuitively, people are happier when they have more choices, but there are also established theories demonstrate that too much choices can lead to negative consequences like demotivation and less satisfaction. Therefore, it is interesting to further explore the effect of having different number of alternatives on people's satisfaction, especially on a limited assortment size like a binary condition, which is not often studied before.

Assortment and choice have been widely studied after Sheena Iyengar and Mark Lepper's seminal research on the assortment size with choice overload – a demotivating state when there are overwhelming number of options. However, research and studies on extremely small assortment size are very limited. Although it is now widely known that the larger the assortment size, the happier people feel when they are choosing, we are still unsure if it is still the case after the choices are made and if the number of alternatives have influence on people's satisfaction degree.

When people are not satisfied with the final choice just being made, it does not necessarily mean that one option is substantially better than the other one. It is likely that the assortment size is related to people's response to the chosen option as people might still feel more satisfied about one over the other even when the options available are similar in attributes and appearance. People deal with this paradox of never feeling fully satisfied with their choice almost every day, from the occasion in the restaurant at the beginning to choosing a t-shirt with only one color out of five or six different ones. Knowing this influence will help people to make more delightful choices. Similarly, applying this influence in the real world will be able to help marketers to create a more pleasant buying environment for customers. Therefore, it is important to understand the relationship between people's happiness and satisfaction and the size of the assortment that are given when the decision is drawn.

In the next sections, I will first do a brief literature review on the relative topics, and then present the studies and findings of my research and end with a general discussion.

2. Literature Review

The discussion on choice making and assortment size and the relation between them have been widely studied in the field of marketing. Intuitively, a broader choice set would be considered more desirable with more available options and variety. However, researchers notice that the increasing number of options can lead to adverse consequences which is referred to as "choice overload". The idea of choice overload suggests that when people are facing overabundant options, a decrease in motivation, satisfaction and other negative affection are likely to develop.

Referred as "Buridan's ass" [7], the choice overload theory was originated from the problem of by Jean Buridan, who pointed out a deferred choice making when a donkey is choosing between two piles of hay. Furthermore, Lewin [3] and Festinger [2] brought out the mutually exclusive idea suggesting that more conflicts arise when the choices become increasingly similar.

Iyengar and Lepper further [4] analyzed the relation of assortment size and choice overload in their experiments. In one of their experiments, customers are offered coupons by tasting the jam from either the small assortment table or the larger assortment table. Results showing more coupon redemption on the smaller assortment size indicate a demotivating choice making consequence for people when facing too much options. Furthermore, Iyengar and Lepper less satisfaction people develop when choosing from the larger assortment size than the smaller one, in line with the adverse consequences people develop when facing overabundant choices. The existing meta-analysis paper on choice overload also examined the previous research with similar results on the adverse consequences generated by choice overload.

Despite the consistent result on the adverse relation between assortment size and negative consequences due to choice overload, there are still many aspects that are not very positive. First, although many previous research has conducted studies in regarding to the assortment size and choice satisfaction, almost all studies allocate 6 options as small assortment size. The unusually small assortment size (binary decision) was never truly analyzed before except for one, mentioned in the meta-analysis paper on choice overload [5], which triggered some other processing mechanisms. Moreover, there are not very many studies focused on people's state after the purchases are made. Almost all previous research is more inclined to analyze the consequences on the phase of making the purchase rather than post-purchase. Therefore, there is still a gap in the study of choice making relating to an unusually small assortment size, which is a binary choice situation.

This research proposal is also expected to justify the moderating effect of cognitive load by introducing a cognitive load to the experiment and the mediating effect of attention paid by justifying the split-attention effect. The cognitive load theory was developed by John Sweller [6] concerning the effort being used and cognitive resources that are focused during the process of solving problems and learning. By inducing a high cognitive load in the experiment instructions, participants will deal with increasing distraction and interference. The split-attention effect [1] later indicated the limitation of human information processing that the cognitive load theory built upon and suggested that the attention will be divided when adding more to the cognitive load.

Beyond confirming the moderating and mediating effects, this research proposal will look further to the consequence after the decision-making phase and investigate if a binary choice can create more choice regret than an extended one.

3. Study 1

The purpose of study 1 is to establish the main finding of limited assortment sizes (i.e., binary choice) creating greater choice regret over time compared to larger assortment sizes. Specifically, participants will be given chances to make choices in the clothing domain since it is common for people to face a decision between different colors when shopping for clothes.

3.1. Method

3.1.1. Participants and Design.

Two hundred participants will be randomly assigned to two different groups and to make their decision under the limited assortment size condition (a binary choice), and the 6-options condition (5 alternatives) respectively.

3.1.2. Procedure.

In a shopping mall, passing customers will be invited to come into the store by the experimenters who dress up as sales people. Participants will be told to do an evaluation for the new brand new line of an apparel company. The t-shirts will be shown in presentations with real models so that customers will have a better assessment towards the options that are available. Except for the colors, the design of all t-shirts presented are similar. T-shirts with different colors will be given in each group, and all participants will be told that they have a chance to win the chosen t-shirt at the end. To ensure the generalization of the effect and avoid conditions of gender preference, all t-shirts are in unisex style. The presented t-shirts are justified through a pretest in advance.

The experimenter will present the t-shirts to each group respectively and participants have to make a choice under all conditions. After the assessment and determination, experimenters will ask customers for their evaluation (“I think my choice is___,” 1= negative, bad, dislike, regretful, 7= good, positive, like, satisfied), and their choice regret (“How much do you regret your choice?” 1=not regretful at all, 7=very regretful).

3.2. Results and Discussion

3.2.1. Results.

As predicted, there is a decreasing main effect between the limited assortment size and people’s satisfaction. Participants given only 1 alternative color generate more choice regret when asked how likely they are going to return the t-shirt. On the other side, there is an increasing relationship between choice satisfaction and the larger assortment size (6-options group), which indicates that people are more likely to be satisfied with their choice under the larger assortment size condition.

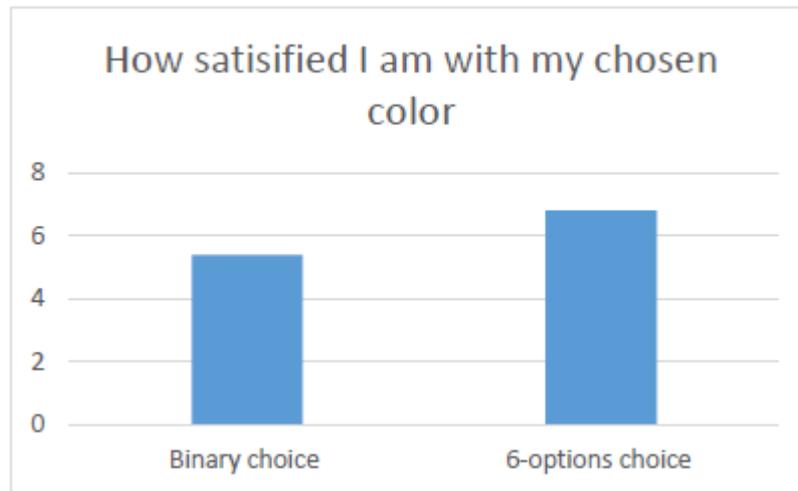


Figure 1

3.2.2. Discussion.

The results in study 1 are consistent with the intuitive statement of the larger the assortment size, the more satisfaction people generate. Participants given only two options develop more choice regret than those are given 6-options instead. This congruence is in a relatively smaller scale since the assortment sizes involved in study 1 is a binary and a 6-options choice, which are typically considered as small assortment sizes in the previous existing studies. Research on choice overload state that too much choices will lead to negative consequences such as demotivation and less satisfaction, however, this finding is based upon relatively larger assortment sizes. Thus the following studies will take extensive choice into account and further investigate the potential mechanisms behind such findings.

4. Study 2

The purpose of study 2 is to continue investigating the main finding of binary decision creating greater choice regret than larger assortment sizes after the choices are made. Except for the binary and six choices condition, participants will also be assigned into a 30 choices condition. Considering the existing meta-analysis literature on choice overload shows almost all previous studies allocate a 6-options as small assortment and a 30-options choice as large assortment, study 2 will evaluate the deferred effect under an even smaller choice set as a binary condition. Study 2 will assess the mediating effects of people's attention on the chosen and non-chosen alternative(s) to their choice satisfaction depending on the number of alternatives they are given.

4.1. Method

4.1.1. Participants and Design.

Three hundred of participants will be randomly assigned to three different groups, and each will be required to make only one choice out of 2 options (1 alternative), 6 options (5 alternatives) and 30 options (29 alternatives) respectively.

4.1.2. Procedure.

An identical scenario will be created as in study 1. Passing customers will be invited to attend the experiment by experimenters as if they are evaluating a new brand line for the apparel company. Real t-shirts will be presented for better assessment. Participants will evaluate t-shirts that are similar in style, design and details but color. Again, to ensure the generalization of the effect and avoid conditions of gender preference, all t-shirts are in unisex style. The presented t-shirts are justified through a pretest in advance.

The experimenter will present the t-shirts to the participants in each group respectively, and all participants are required to make a choice in all conditions. After the participants make the color decision, they will be evaluating their satisfaction (“I think my choice is _____,” 1= negative, bad, dislike, regretful, 7= good, positive, like, satisfied), and their choice regret (“How much do you regret your choice?” 1=not regretful at all, 7=very regretful) In addition, I measure the attention each participant pays on both the chosen (“How much did you think about the option that you chose?” 1= very little, 7= every much) the non-chosen option(s) (How much did you think about the option(s) that you did not choose? 1= very little, 7= every much) Furthermore, the time each participant spends on looking at each color option will also be measured.

4.2. Results and Discussion

4.2.1. Results.

The main effect between the choice regret and the assortment size are predicted to be decreasing from a binary decision to a 6-options choice and then increasing when the number of options are extended to 30. Participants who are more regretful to their choice are found to pay more attention and time to unchosen t-shirts whereas more satisfaction are found in groups where people spend more time and focus more on the chosen t-shirt. The amount of time spending on the non-chosen option(s) is expected to mediate the effect the assortment size has on people’s choice regret.

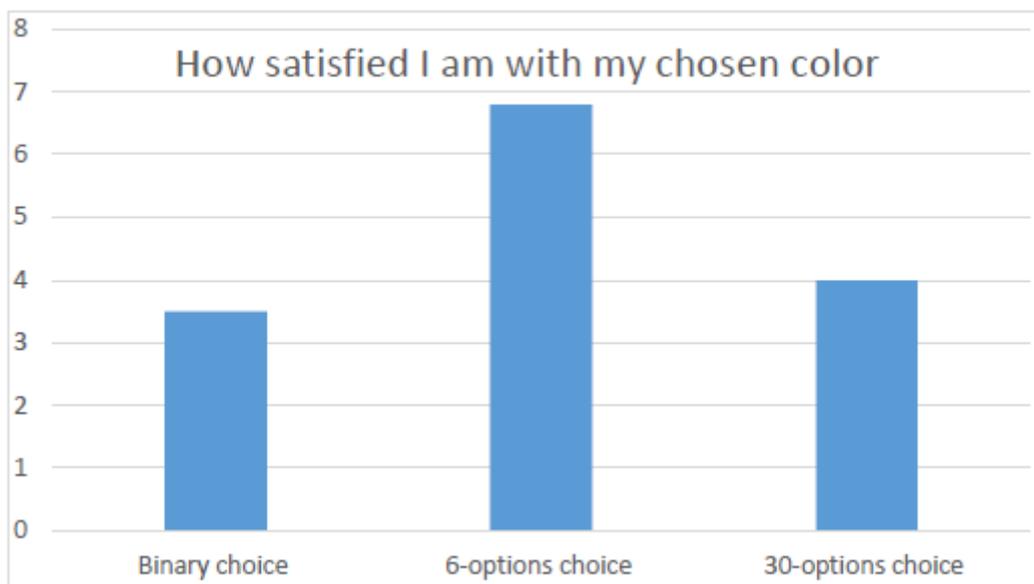


Figure 2

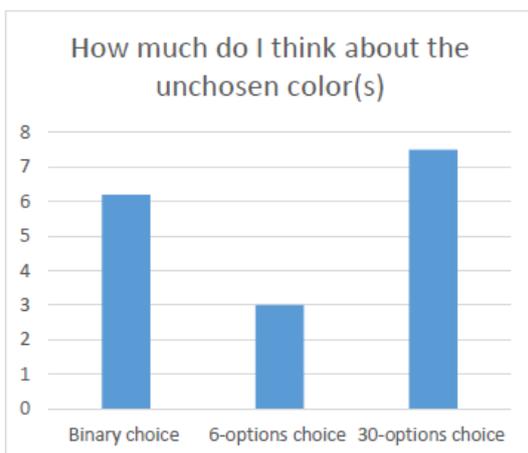


Figure 3

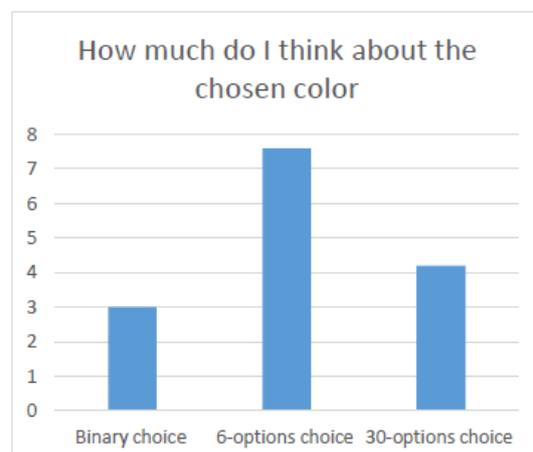


Figure 4

4.2.2. Discussion.

Indeed, the predictive results of study 2 show that the unusually small assortment size (i.e. the binary choice) increases choice regret compared to other conditions, which is triggered by the attention given to the non-chosen option while making the choice. The longer it took for the participants to focus on the non-chosen option(s), the more likely they envision the features of them. Aligned with the previous studies, binary choices are expected to drive people to spend more time on the un-chosen color, and it is likely that people find it easier to imagine only one option very concretely while it is relatively more effortful to picture the features of all other 5 options one by one. Therefore, participants under the 6-options group are likely to spend more time paying attention to the chosen t-shirt, instead of the un-chosen ones. In regarding to the extensive decision group, thinking about all other 29 colors available takes too much time, and it is almost impossible that participants could consider each of the color thoroughly, which means that they might not be able to assess all options available before making the choice, which drives them to spend more time paying attention and thinking about those other un-chosen ones. Such scenario could be triggering some negative affect under the extensive choice condition, as suggested in the previous research and study 2. In addition, choice overload also suggests that the increasing number of options could lead to decreased satisfaction for the chosen option, similar to the 30-options condition. Mediated by the time people spent on the unchosen option(s), binary and extensive choice groups spend more time thinking about the results the other way around, thereby creating more choice regret.

5. Study 3

The purpose of study 3 is to justify the moderating effect of cognitive load as a distractor based on the main effect and the mediating effect it impacts on the attention paid to the unchosen option(s). As the self-reporting survey in study 2 might limit the accuracy of the results, study 3 is also expected to confirm the mediating effect time spent on unchosen color(s) influence the main finding.

5.1. Method

5.1.1. Participants and Design.

300 of participants will attend the experiment. In study 3, all participants will be randomly assigned to a 2x2 group design, making choices under a binary and 6-options group manipulated by either high or low cognitive load.

5.1.2. Procedure.

Participants will be asked to choose a color among some similar t-shirts under the exact same scenario as the preceding ones. Under the high cognitive load manipulation, each participant is required to memorize a set of random numbers while making the choice, and the low cognitive load group will simply replicate the same requirements as in study 1 and study 2. To avoid any self-reporting bias, an eye-tracking technique will be employed to examine the amount of time each participant spent on the unchosen t-shirt(s) in study 3. After the experiments, participants will fill out survey to evaluate their satisfaction ("I think my choice is _____," 1= negative, bad, dislike, regretful,

7= good, positive, like, satisfied) and the level of choice regret ("How much do you regret your choice?" 1=not regretful at all, 7=very regretful). In addition, the time spent on the unchosen option(s) will be recorded and collected under all conditions respectively by experimenters.

5.2. Results and Discussion

5.2.1. Results.

Under the low cognitive load group, a same pattern of people feeling more regretful when making a binary decision than a 6-options condition is predicted to appear again. However, when participants are manipulated with a high cognitive load memorizing random numbers under pressure, the

difference in choice regret level under two conditions will be gone. Furthermore, collected data are expected to show that participants making binary choice indeed spend more time on the unchosen option. But when high cognitive load is exerted, almost equal time are anticipated to be spent on the unchosen t-shirt(s) by both groups. Therefore, the cognitive load is considered to moderate the main effect of the unusually small assortment size generating more choice regret than the small one after choice making. Meanwhile, the manipulation of cognitive load will also present the mediating effect it has on the attention paid to the unchosen option(s) under both conditions.

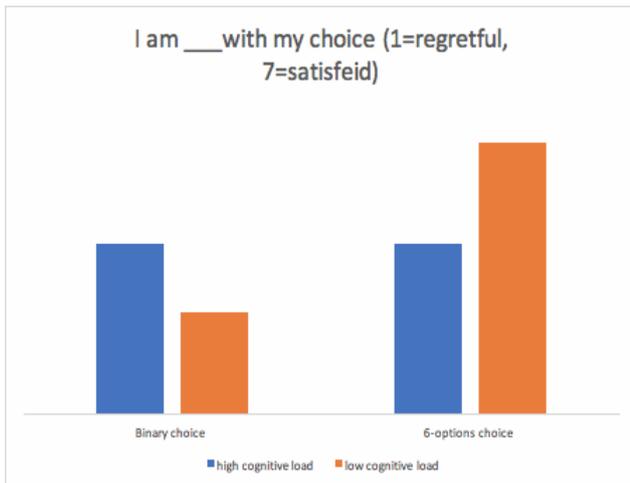


Figure 5

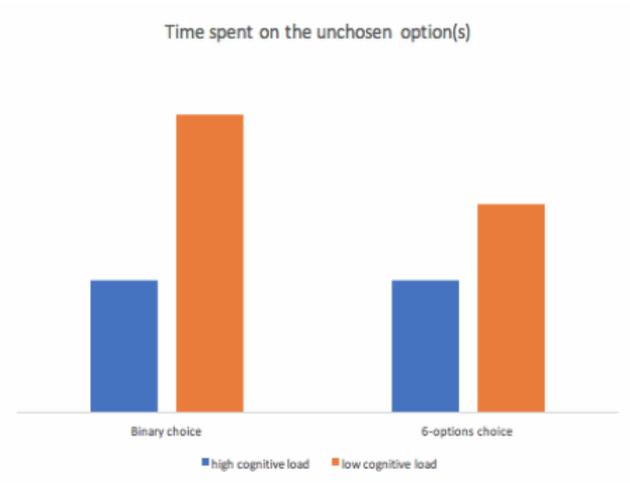


Figure 6

5.2.2. Discussion.

Results in study 3 show that a cognitive overload will influence the level of choice regret participants feel under both scenarios. And the predicative results also examine that when people make choices under an unusually small assortment size, they do pay more attention to the unchosen selection, as suggested by the self-reporting result in Study 2. Indeed, when the participants are under a high cognitive load, the pressure will force them to shift their attention from the selection(s) to the number set naturally, which reduces their strength on thinking about the option that they gave up and then decrease the choice regret created. The decrease in time spent on the unchosen t-shirt(s) for both groups also explains that the cognitive load kills the main effect by moderating the attention occupied with either envisioning or concretely imagining the unchosen option.

6. General Discussion

The three studies presented above examined the relation between the assortment size and people's post-purchase state. Existing previous research demonstrated the negative consequences extended choice options bring to customers' satisfaction to their decision and a demotivation against decision making. My research aims to further explore the case when an unusual small option, a binary choice, is given after the purchase is made. The presented research would indicate that people become less satisfied when making a binary choice and confirm the previous demonstration in choice overload theory.

Study 1 established the main finding that binary choice creates greater choice regret than relatively larger assortment size does. Predictive results show that people given larger option set are more satisfied with their choice in a post-purchase state comparing to those given only two choices.

Study 2 introduced an additional group of choice with an extended choice (30 options) condition to continue evaluate the main effect of decreasing choice satisfaction from a six-options choice to a binary decision. Study 2 further explored the increasing post- purchase choice satisfaction when the assortment size is extended to 30. Additionally, study 2 investigated the mediating effect of the

amount of time people spend on the chosen and non-chosen options. People are found more likely to think about the non-chosen choices under both binary and extended options whereas the 6-options group spend more time on the chosen color when making the choice.

In Study 3, a 2 by 2 cognitive load is involved, suggesting its moderating effect on people's post-purchase choice satisfaction. When people are introduced to a high cognitive load condition by memorizing a set of random number in the meantime, the time spent on the unchosen options are almost the same and the choice satisfaction reported are relatively even. The predictive result indicated that the cognitive load eliminates the main effect as a moderator.

7. Implications

This research proposal examined the idea of very limited assortment size creating more choice regret than relatively larger assortment size. Intuitively, people generate more satisfaction and delight when they have more choice available. However, the choice overload theory suggest that extensive assortment size can lead to potential negative consequence such as demotivation of decision making and choice regret. The examination of this research proposal is based upon the choice overload theory brought forward by Sheena Iyengar. The empirical implication of this research proposal shows that the people are more likely to be satisfied with their decision under a relatively larger assortment size (i.e., 6-options choice) compared with a binary condition, but the increasing tendency get deferred over time when people have to make a choice under an extensive assortment size (i.e., 30-options choice). The implication confirmed the previous exiting research on choice overload theory by Sheena Lyengar, which is the study this research proposal based upon, and also correspond to the intuition of greater assortment size develop more delight.

The findings in this research proposal could be useful for marketers to provide customers a better shopping experience. For example, when marketers displaying and selling products, they should prevent from presenting only two choices to customers in order to provide them a more delightful decision making process and reduce the possibility of return of product in the result of choice regret.

However, there are still many limitations in this research proposal. As shown in the findings, only experiential and hedonic goods in the apparel domain, is tested. The patterns on a different scenario of functional goods could vary, which still calls for further future research.

8. References

- [1] Chandler, P., & Sweller, J. (1992). The split-attention effect as a factor in the design of instruction. *British Journal of Educational Psychology*, 62, 233–246.
- [2] Festinger, Leon (1957), *A Theory of Cognitive Dissonance*, Stanford, CA: Stanford University Press.
- [3] Lewin, Kurt (1951), *Field Theory in Social Science*, New York: Harper & Row.
- [4] Iyengar, Sheena S. and Mark R. Lepper (2000), "When Choice Is Demotivating: Can One Desire Too Much of a Good Thing?" *Journal of Personality and Social Psychology*, 79 (6), 995–1006.
- [5] Scheibehenne, Benjamin, Rainer Greifeneder, and Peter M. Todd (2009), "What Moderates the Too-Much-Choice Effect?" *Psychology and Marketing*, 26 (3), 229–53.
- [6] Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive* 12, 257-28
- [7] Zupko, Jack (2003), *John Buridan: Portrait of a Fourteenth-Century Arts Master*, Notre Dame, IN: University of Notre Dame Press.