5-22-2011

Decision-Making between Different Sized Choice Sets: How the Number of Available Options Affects Peak Satisfaction

C. Taylor Putnam
Dickinson College

Follow this and additional works at: http://scholar.dickinson.edu/student_honors
Part of the Psychology Commons

Recommended Citation

This Honors Thesis is brought to you for free and open access by Dickinson Scholar. It has been accepted for inclusion by an authorized administrator. For more information, please contact scholar@dickinson.edu.
Decision-Making between Different Sized Choice Sets: How the Number of Available Options Affects Peak Satisfaction

C. Taylor Putnam

Dickinson College

Submitted in partial fulfillment of Honors Requirements for the Department of Psychology

Dr. J. A. Skelton, Supervisor
Dr. Jonathan Page, Committee Member
Dr. Sharon Kingston, Committee Member

May 4, 2011
Abstract

Many people enjoying having numerous options available to them, yet when it comes to making a choice, people prefer selecting from fewer options. Research has shown that people tend to have the greatest satisfaction when selecting from 10 available options in relatively simple decisions, however there is little research examining this phenomenon with complex decision-making. Results from an experiment using college students ($N = 104$) indicated that participants’ outcome satisfaction ratings were the highest when there were seven or nine available options compared with three or five available options, yet their process satisfaction ratings followed an inverted U-shaped function with a peak at seven options. Directions for future research include systematically varying the complexity of the options offered as well as comparing simple versus complex decisions of the same domain. This could help researchers better understand how to increase consumer satisfaction.
ACKNOWLEDGEMENTS

There have been many people who have directly or indirectly contributed to this research. I am incredibly thankful for their support.

Foremost, I would like to especially thank my advisor, Professor Skelton, for his guidance and support during this experiment.

In addition, I would like to thank the two other committee members, Professor Page and Professor Kingston, for their guidance and constructive feedback in this experiment.

I would also like to thank Diliana Funtarova for her intellectual and emotional support as well as for helping design and run the study.

Finally, I would like to thank Jeff Majarian for idea to conduct the study.
Decision-Making between Different Sized Choice Sets: How the Number of Available Options Affects Peak Satisfaction

Every day people make numerous decisions. Researchers have begun to ask exactly how people make these decisions, and what drives the process behind human decision-making. Traditional economic theory states that people tend to make decisions in order to prevent encountering costs or hazards (Tversky & Kahneman, 1981, p 456). When faced with making a decision for the first time, conscious thought is often required. However, after making a conscious decision once, people often refer to past decisions when faced with making similar choices (Ariely & Zakay, 2001). As these decisions are made more often, it takes less time and effort to make each successive decision, thus making many of the daily decisions habitual and seemingly automatic (Ariely & Zakay, 2001). While some decisions, like choosing an outfit in the morning, are simple and require little thought, others, like choosing a vacation destination or college require much more time and effort (Ariely & Zakay, 2001).

As a result, some people create rules of thumb to simplify the decision-making process, like picking the middle option within a set (Vlaev et al., 2007). This strategy is often used in order to avoid choice overload, or indecision due to having too many available options (Scheibehenne, Greifender & Todd, 2010). According to traditional economic theory, most of the decisions proposed are framed independently (Tversky & Kahneman, 1981). In other words people make decisions as if they were independent of one another, disregarding how the outcome of one decision might impact future decisions. In the real world, however, the vast majority of decisions are not made independently, and are instead influenced by the outcomes of countless previous decisions (Kahneman & Tversky, 1979). These types of decisions are called dynamic when the “tasks in which sequences of decisions are continuously changing,” thus building off of
one another (Ariely & Zakay, 2001, p. 194). Therefore, the outcome of the previous decision shapes the future decisions.

One of the first models of decision-making was developed by Simon (1972). Simon’s model contained four steps which required people to 1) identify the need to make a decision, 2) gather information, 3) define potential alternatives, and 4) choose the best alternative. This model proposed that there might be many elements that influence decision-making. While Simon’s (1972) model suggests that people need information in order to make an informed decision, Shin and Ariely (2004) found that having information does not necessarily lead to the selection of the most preferable choice. Participants were given different types of information about which option would yield the greatest return. While participants who were given this information tended to pick the better option overall, they still would occasionally pick inferior options because they wanted to keep as many options available as possible (Shin & Ariely, 2004). This study showed that the availability of information can influence decision-making behavior detrimentally and that while economists would like to think that people are rational, individuals may not always act in a rational manner.

The decision-making process can be influenced by a number of other factors such as consumer satisfaction, decision making strategies and the number of available choices (Hutchinson, 2005; Kenrick, Griskevicius, Sundie & Li, 2009; Reutskaja & Hogarth, 2009). Consumer satisfaction can be classified into two different types. The first is outcome satisfaction and can be defined as the amount of satisfaction derived from the outcome of actual choice made. The second is known as process satisfaction, which is the amount of satisfaction derived from the process of making the choice (Reutskaja & Hogarth, 2009). The degree of predicted satisfaction can influence the strategies utilized to reach a decision (Iyengar, Wells & Schwartz,
These strategies can be classified as either maximizing or satisficing. "To maximize is to seek the best and requires an exhaustive search of all possibilities. To satisfize is to seek what is 'good enough,' searching until encountering an option that crosses the threshold of acceptability" (Iyengar et al., 2006, p. 143). Research suggests that peoples' desire to maximize utility or satisfaction motivates them to make various decisions (Kenrick et al., 2009). Decision-making strategies are particularly important when dealing with a large number of available options. Such a large number of available options can be beneficial at times because it can both shorten the time needed to search for alternatives, and facilitate comparison between the available choices. (Hutchinson, 2005). Despite this advantage, the necessity of examination and comparison of such a large number of options can also tire the decision-maker (Simon, 1955). Therefore, people may develop simplifying heuristics in order to facilitate the decision-making process of complex choices (Simon, 1955).

Additionally, prior exposure to a particular option can influence future decision-making behavior. When faced with making a decision in which the options are familiar, people will often make their choices based on past decisions (Scheibehenne, Greifeneder & Todd, 2009). However, when options are unfamiliar the decision-making process becomes more complicated. An example of this occurred in 2003 when Congress passed the Medicare Modernization Act (MMA), a law that would change the way senior citizens chose health insurance plans. In 2006 the MMA took effect, allowing seniors to modify or switch their health care plans for a less expensive alternative. However, these discounted rates came at a cost: seniors had to choose from dozens of new health insurance plans based on their prescription drug regimens. The number of health insurance plans varied by state under this plan, and seniors had to reevaluate their health insurance plans every year. For many seniors, this was an overwhelming process
and the majority simply selected a familiar plan and re-selected it year after year, despite full knowledge of the less expensive options under the MMA (Galewitz, 2009). As it is plain to see, these factors can greatly influence the difficulty of decision-making.

Numerous studies have tested how the number of available options affects decision-making as well as consumer satisfaction. Iyengar and Lepper (2000) found that although people report that they prefer more options, having too many may not be ideal for effective decision-making. In their first study Iyengar and Lepper (2000) allowed supermarket customers to sample different types of jams at a sampling booth. Participants could sample as many flavors as they liked in both the limited (6 flavors) or extensive (24 flavors) conditions and then data were collected on whether or not participants bought any of the jams. Iyengar and Lepper (2000) found that while participants specified the extensive options display as more attractive, there were more jam purchases when the participants sampled from a limited selection of options. Their second study found that in addition to being more influential in decision-making, having fewer options also increased the quality of work produced (Iyengar & Lepper, 2000). Participants in this study were given the option of writing an extra credit assignment that had either six or 30 potential topics. Results showed that participants in the limited options condition were more likely to complete the optional essay and additionally produced higher quality work than those in the extensive options condition. These two studies demonstrate how varying the number of available options affects the decision-making process.

Other studies have found similar results (Haynes, 2009; Reutskaja & Hogarth, 2009; Shah & Wolford, 2007). Haynes (2009) replicated the results of Iyengar and Lepper (2000) using a smaller range of choice options. In this study, participants were able to choose from a selection of 3 (limited options condition) or 10 (extensive options condition) different prizes,
which they believed would be entered into a drawing to receive the prize that they selected. Participants in the extensive options condition found the task to be more difficult and frustrating than those in the limited options condition. Despite this difficulty, participants in the extensive options condition also found the task more enjoyable than those in the limited options condition. Surprisingly, participants in the extensive options condition were less satisfied with their choice than those in the limited options condition (Iyengar & Lepper, 2000). This shows that participants in the extensive options condition showed greater degrees of process satisfaction than those in the limited options condition. Additionally, those in the extensive options condition showed lower degrees of outcome satisfaction and were less likely to purchase the product than those in the limited options condition. This suggests that outcome satisfaction could be better linked with purchasing behavior than process satisfaction.

While many studies have focused on the decision-makers' satisfaction while making a choice between a small and large choice set, few studies have examined decision-making behavior when there are intermediate choice set options (Reutskaja & Hogarth, 2009; Shah & Wolford, 2007). Shah and Wolford (2007) examined choice satisfaction by asking participants to select their preferred type of pen and seeing if they would purchase any of the selected pens at a discounted price. The number of available pens ranged from 2-20 and increased by increments of two. The proportion of participants who decided to purchase a pen progressively increased until its peak at 10 available pens and then progressively decreased, thus demonstrating an “inverted U” shape (Shah & Wolford, 2007). Reutskaja and Hogarth (2009) conducted a similar study which examined the degree of both outcome and process satisfaction experienced by participants when asked to pick their preferred gift box from 5, 10, 15, or 30 options that varied
by shape and/or color. Similar to Shah and Wolford (2007), they found that the degree of satisfaction demonstrated an inverted U shape as well as the peak satisfaction was at 10 options.

Both of these studies have found that purchasing behavior and satisfaction peak at 10 options (Shah & Wolford, 2007; Reutskaja & Hogarth, 2009). This demonstrates that while people like the idea of having many options available, they experience choice-overload, or negative consequences due to an increase in available options (Scheibehenne et al., 2010), when the number of options available exceeds 10 options. However, all these studies involved making simple decisions. The options within a given choice set only tended to differ by one or two features, such as flavor, color, or shape, and because of this they were relatively simple to compare. When faced with making such a decision, it takes little effort to compare the different options because they are so simple (Dijksterhuis, Bos, Nordgren, & van Baaren, 2006). Additionally, these decisions resulted in either short-term or non-existent consequences. There is currently no literature that examines the impact of available options on complex situations that may result in long-term consequences. The current study seeks to fill this gap.

The selection of college meal plans presents a domain that includes long-term consequences. Since all students who live on campus are required to have a meal plan, this particular domain allows the researchers to focus solely on the effects of the decision-making process rather than students' own willingness to make the decision in the first place. Additionally, the process of selecting meal plans is significantly more complex than any of the previous studies because it is necessary to take into account the multiple elements of each meal plan option, including the number of allotted meals which are determined by Flex points, and the value of Declining Balance. Flex points are imaginary monetary unit that represents real dollars for the purpose of purchasing meals or food items on campus. Respectively, declining
balance is the equivalent of a debit account linked to one's student account. When this account records a positive balance students are able to spend these funds as if they were cash (see Appendix A for further explanation). Finally, the process of selecting a meal plan also requires the decision maker to think about the long-term consequences of his or her choice. Unlike the studies that examine simple decision-making behavior such as picking a flavor of jam, students must keep the same meal plan for an entire semester before another decision can be made. Therefore, the purpose of the current study is to examine whether the trends seen when making simple decisions occur when making complex decisions as well.

The first hypothesis states that like previous studies (Reustkaja & Hogarth, 2009; Shah & Wolford, 2007) participants will experience the greatest satisfaction when asked to make a selection from an intermediate number of available options. Since the brain is only able to process a certain amount of information, having an excessive number of options available would likely cause a choice-overload effect (Hertwig & Pleskac, 2010; Dijksterhuis & van Olden, 2005). Therefore, participants should report the greatest degrees of satisfaction when presented with an intermediate number of options because they will not be constrained to selecting from a limited number of options, yet not so many that they will experience choice-overload.

Haynes (2009) found that as the number of available options increased, participants were more likely to experience higher degrees of difficulty, frustration, and regret when making a decision. Therefore, the second hypothesis states that having a greater number of options available will make the decision-making process more difficult. Similarly, the third hypothesis states that having a greater number of options available will make the decision-making process more frustrating. Finally, participants who were faced with making a decision with a greater number of available options experienced more feelings of regret than those choosing from fewer
options (Haynes, 2009; Iyengar & Lepper, 2000). The fourth hypothesis states that participants will be more likely to experience regret when having to choose from a greater number of available options. These measures were used because they could help account for why the predicted differences in satisfaction would occur.

Method

Choice Options

In order to test these hypotheses, it was necessary to create four different lists that varied the number of available options. It was important to create lists using meal plans that differed from the ones Dickinson offered so that participants would not be biased making their selections. However, it was also important to create lists that contained similar meal plans to the ones with which they were already familiar. Therefore, a list of 11 meal plans were taken from the Dining Services websites of institutions comparable to Dickinson including Gettysburg College, Franklin and Marshall College, Elizabethtown College, Ursinus College, and Shippensburg University and adapted to have similar language for the purpose of this study. These meal plans all had similar retail values to the ones offered at Dickinson with regards to the number of meals offered, the flexibility in time and location for meal consumption (see Appendix A for explanation of Dickinson’s current meal plans and how the new meal plans were adapted), and cost (see Appendix B for numerical equations and proofs of costs). One meal plan was excluded from this list because it did not fall within the same price range as the current Dickinson meal plans, leaving 10 available meal plans from which to choose.

Pilot Study.

In order to determine which meal plans should be used in the final study, three rounds of pilot testing were conducted to test for attractiveness of each meal plan (see Appendix C). So as
not to overwhelm the participants in rating too many meal plans, a shorter list was compiled. The meal plans with the two highest and lowest flex point dollar values were excluded leaving the middle six meal plans to become the final list of possible choices. This list contained an equal number of meal plans that used an allotment of meals per week as meal plans that used an allotment of meals per semester. Each meal plan was then assessed using a 5-point Likert scale ranging from 1 (Not Attractive) to 5 (Very Attractive). Twenty-two participants completed the first version of the pilot study and results of a repeated-measures ANOVA indicated that there were differences in the attractiveness of the meal plans, \( F(5, 105) = 3.95, p < .01, \eta^2 = .16 \). This list was then pilot tested a second time with twenty-one different participants. The different meal plans were presented in a different order than the first pilot test, but otherwise had an identical format. Like the first pilot test, results revealed that there were differences in attractiveness between the six options, but the attractiveness of the options was consistent regardless of the order in which they were presented, \( F(5, 100) = 4.57, p < .01, \eta^2 = .19 \).

To arrive at nine meal plans for the final version, three of the excluded meal plans from the previous round of pilot testing were added to this pilot study so that there was an equal distribution of higher- and lower-rated meal plans around the mean. Participants \( N = 21 \) completed this 9-option version of the pilot study that was otherwise identical to the first two pilot tests and results indicated that there were differences in the attractiveness of the various meal plans, \( F(8, 160) = 7.45, p < .01, \eta^2 = .27 \). Based on the results of this pilot study, four lists of options were then created using the same methods as Shah and Wolford (2007). The first contained three options: the median-rated option from pilot testing as well as the best- and worst-rated options. Each successive condition contained all previous options plus two more options,
the next highest option and the next lowest option until all options were present, yielding lists with three, five, seven, and nine options.

Measures

This questionnaire consisted of five items about decision-making. Satisfaction was measured two ways: outcome satisfaction ("How much do you like the meal plan you decided to pick?") and process satisfaction ("How much did you enjoy making the choice?"). These questions were taken from Reutskaja and Hogarth (2009) and adapted to the current study. The degree of difficulty was measured by asking the question "How difficult was this task?" The degree of frustration was measured by asking the question "How frustrating was this task?" The degree of difficulty and the degree of frustration were self-developed questions. Regret was measured by asking the question "How much did you regret not having chosen a different meal plan?" This question was taken from Haynes (2009) and was adapted to fit the current study. Participants rated all of these questions on a 5-point Likert scale. Demographic information: age, class year, and current meal plan were also included in the post-decision questionnaire.

Participants

Participants were obtained using two different recruitment methods: the psychology department's participant pool and email and facebook blasts to student organizations on campus. Data from 98 participants from the participant pool and 118 from the online sample were collected. Data from 84 participants in the participant pool sample was excluded because of a procedural error which is described below. Data from 24 of participants in the online sample were excluded because they did not complete the meal plan section of the larger study. Additionally, data from two participants were excluded because participants did not select a meal plan, making the rest of the dependent measures irrelevant. Data from two other participants
were excluded because they were over the age of 24 and did not include a class year, indicating that they were not Dickinson students. This left a combined sample of 104 participants.

Participant ages ranged from 18 to 32 with an average age of 20 (SD = 1.77). Thirty of the participants were sophomores (29.4 %), followed by 28 juniors (27.5%), 27 seniors (26.5%), and 17 first years (16.7%).

Additionally, the participants’ current meal plans tended to differ by class year with first years and sophomores selecting the Traditional meal plan 44.7% of the time compared to Juniors and Seniors who selected it 26.6% of the time. Meanwhile, when examining the Flex and Apartment meal plans, first years and sophomores selected the Flex plans 55.3% of the time while juniors and seniors selected the Flex and Apartment meal plans 75.8% of the time. The Flex and Apartment meal plans were grouped together because they functioned similarly in terms of how the meal plan could be used (see Table 1 for frequencies of each meal plan). This shows that upperclassmen tend to select different meal plans than underclassmen.

Procedure

Participants in the participant pool sample could sign themselves up for a session between 7:00 pm and 9:00 pm. Each session could accommodate a total of up to 30 participants and a total of five sessions were conducted. Upon entering the testing site, participants were informed that they would be participating in two individual studies, both concerning decision-making. They were instructed by the researchers to log into a computer and enter a provided URL address that contained the questionnaire. Due to a proofreading error in which the scales differed across experimental conditions, two of the sessions used the corrected URL while the other three used the uncorrected URL and were thus excluded. The computer program (Qualtrics™) randomized the order in which the two studies appeared and additionally randomly
assigned each participant to one of four experimental conditions. As shown in Appendix D, depending on the condition, participants completed a study that differed in the number of options available (3 options, 5 options, 7 options, and 9 options). Participants were asked to select their preferred option and then to complete the post-decision questionnaire. Participants taken from the participant pool were then debriefed and awarded class credit for their participation.

Participants in the online sample were sent either an email or facebook message asking them to participate in a short online study about decision-making. Participants were given the same corrected URL address as those in the participant pool sample and completed the survey at their convenience. Participants in the online sample did not receive any incentive for their participation.

Overall there were 23 participants in the 3 Options condition (2 participant pool, 21 online), 28 participants in the 5 Options condition (2 participant pool, 26 online), 28 participants in the 7 Options condition (3 participant pool, 25 online), and 25 participants in the 9 options condition (4 participant pool, 21 online).

Results

The relationship between all of the dependent variables was examined and can be found in Table 2. The relationship between outcome satisfaction and process satisfaction was examined and was found that the two variables were positively related. Both outcome and process satisfaction were negatively correlated with frustration and regret. Frustration, difficulty, and regret were all positively correlated.

Polynomial trend analyses were used to examine the effects of the number of options on the various dependent variables of the current study. Polynonial trend analyses are conducted when the "groups defined by the independent variable are ordered along some continuum"
(Howell, 2002, p. 408). Because the data may show inflection points, the trends observed give more insight into the optimum number than comparing specific means (Howell, 2002).

Moreover, Reutskaja and Hogarth (2009) used polynomial trend analyses to examine the relationship between the number of options and satisfaction in their study. Therefore, polynomial trend analyses were used in the current study for consistency.

The first hypothesis posited that participants would experience the greatest satisfaction when asked to make a selection from an intermediate number of available options. Mean satisfaction ratings for the outcome of meal-plan decisions can be found in Table 3. The Number of Options factor was divided into three polynomial trend contrasts because it was predicted that inflection points would be observed in these particular analyses. Specifically, it was predicted that satisfaction would first increase as a greater number of options were added, however, the reverse would occur once too many options had been added. In this section, the significant results will be reported in text, however, all the linear, quadratic, and cubic results can be found in Table 3. As shown in Figure 1, the participants’ satisfaction with the outcome of the decision was similar when they chose from three or five meal plans, but satisfaction was greater when the number of plans was seven or nine, \( t(100) = 1.89, p = .062, d = .38 \) for the linear contrast. As shown in Figure 2, the participants’ satisfaction with the process of making the decision followed the inverted- U format. Process satisfaction ratings increased as the number of available options increased until they peaked at the 7 Options condition. Process satisfaction ratings sharply decreased for the 9 Options condition, \( t(99) = -2.57, p = .01, d = -.51 \) for the quadratic contrast.

Contrary to prediction, participants’ difficulty ratings did not differ across conditions, \( t(99) = 0.94, p = .35, d = .19 \) for the quadratic contrast, indicating that participants felt that choosing a meal plan was equally difficult for each condition. Participants’ frustration ratings
did not differ across conditions, $t(100) = -0.47, p = .64, d = -.09$ for the quadratic contrast, indicating that selecting a meal-plan was equally frustrating for each condition. Participants’ regret ratings did not differ across conditions either, $t(99) = -0.47, p = .64, d = .09$ for the quadratic contrast, indicating that participants felt the same amount of regret regardless of their assigned condition.

**Discussion**

Consistent with the hypothesis, there were differences in both outcome satisfaction and process satisfaction between the four conditions. However, it was predicted that satisfaction ratings would have the inverted U shape when measuring outcome satisfaction and this was not observed. Instead, the satisfaction ratings tended to follow a more linear trend, with outcome satisfaction ratings being lower in the 3 Option and 5 Options conditions than they were in the 7 Option and 9 Option conditions. There were no differences in satisfaction between the 3 Option and 5 Option conditions. Likewise, there were no differences in satisfaction between the 7 Option and the 9 Option conditions. This comparison between the 3 and 5 Option group and the 5 and 7 Option group was unplanned. The trends in process satisfaction ratings were also consistent with the hypothesis. The process satisfaction ratings continuously increased as the number of options available increased up to the peak of 7 Options. There was then a sharp decrease in process satisfaction for the 9 Option condition. This result was interesting because it is inconsistent with the results of Haynes (2009), who found that participants in the extensive option condition found the task more enjoyable than those in the limited options condition.

These results are particularly interesting because they confirm the hypothesis that peak satisfaction ratings for complex decisions occur at an intermediate number of available options, which in the current study occurs when there are about 7 available options. This is lower than
what has been found with simple decisions, which tend to have peak satisfaction ratings around 10 available options (Ruetskaja & Hogarth, 2009; Shah & Wolford, 2007). Contrary to prediction, there were no differences in the degree of difficulty, the degree of frustration, or the degree of regret felt across experimental conditions.

One possible explanation for these results is that individuals could simply be happier when presented with many available options. Although the outcome satisfaction didn’t change between the 7 Option and the 9 Option conditions, it was still significantly higher than that of the 3 Option and 5 Option conditions. This suggests that people desire the flexibility that having a greater number of options allows. As mentioned before, Shin and Ariely (2004) found that many people are fearful of losing options and therefore will act irrationally in order to maintain as many choices as possible. In their study, participants were asked to click on four different doors that would yield different payoffs. They were allotted 100 clicks and the goal was to try and obtain the greatest amount of money. If doors were not clicked on they shrunk until they disappeared. Participants could bring the door back, but they had to either waste a click or pay a sum of varying degrees. Shin and Ariely (2004) found that participants in all conditions were equally likely to incur the cost of reopening a door.

While this phenomenon could explain why participants were more satisfied with the decision they actually made, it does not explain nor does it account for the fact that participants in the 9 Option condition had lower ratings of process satisfaction than they did of outcome satisfaction. Participants may have been overwhelmed by the number of options available in the 9 Option condition, making the decision-making process less enjoyable. This speculation is consistent with the findings of Iyengar and Lepper (2000). They set up a sampling stand in a grocery store so that participants could sample from either a limited or extensive number of jams.
They found that participants were more likely to stop and sample the jams from the extensive option condition than from the limited option condition. However, those who sampled from the limited option condition were more likely to actually purchase a jam than those in the extensive option condition. Because the current study was a simulation study, the participants did not actually have to purchase the meal plans that they selected. The fact that the participants reported greater satisfaction in the 7 and 9 Option conditions than in the 3 and 5 Option conditions could be related to the initial attraction of the participants to the sampling stand in Iyengar and Lepper's (2000) study. Since more people stopped at the sampling stand in the extensive option condition, this shows that they initially were attracted to having more options rather than less options. This was seen in the current study because participants reported a greater satisfaction when they had more options available to them. However, when the participants had to select a jam to purchase, those from the extensive option condition were significantly less likely to actually do so than those in the limited option condition. This suggests that those in the extensive option condition disliked the process of selecting a jam more so than those in the limited-option condition. The current study shows similar findings because those in the 9 Option condition reported lower levels of process satisfaction than those in the other three conditions. Since there was not a difference between outcome satisfaction ratings between the 7 Option and the 9 Option condition but there was a difference in process satisfaction ratings, this suggests that process satisfaction should be more closely examined.

One possible reason that there was no inverted-U formation observed for outcome satisfaction could be because there were only four experimental levels which may have lowered the power of the current study. Although Reutskaja and Hogarth (2009) observed an inverted-U formation using four experimental levels, the number of options in the forth group was twice as
large as the number present in the third group. This makes it very likely that an inverted-U formation would be observed because there is such a sharp increase between the number of options availed between the two conditions. Therefore, it is particularly interesting that the inverted-U formation is observed in the current study for process satisfaction because there are only two additional options between the third and fourth conditions. Shah and Wolford’s (2007) study showed an inverted-U formation when there were 10 experimental conditions. Perhaps this formation could be seen if there were more conditions present.

The fact that the current study was a simulation study could also account for the non-significant results seen in the measures of the degree of difficulty, the degree of frustration, and the degree of regret felt for not having selected a different meal plan. Participants may not have taken this study as seriously as they would have if they were selecting a meal plan in real life. It may have been difficult for participants to experience any feelings of regret because they did not actually purchase the meal plan. The only study that examined how varying the number of options affects regret was the one conducted by Haynes (2009). While this study was a simulation, it used deception such that participants believed that their decision would have lasting consequences. Bullens, van Harreveld and Förster (2011) were also able to influence regret by making them select their preferred incentive. Similar to Haynes (2009), participants in this study reported various degrees of regret because they believed that their decision had lasting implications. These studies suggest that regret may not be easily affected in situations that do not directly affect the decision-maker. Likewise, people may not find decision-making as difficult or frustrating in a simulation situation because there are virtually no consequences to the actions taken. As a result, participants may not have taken this study as seriously as they would have if it actually affected their everyday lives.
Another dimension to examine is the popularity of the meal plans selected. For the purposes of this study, meal plans that were selected more frequently were considered to be more popular (see Table 4). Overall, there were two overwhelmingly popular meal plans: Option 3 (220 meals per semester and $150 declining balance) and Option 7 (15 meals per week and $250 declining balance). One interesting trend observed was that Option 3 and Option 7 had the highest percentages of selection when they were the last option listed (43.5% and 50% respectively). However, these percentages decreased when they were listed as the third option out of five for Option 3, or the seventh option out of nine for Option 7 (35.7% and 28% respectively). While, these findings suggest that there might of an order effect, or an increase in popularity due to the position of the meal plan in the list, this was previously examined during pilot testing and was found to not affect the meal plan’s popularity. Additionally, Option 3 still remains the second most popular meal plan after Option 7 is introduced in the 7 Option condition. Therefore, the popularity of a particular feature of the meal plan when combined with the placement of the item in the list may have accounted for this trend, and thus was not previously found in the pilot testing. Since these two meal plans had different features that might have made them attractive to participants, such as the amount of declining balance, whether meals were allotted weekly or by semester, and the number of meals available, it would be interesting to examine the specific effects those different features had on the overall attractiveness of each meal plan to the participants. It is possible that having a greater amount of declining balance could offer decision-makers greater flexibility, a quality that might be attractive in a meal plan. A study that systematically varied these features could help explain which meal plan features are most attractive and could be useful in the design of future studies. Either the most popular meal plans could be directly compared or new meal plan options could
be designed that were more similar to one another. Additionally, future studies could examine whether there were framing effects that occurred because meal allotments were phrased either weekly or by semester. By further examining systematically the specific features of what makes a particular meal plan complex, it could help researchers better understand why process satisfaction and outcome satisfaction differ.

One limitation of the current study was that the meal plan options had different attractiveness ratings at the beginning of the study. Therefore it is impossible to determine whether or not this had an influence on the results of the current study. It is possible that participants may have been more satisfied with their current meal plan selection because they were selecting from a list that included more attractive options. Revisions to the study, including the aforementioned suggestion could correct for this limitation in future studies. Ideally, testing this hypothesis would use choice sets that contain objectively identical options. However, it is very difficult to do this in real-life situations because people have distinct preferences.

While numerous studies have examined satisfaction with relation to the number of options available, most of these studies concern making simple choices. Since the current study found that for complex decisions peak satisfaction ratings occurred at a lower number of available options than for simple decisions, a logical future direction would be to conduct an experiment that directly compared satisfaction ratings for simple and complex decisions. Rather than comparing two different domains of decision-making, such as satisfaction ratings of choices of pens and choices of meal plans, it would be preferable to systematically vary the complexity of each available option for one specific domain. For instance, in the simple condition the number of available options could vary as it did in the current study, but the only difference between each of the available options would be that the number of meals offered each week
would be different with all other factors remaining constant. However, in the complex decision condition the number of meals and the amount of declining balance could also vary. The current study was fairly representative of Dickinson’s campus with regards to the distribution of class year. Once the aforementioned suggestions have been worked out, it would be interesting to conduct a study that examined complex decision-making in populations of older adults or even children.

Another possible future direction for this study would be to conduct a similar study using a behavioral measure of satisfaction. Iyengar and Lepper (2000) conducted a study that varied the number of available options of chocolate to the participants and had them select their favorite. As an inducement, participants were able to choose whether they wanted to receive a box of the same brand of chocolate or a monetary sum of equal cost. Those who chose the box of chocolate also tended to be more satisfied with their chocolate selection from the experiment. A variation of the current study could implement this type of measure using some sort of material inducement. For instance, decision-makers could make complex choices such as placing a coffee order that has numerous elements (e.g. size of the cup, adding cream, sugar, or whipped cream, or whether to serve the beverage hot or cold). Participants would then be able to choose between the actual coffee ordered or an equivalent value of cash. This behavioral measure could be a good indicator of how well the outcome satisfaction measure actually worked because if participants were truly satisfied with their meal plan selection it would stand to reason that they would also select the material inducement instead of cash.

An additional future direction would be to make the study seem more true to life by having the participants select a meal plan that they would like to see Dining Services implement. This situation would make participants more likely to care about their particular meal plan they
select. If they believed that their meal plan selection might actually be used in the future, this
would create consequences for their actions. Therefore, participants would be more invested in
making a decision, and thus might find the decision-making process to be more difficult and/or
frustrating. Additionally, the time spent making the decision and the number of times
participants changed their minds could be recorded to give a better indication of difficulty and
frustration. Finally, another future direction could be to run the study longitudinally. The use of
the meal plan could either be tracked or manipulated such that participants could have a chance
to experience some of the consequences of the meal plan. This might create a more accurate
measure of regret because regret may not be felt immediately after the decision has been made
and would allow those feelings to occur more naturally.

Results of this study could be used by Dickinson’s Dining Services Office. By knowing
that the peak satisfaction levels differ according to the number of options available, Dining
Services could have a better understanding of how many meal plan options to offer that would
maximize student satisfaction. However, these results do not only apply to Dickinson. Results
of this study have implications for future research regarding simple versus complex decision-
making and how this contributes to consumer satisfaction in other domains and organizations,
such as health care. Obviously the decision-making strategies between choosing a health care
plan and choosing between brand name or generic prescription drugs will differ because
choosing a health care plan is much more complex. Having a better understanding of how
decision-making differs between simple and complex decisions could help companies strategize
in marketing their products to consumers such that they will enjoy making the purchase as well
as be satisfied with the actual product. If a particular company wants to influence people into
thinking that they have made a better choice they should offer more options. However, if the
company wants to influence people into making a better choice, it may be better to offer fewer options. The results of the current study give directions for future research on which particular elements of a meal plan are most important to students. These strategies can then be applied to other companies so that they can select the optimum combination of features to a complex product or service package that can then be sold to potential customers. If these strategies are applied appropriately they could create more loyal customers and in turn increase sales. However, there is still much research to be done.
References


Figure Captions

*Figure 1.* Average ratings of outcome satisfaction across the number of meal plan options

*Figure 2.* Average ratings of process satisfaction across the number of meal plan options
Decision-Making Satisfaction

![Graph showing the relationship between Number of Options and Process Satisfaction Rating. The graph indicates an overall increase in satisfaction with a moderate number of options (5 Options), peaking at 7 Options, and then decreasing with 9 Options.](image)
Table 1.

Frequencies of current meal plans selected by class year

<table>
<thead>
<tr>
<th>Class Year</th>
<th>Current Meal Plan</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Traditional</td>
<td>Flex 1</td>
<td>Flex 2</td>
<td>Apartment</td>
<td>Total</td>
</tr>
<tr>
<td>First Year</td>
<td>9</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Sophomore</td>
<td>12</td>
<td>13</td>
<td>5</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>Junior</td>
<td>7</td>
<td>16</td>
<td>4</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>Senior</td>
<td>6</td>
<td>14</td>
<td>12</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>51</td>
<td>12</td>
<td>5</td>
<td>102</td>
</tr>
</tbody>
</table>
Table 2.

Intercorrelations between dependent variables

<table>
<thead>
<tr>
<th></th>
<th>Outcome Satisfaction</th>
<th>Process Satisfaction</th>
<th>Frustration</th>
<th>Regret</th>
<th>Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome satisfaction</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process satisfaction</td>
<td>.471**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frustration</td>
<td>-.349**</td>
<td>-.246*</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regret</td>
<td>-.419**</td>
<td>-.207*</td>
<td>.396**</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Difficulty</td>
<td>-.138</td>
<td>-.123</td>
<td>.644*</td>
<td>.342**</td>
<td>---</td>
</tr>
</tbody>
</table>

* $p < .05$, ** $p < .01$

Note. $n_s = 102-104$
Table 3.

Average scores for dependent variables by Number of Options factor

<table>
<thead>
<tr>
<th>Meal Plan</th>
<th>Outcome Process Difficulty</th>
<th>Frustration</th>
<th>Regret</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Option</td>
<td>3.48 (SD = .98) 3.00 (SD = .98) 3.16 (SD = .84)</td>
<td>2.48 (SD = 1.20)</td>
<td>2.00 (SD = 1.09)</td>
</tr>
<tr>
<td>5 Option</td>
<td>3.39 (SD = .86) 3.18 (SD = .86) 3.04 (SD = .79)</td>
<td>2.79 (SD = 1.10)</td>
<td>2.29 (SD = 1.12)</td>
</tr>
<tr>
<td>7 Option</td>
<td>3.93 (SD = .78) 3.36 (SD = .78) 3.11 (SD = .88)</td>
<td>2.39 (SD = 1.20)</td>
<td>2.00 (SD = 1.09)</td>
</tr>
<tr>
<td>9 Option</td>
<td>3.84 (SD = .91) 2.64 (SD = .91) 3.32 (SD = 1.07)</td>
<td>2.48 (SD = 1.29)</td>
<td>2.09 (SD = 1.10)</td>
</tr>
</tbody>
</table>

linear contrasts: $t(100) = 1.89, p < .05, d = .38$ $t(99) = -1.12, p < .05, d = -.23$ $t(99) = -0.66, p < .01, d = -.14$ $t(100) = -0.34, p > .10, d = .07$ $t(99) = -0.04, p > .10, d = .01$

quadratic contrasts: $t(100) = -0.01, p > .10, d = .01$ $t(99) = -2.57, p < .05, d = -.51$ $t(99) = 0.94, p = .35, d = .19$ $t(100) = -0.47, p < .05, d = -.09$ $t(99) = -0.47, p < .05, d = .09$

cubic contrasts: $t(100) = -1.55, p < .05, d = -.29$ $t(99) = -1.19, p < .05, d = -.23$ $t(99) = 0.07, p > .10, d = .01$ $t(100) = 1.16, p = .25, d = .22$ $t(99) = 1.00, p = .32, d = .19$

Note. Because of missing data, N's per group vary from 23-28.
Table 4.
Number and percent of participants who chose each meal plan by condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>3 Options</th>
<th>5 Options</th>
<th>7 Options</th>
<th>9 Options</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 meals/week + $200</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>26.1%</td>
<td>21.4%</td>
<td>3.6%</td>
<td>4%</td>
<td>13.5%</td>
</tr>
<tr>
<td>17 meals/week + $80</td>
<td>7</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>30.4%</td>
<td>25%</td>
<td>10.7%</td>
<td>8%</td>
<td>18.3%</td>
</tr>
<tr>
<td>220 meals/semester + $150</td>
<td>10</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>43.5%</td>
<td>35.7%</td>
<td>18.9%</td>
<td>20%</td>
<td>28.8%</td>
</tr>
<tr>
<td>180 meals/semester + $120</td>
<td>N/A</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>7.1%</td>
<td>3.6%</td>
<td>0%</td>
<td>2.9%</td>
<td></td>
</tr>
<tr>
<td>225 meals/semester + $120</td>
<td>N/A</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>10.7%</td>
<td>7.1%</td>
<td>16%</td>
<td>8.7%</td>
<td></td>
</tr>
<tr>
<td>14 meals/week + $100</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>7.1%</td>
<td>0%</td>
<td>1.9%</td>
</tr>
<tr>
<td>*15 meals/week + $250</td>
<td>N/A</td>
<td>N/A</td>
<td>14</td>
<td>7</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>50%</td>
<td>28%</td>
<td>20.2%</td>
</tr>
<tr>
<td>175 meals/semester + $200</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>8%</td>
<td>1.9%</td>
</tr>
<tr>
<td>160 meals/semester + $275</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>16%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>28</td>
<td>28</td>
<td>25</td>
<td>104</td>
</tr>
</tbody>
</table>
Appendix A

Current Meal Plans

A list of Dickinson’s current meal plans was obtained from Dining Services and used as a reference point for examining other meal plans used in this study. The current list included a list of three meal plans (Traditional, Flex 1, and Flex 2) that cost $2,525.00 and one (Apartment Plan) that cost $2,325.00. Under each of these plans students are able to eat in any of the campus dining facilities (Dining Hall, Union Station, Quarry, Underground, and Biblio Café) during any meal. The cost of each daily meal in the Dining Hall is assigned a fixed number of flex points, two for breakfast, three for lunch and five for dinner. When not used in the Dining Hall, flex points are converted to their equivalent dollar value. For example, a coffee purchased at the Biblio Café with a price of $1.25 would cost a student 1.25 flex points. Students on the Traditional plan can eat every meal offered (6 breakfasts, 7 lunches, and 7 dinners per week) but must pay additional amounts if they want to spend more than the allotted amount the meal offers. Students on the Flex and Apartment plans can spend whatever amount they want on each meal but have a limited amount of flex points each semester (Flex 1 = 700 flex points, Flex 2 = 650 flex points, and Apartment Plan = 400 flex points). Students on the Flex and Apartment plans are also given Declining Balance money (Flex 1 = $125, Flex 2 = $150, and Apartment Plan = $200) which can be spent as if it were a debit card in any of the dining facilities, the campus convenience store, bookstore, or post office.

In order to obtain a base measurement of the overall value of each meal plan, the value of each flex point (flex point dollar value) was calculated. This flex point dollar value is the actual dollar value of each flex point which is measured in U.S. dollars. The flex point dollar value was determined by subtracting the amount of Declining Balance from the total cost of the meal plan
and the dividing that amount by the number of available flex points (Calculations for flex point
dollar values can be seen in Appendix B). The amount of Declining Balance was subtracted
because this money functions like regular money, with one declining dollar equaling one U.S.
dollar, whereas flex points cost more than the dollar amount received. The flex point dollar
values for Traditional, Flex 1, Flex 2, and the Apartment Plan were $2.48, $3.43, $3.65, and
$5.31 respectively. These values were used as a base estimate when searching for the new meal
plans that would be used in the current study.

New Meal Plans

A list of 11 meal plans were taken from the Dining Services websites of institutions
comparable to Dickinson including Gettysburg College, Franklin and Marshall College,
Elizabethtown College, Ursinus College, and Shippensburg University (See Appendix B for a list
of all considered meal plans) and converted such that the language used to describe all the meal
plan features was similar (i.e. flex points and declining balance). These particular meal plans
were selected because they did not appear to be overwhelmingly superior or inferior to the meal
plans currently offered by Dickinson. However, this selection of meal plans allowed students to
have either an allotted number of meals a week or an allotted number of meals a semester.
Therefore, in order to compare the flex point dollar values across meal plans it was necessary to
convert the number of meals into flex point values. To demonstrate the potential of each meal
plan the maximum flex point value was calculated. This would require the meals to be used in
the most economical fashion by having meals that cost a larger number of flex points, such as
dinner, to be used before meals that cost a smaller number of flex points, such a lunch. For
example, if a meal plan offered 15 meals a week, the student would first want to use as many
meals as they could on dinner, which would be seven in this case. They would then want to use
their remaining eight meals in the most economical way by using seven on lunch and one on breakfast. The same logic holds true for meal plans that offer an allotted number of meals a semester. If there are 15 weeks in a semester, with 14 weeks of class and one week of final exams, the total number of flex points per semester for each dinner, lunch, and breakfast would be 105, 105, and 90 respectively. All of the new meal plans were then listed in ascending order by flex point dollar value. With the exception of one meal plan, which was then excluded from the list, all of the new meal plans had flex point dollar values that were between the flex point dollar values of the Traditional ($2.48) and Flex 1 plans ($3.43), and in total had a range of $0.93 flex point dollars.
Appendix B

Meal Plan List and Flex Point Dollar Value Calculations

1. Traditional (20 meals/week)
   \[105_{\text{dinner}} + 105_{\text{lunch}} + 90_{\text{breakfast}} = 300_{\text{meals}}\]
   \[= 525 + 315 + 180 = 1020 \text{ flex points}\]
   \[\$225 \div 1020 = \$2.48\]

2. Flex 1 (700 flex points + $125 decline)
   \[\$2525 - \$125 = \$2400\]
   \[\$2400 \div 700 = \$3.43 \text{ real dollars}\]

3. Flex 2 (650 flex points + $150 decline)
   \[\$2525 - \$150 = \$2375\]
   \[\$2375 \div 650 = \$3.65 \text{ real dollars}\]

4. Apartment (400 flex points + $200 decline)
   \[\$2325 - \$200 = \$2125\]
   \[\$2125 \div 400 = \$5.31 \text{ real dollars}\]

5. 12 meals/week + $200
   \[5(7) + 3(5) = 50 \text{ flex points/week}\]
   \[50(15) = 750 \text{ flex points/semester}\]
   \[\$2525 - \$200 = \$2325\]
   \[\$2325 \div 750 = \$3.10 \text{ real dollars}\]

6. 225 meals/semester + $120
   \[105_{\text{dinner}} + 105_{\text{lunch}} + 15_{\text{breakfast}} = 225_{\text{meals}}\]
   \[= 525 + 325 + 30 = 880 \text{ flex points}\]
   \[\$2525 - \$120 = \$2405\]
   \[\$2405 \div 880 = \$2.73 \text{ real dollars}\]

7. 180 meals/semester + $145
   \[105_{\text{dinner}} + 75_{\text{lunch}} = 180_{\text{meals}}\]
   \[= 525 + 225 = 750 \text{ flex points}\]
   \[\$2525 - \$145 = \$2380\]
   \[\$2380 \div 750 = \$3.17 \text{ real dollars}\]

8. 220 meals/semester + $150
   \[105_{\text{dinner}} + 105_{\text{lunch}} + 10_{\text{breakfast}} = 220_{\text{meals}}\]
   \[= 525 + 315 + 20 = 860 \text{ flex points}\]
   \[\$2525 - \$150 = \$2375\]
   \[\$2375 \div 860 = \$2.76 \text{ real dollars}\]

9. 160 meals/semester + $275
   \[105_{\text{dinner}} + 55_{\text{lunch}} = 160_{\text{meals}}\]
   \[= 525 + 165 = 690 \text{ flex points}\]
   \[\$2525 - \$275 = \$2250\]
   \[\$2250 \div 690 = \$3.26 \text{ real dollars}\]

10. 19 meals/week + $50
    \[5(7) + 3(7) + 2(5) = 66 \text{ flex points/week}\]
    \[66(15) = 990 \text{ flex points/semester}\]
    \[\$2525 - \$50 = \$2455\]
$2455/ 990 = $2.50 real dollars

11. **14 meals/ week + $100**
   5(7) + 3(7) = 56 flex points/ week
   56(15) = 840 flex points/ semester
   $2525 - $100 = $2425
   $2425/ 840 = $2.89 real dollars

12. **15 meals/ week + $250**
   5(7) + 3(7) + 2(1) = 58 flex points/ week
   58(15) = 870/ semester
   $2525 - $250 = $2275
   $2275/ 870 = $2.61 real dollars

13. **175 meals/ semester + $200**
   105_dinner + 70_lunch = 175_meals
   = 525 + 210 = 735 flex points/ semester
   $2525 - $200 = $2325
   $2325/ 735 = $3.16 real dollars

14. **19 meals/ week + $150**
   5(7) + 3(7) + 2(5) = 66 flex points/ week
   66(15) = 950 flex points/ semester
   $2525 - $150 = $2375
   $2375/ 950 = $2.40 real dollars

15. **17 meals/ week + $80**
   5(7) + 3(7) + 2(3) = 62 flex points/ week
   62(15) = 930 flex points/ semester
   $2525 - $80 = $2445
   $2445/ 930 = $2.63 real dollars
Appendix C

Pilot study version 1.

Meal Plan Attractiveness Assessment

Many students are dissatisfied with the current meal plan options Dickinson offers and as such would like to see other meal plans available to them. Below, you will find a list of meal plans offered by institutions comparable to Dickinson. Under each of these possible meal plans, students would be able to eat any meal in any of the dining facilities on campus: the Dining Hall, Union Station, The Quarry, Biblio Café and the Underground. The cost of each daily meal in the Dining Hall would be assigned a fixed number of flex points, two for breakfast, three for lunch and five for dinner. When not used in the Dining Hall, flex points are converted to their respective dollar value. For example, a coffee purchased at the Biblio Café with a price of $1.25 would cost a student 1.25 flex points. Please indicate the attractiveness of each meal plan by circling the corresponding number.

**Option 1:** This meal plan includes any 12 meals per week. If the meals are not used by the end of the week they are forfeited. The meal plan resets to 12 meals each Saturday morning. $200 Declining Balance is also included.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Attractive</td>
<td></td>
<td></td>
<td></td>
<td>Very Attractive</td>
</tr>
</tbody>
</table>

**Option 2:** This meal plan allows student to eat any 225 total meals per semester. $120 Declining Balance is also included.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Attractive</td>
<td></td>
<td></td>
<td></td>
<td>Very Attractive</td>
</tr>
</tbody>
</table>

**Option 3:** This meal plan allows students to eat any 220 total meals per semester. $150 Declining Balance is also included.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Attractive</td>
<td></td>
<td></td>
<td></td>
<td>Very Attractive</td>
</tr>
</tbody>
</table>

**Option 4:** This meal plan includes any 14 meals per week and $100 Declining Balance. Students may use multiple meals per meal period up to their weekly limit. If the meals are not used by the end of the week they are forfeited. The meal plan re-sets to 14 meals each Saturday morning.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Attractive</td>
<td></td>
<td></td>
<td></td>
<td>Very Attractive</td>
</tr>
</tbody>
</table>

**Option 5:** This meal plan includes any 175 meals per semester and $200 Declining Balance.

OVER →
Option 6: This meal plan allows students to eat any 17 meals per week. If meals are not used by the end of the week they are forfeited. This meal plan resets every Saturday morning. $80 Declining Balance is also included.
Meal Plan Attractiveness Assessment

Many students are dissatisfied with the current meal plan options Dickinson offers and as such would like to see other meal plans available to them. Below, you will find a list of meal plans offered by institutions comparable to Dickinson. Under each of these possible meal plans, students would be able to eat any meal in any of the dining facilities on campus: the Dining Hall, Union Station, The Quarry, Biblio Café and the Underground. The cost of each daily meal in the Dining Hall would be assigned a fixed number of flex points, two for breakfast, three for lunch and five for dinner. When not used in the Dining Hall, flex points are converted to their respective dollar value. For example, a coffee purchased at the Biblio Café with a price of $1.25 would cost a student 1.25 flex points. Please indicate the attractiveness of each meal plan by circling the corresponding number.

**Option 1**: This meal plan includes any 14 meals per week and $100 Declining Balance. Students may use multiple meals per meal period up to their weekly limit. If the meals are not used by the end of the week they are forfeited. The meal plan resets to 14 meals each Saturday morning.

1 2 3 4 5
Not Attractive Very Attractive

**Option 2**: This meal plan includes any 175 meals per semester and $200 Declining Balance.

1 2 3 4 5
Not Attractive Very Attractive

**Option 3**: This meal plan allows students to eat any 17 meals per week. If meals are not used by the end of the week they are forfeited. This meal plan resets every Saturday morning. $80 Declining Balance is also included.

```
1 2 3 4 5
Not Attractive Very Attractive
```

**Option 4**: This meal plan includes any 12 meals per week. If the meals are not used by the end of the week they are forfeited. The meal plan resets to 12 meals each Saturday morning. $200 Declining Balance is also included.

```
1 2 3 4 5
Not Attractive Very Attractive
```

OVER
**Option 5**: This meal plan allows students to eat any 225 total meals per semester. $120 Declining Balance is also included.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Attractive</td>
<td>Very Attractive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Option 6**: This meal plan allows students to eat any 220 total meals per semester. $150 Declining Balance is also included.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Attractive</td>
<td>Very Attractive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Many students are dissatisfied with the current meal plan options Dickinson offers and as such would like to see other meal plans available to them. Below, you will find a list of meal plans offered by institutions comparable to Dickinson. Under each of these possible meal plans, students would be able to eat any meal in any of the dining facilities on campus: the Dining Hall, Union Station, The Quarry, Biblio Café and the Underground. The cost of each daily meal in the Dining Hall would be assigned a fixed number of flex points, two for breakfast, three for lunch and five for dinner. When not used in the Dining Hall, flex points are converted to their respective dollar value. For example, a coffee purchased at the Biblio Café with a price of $1.25 would cost a student 1.25 flex points. Please indicate the attractiveness of each meal plan by circling the corresponding number.

**Option 1:** This meal plan includes any 12 meals per week. If the meals are not used by the end of the week they are forfeited. The meal plan resets to 12 meals each Saturday morning. $200 Declining Balance is also included.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Attractive</td>
<td>Very Attractive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Option 2:** This meal plan allows student to eat any 225 total meals per semester. $120 Declining Balance is also included.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Attractive</td>
<td>Very Attractive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Option 3:** This meal plan allows students to eat any 180 total meals per semester. $145 Declining Balance is also included.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Attractive</td>
<td>Very Attractive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Option 4:** This meal plan allows students to eat any 220 total meals per semester. $150 Declining Balance is also included.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Attractive</td>
<td>Very Attractive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Option 5:** This meal plan allows students to eat any 160 total meals per semester. $275 Declining Balance is also included.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Attractive</td>
<td>Very Attractive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OVER →
Option 6: This meal plan includes any 14 meals per week and $100 Declining Balance. Students may use multiple meals per meal period up to their weekly limit. If the meals are not used by the end of the week they are forfeited. The meal plan re-sets to 14 meals each Saturday morning.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not Attractive</td>
<td></td>
<td></td>
<td></td>
<td>Very Attractive</td>
</tr>
</tbody>
</table>

Option 7: This meal plan includes any 15 meals per week and $250 Declining Balance. If meals are not used by the end of the week they are forfeited. This meal plan resets to 15 meals each Saturday morning.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not Attractive</td>
<td></td>
<td></td>
<td></td>
<td>Very Attractive</td>
</tr>
</tbody>
</table>

Option 8: This meal plan includes any 175 meals per semester and $200 Declining Balance.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not Attractive</td>
<td></td>
<td></td>
<td></td>
<td>Very Attractive</td>
</tr>
</tbody>
</table>

Option 9: This meal plan allows students to eat any 17 meals per week. If meals are not used by the end of the week they are forfeited. This meal plan resets every Saturday morning. $80 Declining Balance is also included.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not Attractive</td>
<td></td>
<td></td>
<td></td>
<td>Very Attractive</td>
</tr>
</tbody>
</table>
Study materials.

3 Option condition

Meal Plan Selection Assessment

Many students are dissatisfied with the current meal plan options Dickinson offers and as such would like to see other meal plans available to them. Below, you will find a list of meal plans offered by institutions comparable to Dickinson. Under each of these possible meal plans, students would be able to eat any meal in any of the dining facilities on campus: the Dining Hall, Union Station, The Quarry, Biblio Café and the Underground. The cost of each daily meal in the Dining Hall would be assigned a fixed number of flex points, two for breakfast, three for lunch and five for dinner. When not used in the Dining Hall, flex points are converted to their respective dollar value. For example, a coffee purchased at the Biblio Café with a price of $1.25 would cost a student 1.25 flex points. The cost of all meal plans is the same. Please select your preferred meal plan option.

_____ Option 1: This meal plan includes any 12 meals per week. If the meals are not used by the end of the week they are forfeited. The meal plan resets to 12 meals each Saturday morning. $200 Declining Balance is also included.

_____ Option 2: This meal plan allows students to eat any 17 meals per week. If meals are not used by the end of the week they are forfeited. This meal plan resets every Saturday morning. $80 Declining Balance is also included.

_____ Option 3: This meal plan allows students to eat any 220 total meals per semester. $150 Declining Balance is also included.
Post Decision Questionnaire

Please indicate your response by circling the corresponding numbers.

1. How much do you like the meal plan you decided to pick?
   
   1  2  3  4  5
   Not at all        Very Much

2. How much did you enjoy making the choice?
   
   1  2  3  4  5
   Not at all        Very Much

3. How difficult was this task?
   
   1  2  3  4  5
   Very Easy        Very Difficult

4. How frustrating was this task?
   
   1  2  3  4  5
   Not Frustrating  Very Frustrating

5. How much did you regret not having chosen a different meal plan?
   
   1  2  3  4  5
   Not at all        Very Much

Finally, please indicate which response best describes you.

Age (in years) ________
Current Meal Plan:
   ______ Traditional
   ______ Flex 1
   ______ Flex 2
   ______ Apartment Plan

Class year:
   ______ First Year
   ______ Sophomore
   ______ Junior
   ______ Senior
5 Option Condition

Meal Plan Selection Assessment

Many students are dissatisfied with the current meal plan options Dickinson offers and as such would like to see other meal plans available to them. Below, you will find a list of meal plans offered by institutions comparable to Dickinson. Under each of these possible meal plans, students would be able to eat any meal in any of the dining facilities on campus: the Dining Hall, Union Station, The Quarry, Biblio Café and the Underground. The cost of each daily meal in the Dining Hall would be assigned a fixed number of flex points, two for breakfast, three for lunch and five for dinner. When not used in the Dining Hall, flex points are converted to their respective dollar value. For example, a coffee purchased at the Biblio Café with a price of $1.25 would cost a student 1.25 flex points. The cost of all meal plans is the same. Please select your preferred meal plan option.

____ Option 1: This meal plan includes any 12 meals per week. If the meals are not used by the end of the week they are forfeited. The meal plan resets to 12 meals each Saturday morning. $200 Declining Balance is also included.

____ Option 2: This meal plan allows students to eat any 17 meals per week. If meals are not used by the end of the week they are forfeited. This meal plan resets every Saturday morning. $80 Declining Balance is also included.

____ Option 3: This meal plan allows students to eat any 220 total meals per semester. $150 Declining Balance is also included.

____ Option 4: This meal plan allows students to eat any 180 total meals per semester. $145 Declining Balance is also included.

____ Option 5: This meal plan allows student to eat any 225 total meals per semester. $120 Declining Balance is also included.
Post Decision Questionnaire

Please indicate your response by circling the corresponding numbers.

6. How much do you like the meal plan you decided to pick?
   1  2  3  4  5
   Not at all  Very Much

7. How much did you enjoy making the choice?
   1  2  3  4  5
   Not at all  Very Much

8. How difficult was this task?
   1  2  3  4  5
   Very Easy  Very Difficult

9. How frustrating was this task?
   1  2  3  4  5
   Not Frustrating  Very Frustrating

10. How much did you regret not having chosen a different meal plan?
    1  2  3  4  5
    Not at all  Very Much

Finally, please indicate which response best describes you.

Age (in years) _______

Class year:
   _____ First Year
   _____ Sophomore
   _____ Junior
   _____ Senior

Current Meal Plan:
   _____ Traditional
   _____ Flex 1
   _____ Flex 2
   _____ Apartment Plan
7 Option condition

Meal Plan Selection Assessment

Many students are dissatisfied with the current meal plan options Dickinson offers and as such would like to see other meal plans available to them. Below, you will find a list of meal plans offered by institutions comparable to Dickinson. Under each of these possible meal plans, students would be able to eat any meal in any of the dining facilities on campus: the Dining Hall, Union Station, The Quarry, Biblio Café and the Underground. The cost of each daily meal in the Dining Hall would be assigned a fixed number of flex points, two for breakfast, three for lunch and five for dinner. When not used in the Dining Hall, flex points are converted to their respective dollar value. For example, a coffee purchased at the Biblio Café with a price of $1.25 would cost a student 1.25 flex points. The cost of all meal plans is the same. Please select your preferred meal plan option.

_____ Option 1: This meal plan includes any 12 meals per week. If the meals are not used by the end of the week they are forfeited. The meal plan resets to 12 meals each Saturday morning. $200 Declining Balance is also included.

_____ Option 2: This meal plan allows students to eat any 17 meals per week. If meals are not used by the end of the week they are forfeited. This meal plan resets every Saturday morning. $80 Declining Balance is also included.

_____ Option 3: This meal plan allows students to eat any 220 total meals per semester. $150 Declining Balance is also included.

_____ Option 4: This meal plan allows students to eat any 180 total meals per semester. $145 Declining Balance is also included.

_____ Option 5: This meal plan allows student to eat any 225 total meals per semester. $120 Declining Balance is also included.

_____ Option 6: This meal plan includes any 14 meals per week and $100 Declining Balance. Students may use multiple meals per meal period up to their weekly limit. If the meals are not used by the end of the week they are forfeited. The meal plan re-sets to 14 meals each Saturday morning.

_____ Option 7: This meal plan includes any 15 meals per week and $250 Declining Balance. If meals are not used by the end of the week they are forfeited. This meal plan resets to 15 meals each Saturday morning.
Post Decision Questionnaire

Please indicate your response by circling the corresponding numbers.

11. How much do you like the meal plan you decided to pick?
   1  2  3  4  5
   Not at all  Very Much

12. How much did you enjoy making the choice?
   1  2  3  4  5
   Not at all  Very Much

13. How difficult was this task?
   1  2  3  4  5
   Very Easy  Very Difficult

14. How frustrating was this task?
   1  2  3  4  5
   Not Frustrating  Very Frustrating

15. How much did you regret not having chosen a different meal plan?
   1  2  3  4  5
   Not at all  Very Much

Finally, please indicate which response best describes you.

Age (in years) _______

Class year:
   _____ First Year
   _____ Sophomore
   _____ Junior
   _____ Senior

Current Meal Plan:
   _____ Traditional
   _____ Flex 1
   _____ Flex 2
   _____ Apartment Plan
Meal Plan Selection Assessment

Many students are dissatisfied with the current meal plan options Dickinson offers and as such would like to see other meal plans available to them. Below, you will find a list of meal plans offered by institutions comparable to Dickinson. Under each of these possible meal plans, students would be able to eat any meal in any of the dining facilities on campus: the Dining Hall, Union Station, The Quarry, Biblio Café and the Underground. The cost of each daily meal in the Dining Hall would be assigned a fixed number of flex points, two for breakfast, three for lunch and five for dinner. When not used in the Dining Hall, flex points are converted to their respective dollar value. For example, a coffee purchased at the Biblio Café with a price of $1.25 would cost a student 1.25 flex points. The cost of all meal plans is the same. **Please select your preferred meal plan option.**

_____ **Option 1:** This meal plan includes any 12 meals per week. If the meals are not used by the end of the week they are forfeited. The meal plan resets to 12 meals each Saturday morning. $200 Declining Balance is also included.

_____ **Option 2:** This meal plan allows students to eat any 17 meals per week. If meals are not used by the end of the week they are forfeited. This meal plan resets every Saturday morning. $80 Declining Balance is also included.

_____ **Option 3:** This meal plan allows students to eat any 220 total meals per semester. $150 Declining Balance is also included.

_____ **Option 4:** This meal plan allows students to eat any 180 total meals per semester. $145 Declining Balance is also included.

_____ **Option 5:** This meal plan allows student to eat any 225 total meals per semester. $120 Declining Balance is also included.

_____ **Option 6:** This meal plan includes any 14 meals per week and $100 Declining Balance. Students may use multiple meals per meal period up to their weekly limit. If the meals are not used by the end of the week they are forfeited. The meal plan re-sets to 14 meals each Saturday morning.

_____ **Option 7:** This meal plan includes any 15 meals per week and $250 Declining Balance. If meals are not used by the end of the week they are forfeited. This meal plan resets to 15 meals each Saturday morning.

_____ **Option 8:** This meal plan includes any 175 meals per semester and $200 Declining Balance.

_____ **Option 9:** This meal plan allows students to eat any 160 total meals per semester. $275 Declining Balance is also included.
Post Decision Questionnaire

Please indicate your response by circling the corresponding numbers.

16. How much do you like the meal plan you decided to pick?

   1  2  3  4  5
   Not at all  Very Much

17. How much did you enjoy making the choice?

   1  2  3  4  5
   Not at all  Very Much

18. How difficult was this task?

   1  2  3  4  5
   Very Easy  Very Difficult

19. How frustrating was this task?

   1  2  3  4  5
   Not Frustrating  Very Frustrating

20. How much did you regret not having chosen a different meal plan?

   1  2  3  4  5
   Not at all  Very Much

Finally, please indicate which response best describes you.

Age (in years) ________

Class year:
   ______ First Year
   ______ Sophomore
   ______ Junior
   ______ Senior

Current Meal Plan:
   _____ Traditional
   _____ Flex 1
   _____ Flex 2
   _____ Apartment Plan
Sample script

Introduction Script

[As participants enter the waiting room they will check in with the researchers and be handed a consent form.]

Thank you for coming in today. I'm Taylor/ Diliana and we're conducting this study as part of our honors projects. This study is actually a series of two experiments concerning decision-making behavior.

Each study should take no more than 15 minutes, so the entire study should take about 30 minutes to complete. On the table next to the computer you will find a set of instructions for how to log in to each study. Once you complete the first experiment you can continue on to the second experiment. Also, it is your right to withdraw from the study at any time. I don't think you'll find it necessary to do this, but it is your right.

Please turn off your phones or put them on silent so that you will not be distracted.

You may leave once you've completed both studies.

Does anyone have any questions? [Pause] If you have questions at any point during the study, feel free to come into this room and ask.

If you agree with what we have said please read and sign the consent form and then we will lead you back to a room with a computer.

Participants will then be escorted back to their individual study rooms.

Here are the login instructions [Physically show them the instruction sheet]. Make sure to read them carefully before starting the study. Pay particular attention to the login instructions because the two experiments use different software programs and as a result the login directions will differ.

From this point onward, the study is automated up to the end.
Sample email

Hi _______

I am currently working on my thesis project and I need a little help. I have to collect 200 responses, and I was wondering if you could fill in a short survey for me, please. It takes no more than 5-10 minutes. You would help a lot!

Here is the link to the survey:

http://survey.qualtrics.com/SE/?SID=SV_cFOxm1Lwc7RQxqQ

IMPORTANT NOTE: On the screen where you are asked to pick a Camera there is an important picture. The site might be slow with loading the picture or a red cross might appear. Please, wait for the picture to show and if you see a red cross on the screen, right click on it and select “Show picture”.

Thank you for helping. I truly appreciate!

Best,

Taylor Putnam & Diliana Funtarova