Fast and Slow: Does Generating (Too Many) Options Cause Choice Overload?

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Abstract

How does option Self-Generation under pressure affect choice satisfaction? Being linked to pre-existing preferences, Self-Generated options should be evaluated more positively, leading to higher satisfaction compared to forced-choice settings; by adding a time limit, the number of generated options should decrease, once again reducing satisfaction. This 2 factor within-subject study explored the relationship between the number of options generated by participants and their choice satisfaction. A causal relationship was tested by adding a time limit to half of the questions answered by each participant. Results showed that, under time pressure, participants produced less options and were less satisfied with their choices. In the unlimited time condition, there was no relationship between number of options and satisfaction, while under time pressure people who generated more options also appeared to be slightly more satisfied with their chosen one. Possible explanations of these results are discussed, and avenues for future research are proposed.

Layman's Abstract

When people are given more options to choose from, they are less satisfied with their pick: is this still true when they themselves come up with the options to choose from? This work tests whether a larger number of options generated by the individual leads to greater satisfaction with the choice, as well as if the addition of a time limit can lower both the number of options and the level of satisfaction. Participants were asked to think of options in 4 different scenarios, two of which with a timer, then choose one of those options. Results show that when under pressure, participants came up with less options, and were less satisfied with them. Without timer, changes in the number of options did not seem to cause changes in satisfaction, while with the time limit, people who came up with more options were also more satisfied with the one chosen.

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1. Introduction

An interesting question to explore in the context of human choices regards how choice satisfaction is impacted when the person making the choice is also the one generating the options to choose from. This is often reflected in everyday life when people need to think, for example, about what to prepare for dinner, or where to plan their next vacation. Does having too many options make human beings dissatisfied?

1.1. An overview of Choice Overload

"Choice Overload" is a phenomenon referring to a decisional context in which, being given too many options to choose from, the individual experiences a decrease in the motivation to choose and, more importantly, the satisfaction felt towards the choice (Iyengar & Lepper, 2000; Reutskaja & Hogarth, 2009). While past research pointed out potential benefits of having larger sets of options (Baumol & Ide, 1956; Cordova & Lepper, 1996; Reibstein et al., 1975; Ryan & Deci, 2000), it was pointed out by Iyengar & Lepper (2000) that this only proved that any amount of choice is better than no choice at all, while people seem to actually be more satisfied towards their choices when they are asked to choose from a limited set of options. The role of satisfaction is particularly relevant when studying this phenomenon, as it has been proven that higher levels of choice overload are in fact more likely to produce low levels of satisfaction (Chernev et al., 2015). More precisely, satisfaction reflects the size of a given choice set as a U-shaped function, with the peak of satisfaction corresponding to a medium sized assortment of options (Reutskaja & Hogarth, 2009). Thus, it can be concluded that when people are given too many options to choose from, they experience Choice Overload, and they tend to be less satisfied with the outcome (Botti & Iyengar, 2004). The theory proposed in this work aims to explore what would happen when a choice set is generated by the same individuals who have to choose: would Choice Overload still take place, or would satisfaction increase together with the size of the set? In order to investigate this, an overview of the construct of Self-Generation appears to be necessary.

1.2. Self-Generated Choices

While previous research focused on choices with options defined by the researchers, it mostly neglected the role that the individual might have in generating those options. Indeed, not all situations in the real world provide a well-structured list of potential choices. In many cases, the individuals themselves need to create the set of options among which to choose: "*Life is not a multiple-choice test*" (Zhang et al., 2021). Thus, it would be relevant to delve deeper Self-Generation of options in order to understand human choice behavior in a more natural setting.

In studying decisional contexts, recent research has shown that generated options appear to be related to retrieval processes within semantic memory, such as Zhang et al. (2021) showing that choices can be predicted with high accuracy when using a model which assumes that semantic memory has a constraining effect on the set of choices for evaluation. Furthermore, research showed that individuals recall potential options based on whether that option brought them positive results in previous occasions, even when the context of recall is different from the recalled one (Morris et al., 2021). Furthermore, Aka and Bhatia (2021) showed that features relevant to a specific decision, such as the individual's personal preference, also guide the retrieval process, determining which elements are recalled. Thus, Self-Generation of options is guided by the individual's semantic memory, and it is linked to their personal preferences.

Therefore, it can be hypothesized that as more personal preferences are generated (Aka & Bhatia, 2021), the individual would be able to choose among options that they already like more, increasing their satisfaction with them: contrarily from the paradigm of Choice Overload, this could mean that having more choices would lead to higher satisfaction. The hypothesis to be tested could thus be described as such:

- H1: "*As the number of self-generated options increases, the individual level of satisfaction felt towards the choice will also increase.*"

1.3. Time Pressure and Choice Overload

In the study of decisional contexts, the addition of time pressure has been found to increase the effects of Choice Overload (Park & Kang, 2022), and to reduce the satisfaction felt by the individual towards the choice (Haynes, 2009). Under conditions of time pressure, the context of a choice setting appears to be altered, leading to changes in individual preferences (Pettibone, 2012).

Due to these reasons, Time Pressure appears to be a relevant variable to consider when exploring the Choice Overload phenomenon.

More specifically, it would be relevant to explore its effects on the Self-Generation construct: as people are placed in time-sensitive situations, and thus have less time to think, they are expected to produce a smaller number of options. This would allow to experimentally produce a condition with less generated options, providing the means to test the existence of a causal link between Self-Generation of options and satisfaction with the resulting choice.

Therefore, as the aim of the current research is to demonstrate that within a context of Self-Generation the phenomenon of Choice Overload should be reversed, the addition of a time limit is presumed to both reduce the number of generated options and, as a consequence, also reduce the level of choice satisfaction:

- H2.1: "*When people are placed under conditions of Time Pressure, the number of options generated by them will decrease.*"
- H2.2: "*When people are placed under conditions of Time Pressure, the level of satisfaction they feel towards their choice will increase.*"

2. Methods

2.1. Experimental Design

The study uses a 2 factor within-subject design between participants' answers in an "Unlimited Time" condition, with no limit on the time they have to generate options, vs a "Time Pressure" condition, in which they are cut off after a 30 second timer runs out.

A different part of the study, which will not be the object of this paper, uses a between-subject design by dividing participants in the "Self" condition where the situation presented refers to the participants themselves, and the "Other" condition in which they have to give their answers in place of a friend. The current study will focus exclusively on the "Self" condition.

2.2. Participants

485 participants in total were gathered through the platform Prolific, their consent was obtained at the beginning of the experiment and they were paid £2,00 as compensation. 96 participants who did not complete the entire survey were removed from the data, resulting in the final number of participants being 389 (186 males and 193 females, with the remaining 10 identifying as non-binary; average age = 29.87). The participants were then divided among the "Self" and "Other" condition: the focus of this work will only be placed on the "Self" condition, with 198 participants in total.

The Ethics committee was contacted by the supervisor, and the research proposal, with number 2023-06-23-M.L. Vives Moya-V2-4824 was approved on 04/07/2023.

2.3. Measures

Number of Generated Options: Participants are asked to write down as many options as they want as potential solutions to different scenarios (e.g., a list of potential costumes that they could wear to a Halloween party, see Appendix A for all the scenarios); the number of answers given for each scenario is then averaged for each participant.

Level of Satisfaction: Participants rate their level of satisfaction on a 7-point Likert scale, with descriptors ranging from 1 = "extremely dissatisfied" to 7 = "extremely satisfied".

Completion Time: The amount of time in which participants completed the option generation task.

2.4. Procedure

After collecting informed consent, participants first had to fill in a questionnaire regarding their willingness to help strangers.

Following it, the structure of the questionnaire was divided in two parts, one focusing on the Unlimited Time condition, and one on the Time Pressure condition.

For the Unlimited Time condition, participants read a hypothetical scenario, and were asked to generate any number of options as potential solutions. There were in total four scenarios (see Appendix A), two of which were assigned to each participant: when they felt satisfied with the options they generated, the participants could move on to the next part of the survey. Following this, participants were shown all of the options that they wrote, and had to choose one. Finally, they had to rate their level of choice satisfaction on a 7-point Likert scale.

After this, for the Time Pressure condition, participants had to complete the two remaining situations of the survey, now rephrased to reflect the addition of a 30 seconds time limit -shown through the addition of a timer on the page- to generate the options, after which the page moved on automatically. After generating their options, participants once again had to choose one and rate their satisfaction.

After completing all 4 questions, participants were asked to complete a Generalized Anxiety Disorder Assessment (GAD-7).

Finally, they were asked to provide their demographic information, and were subsequently debriefed on the aims of the experiment and thanked for their participation, thus concluding the survey.

2.5. Statistical Analyses

The experiment used Pearson’s correlational analysis (two-tailed) to explore the relationship between the Number of Generated Options and the Level of Satisfaction.

Multiple paired-sample t-tests were performed to analyze the mean differences for each subject between the two conditions on the variables of Number of Generated Options and Level of Satisfaction, as well as a one-sample t-test for the manipulation check.

3. Results

The manipulation was successful, as people were shown to take more time to complete the option generation task in the Unlimited Time condition compared to the 30 seconds given to them in the Time Pressure condition ($t(197) = 10.56$, $p < 0.001$), with a large effect size ($g = 0.75$).

The means and standard deviations of Number of Generated Options and Level of Satisfaction (for both conditions) are summarized in Table 1.

Table 1
Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
Number of Generated Options (Unlimited Time)	1	20	5.01	2.76
Level of Satisfaction (Unlimited Time)	3	7	6.08	0.80
Number of Generated Options (Time Pressure)	1	9	3.89	1.41
Level of Satisfaction (Time Pressure)	3	7	5.67	1.06

A significant difference was found between the means of both the number of generated options ($t(197) = 6.27$, $p < 0.001$) (see Figure 1), and the levels of satisfaction ($t(197) = 5.65$, $p < 0.001$) (see Figure 2), across the two conditions of Unlimited Time and Time Pressure; both effects have medium size (respectively $g = 0.44$ and $g = 0.40$): these results seem to indicate that the presence of a ticking clock has a negative impact on the process of self-generating options, and it also decreases the amount of satisfaction that people feel towards their choices.

Figure 1

Number of Generated Options in the Unlimited Time condition vs the Time Pressure condition

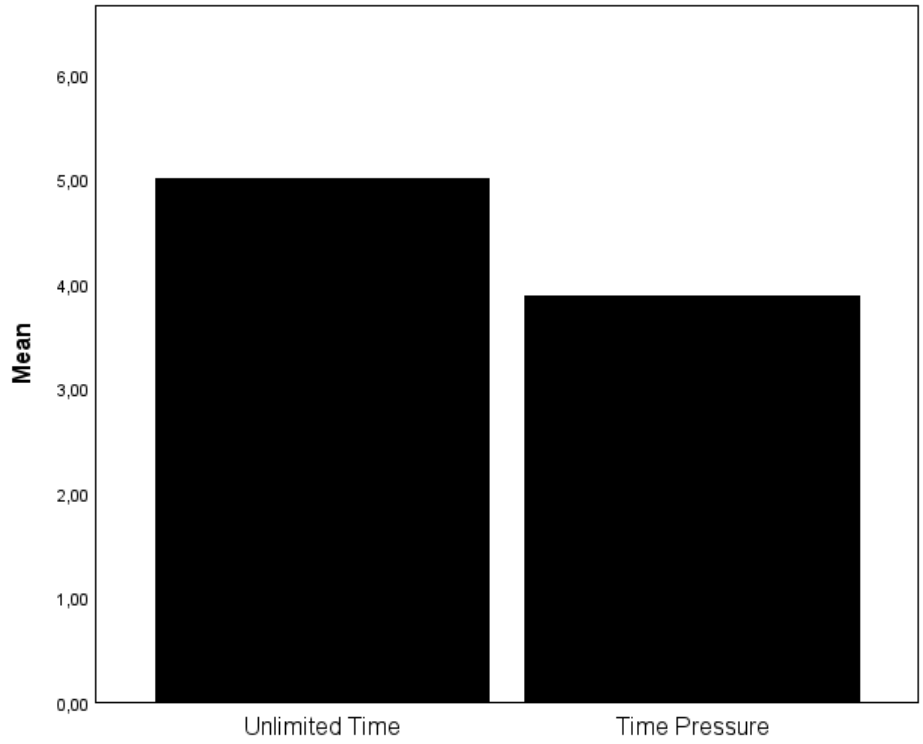
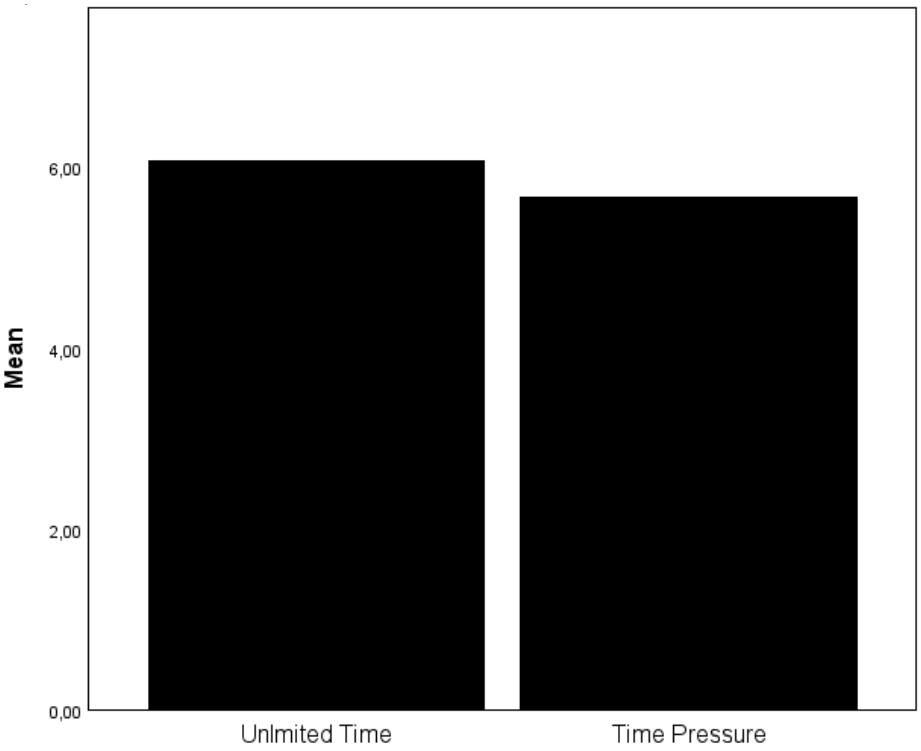


Figure 2

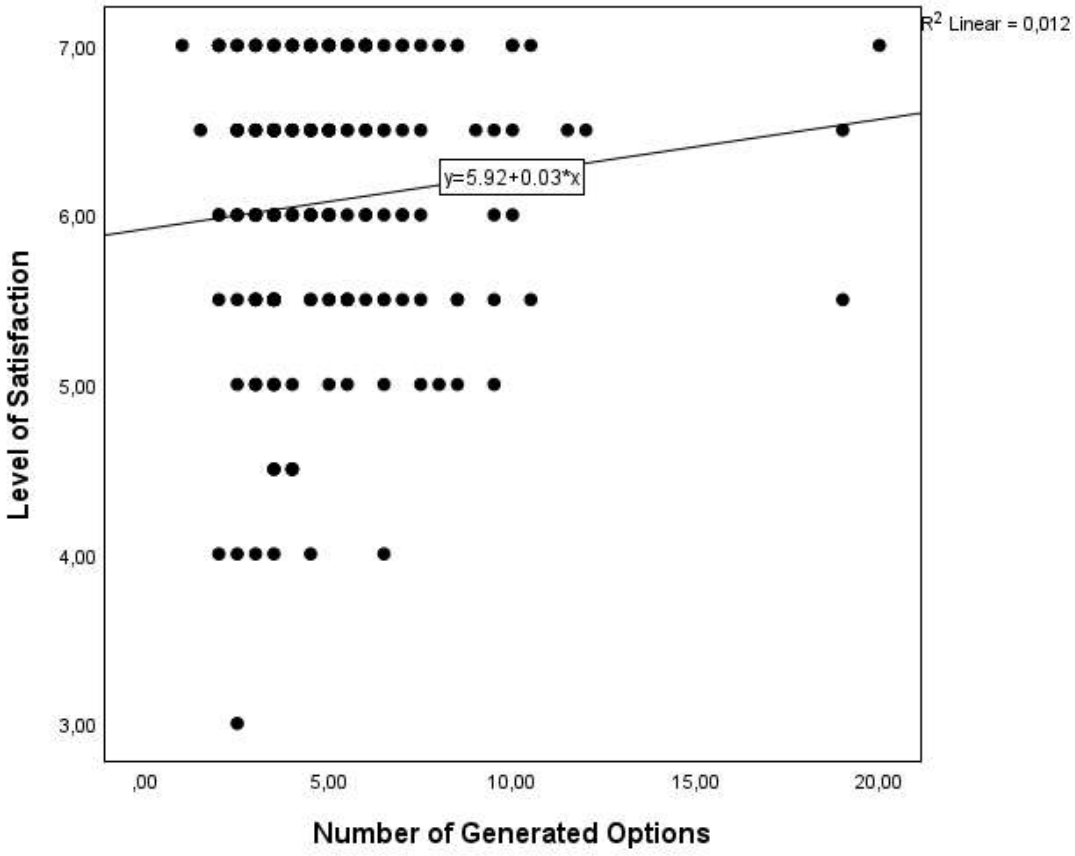
Level of Satisfaction in the Unlimited Time condition vs the Time Pressure condition



No significant correlation was found between number of generated options and levels of satisfaction in the Unlimited Time condition ($r = 0.11$, $p = 0.12$), suggesting that the hypothesized effect of self-generation on satisfaction is not present, and Choice Overload is not reversed (see Figure 3).

Figure 3

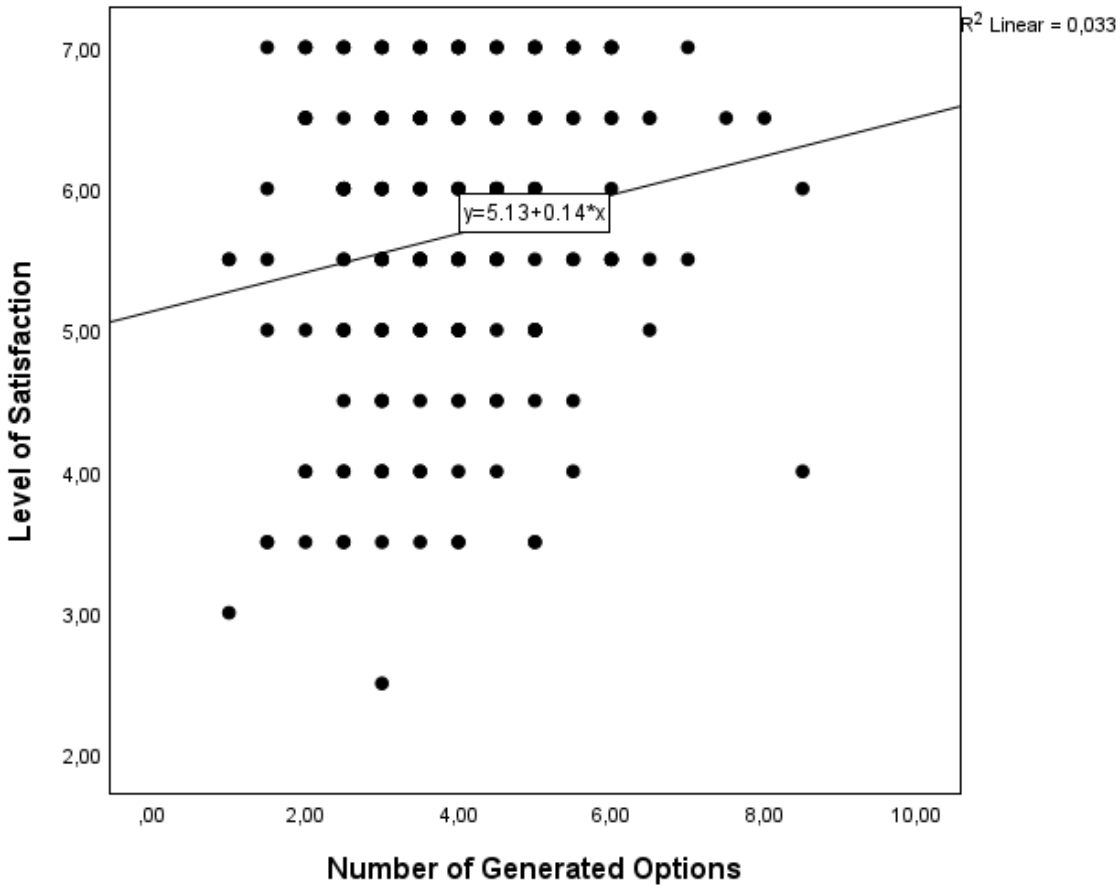
Scatterplot of Satisfaction by Number of Generated Options in the Unlimited Time condition



On the other hand, the Time Pressure condition showed a slightly significant result ($r = 0.18$, $p = 0.010$), suggesting that a reversal of the Choice Overload phenomenon does take place in conditions of high pressure, as having more options in this situation leads people to feel more satisfied with their eventual choice. (see Figure 4).

Figure 4

Scatterplot of Satisfaction by Number of Generated Options in the Time Pressure condition



4. Discussion

The results of the experiment showed that Self-Generating options does not appear to have an effect on the subsequent level of satisfaction with the choice taken, in the condition of unlimited time. A different situation, however, appears to arise in the time pressure condition, where a significant correlation between number of Self-Generated options and the level of satisfaction was found. Furthermore, time pressure also appeared to have a significant impact in reducing both the number of generated options and the level of choice satisfaction.

The aim of the study was to demonstrate that Self-Generation of options in a choice setting would cause a reversal of the Choice Overload phenomenon; this appears to be disproven by the results. Interestingly, the absence of this correlation seems to also go against classical findings on Choice Overload, such as Reutskaja and Hogarth (2009), as the U-shaped function for choice satisfaction and number of options described in their paper was not replicated in this experiment. This finding might imply that the context of option Self-Generation might in fact have an impact on Choice Overload: further research appears to be necessary in order to determine the exact nature of such impact.

A possible explanation for this phenomenon could be given by connecting to the findings of Aka & Bhatia (2021) stating that memory processes are modulated by the context of the choice: it is possible that the addition of a time limit represents a context in which the retrieval process, being pressed to work faster, is guided to produce more options which are linked to pre-existing personal preferences, leading the individual to be more satisfied with their choice. This would be in line with the findings outlined by (Pettibone, 2012) describing how contexts of choice settings can be altered by limiting the amount of time available. This explanation would require further study on retrieval processes and how they are linked to contexts of choices and personal preferences.

Another potential interpretation could be offered by research showing that people under time pressure might have a feeling of having rushed their evaluation of the options (Inbar et al., 2011): it is possible that, in the context of open-ended questions such as the Self-Generated ones, this feeling is suppressed by the fact that the Self-Generated options are already pre-evaluated, due to their link to pre-existing preferences (Aka & Bhatia, 2021), leading to higher satisfaction. Once again, more research on memory and personal preferences and their interplay with time pressure appears to be necessary.

Despite this reversal of the Choice Overload phenomenon for Self-Generated options under time pressure, the effects of the time limits were shown to be generally detrimental in choice

settings, by reducing the overall level of satisfaction. This is in line with previous research on time pressure (Haynes, 2009), and it appears to be a confirmation of the secondary hypothesis of this study.

Considering the results presented in this work, future researchers should strive to pursue a greater understanding role of time pressure in the Self-Generation of options, and its effects on choice satisfaction. As the Choice Overload phenomenon appears to be reversed when a time limit is present, it might be interesting to explore whether or not the levels of satisfaction, which are consistently lower under time pressure (Haynes, 2009) present differences in a Self-Generated choice setting when compared to a more classical forced choice scenario.

Thus, the experiment presented in the current work provided evidence that by giving people the opportunity to Self-Generate the sets that they have to choose from, it might allow them to be more satisfied with their choices, either by seemingly removing the effects of Choice Overload (as shown in the condition with unlimited time) or by reversing them altogether, by adding a time limit. This opens up avenues to more deeply explore the role of memory retrieval processes in human decision making, and its potential applications to consumer behavior.

5. References

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Appendix

Description of the scenarios

1. In the Unlimited Time condition:

- “You have been invited to a costume party, and you have to choose a costume that you would like to wear. Write a list of potential costume options for you to wear to the party. Feel free to write as many options as you want, then you can move on to the next question.”;
- “You are invited to a party, and every guest has to bring something to eat. Write a list of potential food options for you to bring to the party. Feel free to write as many options as you want, then you can move on to the next question.”;
- “Your friend is going to marry soon and you are invited to their wedding. Write a list of potential gift options that you would like to give your friend for their wedding. Feel free to write as many options as you want, then you can move on to the next question.”;
- “You are planning a date for your anniversary with your significant other, and you want it to be special. Write a list of potential date options that you would like to have with your significant other. Feel free to write as many options as you want, then you can move on to the next question.”.

2. In the Time Pressure condition:

- “You have been invited to a costume party, and you have to choose a costume that you would like to wear. Write a list of potential costume options for you to wear to the party. Feel free to write as many options as you want. You only have 30 seconds to come up with your options.”;
- “You are invited to a party, and every guest has to bring something to eat. Write a list of potential food options for you to bring to the party. Feel free to write as many options as you want. You only have 30 seconds to come up with your options.”;
- “Your friend is going to marry soon and you are invited to their wedding. Write a list of potential gift options that you would like to give your friend for their wedding. Feel free to write as many options as you want. You only have 30 seconds to come up with your options.”;
- “You are planning a date for your anniversary with your significant other, and you want it to be special. Write a list of potential date options that you would like to have with your significant other. Feel free to write as many options as you want. You only have 30 seconds to come up with your options.”.