

Broad Bracketing Induces Utilitarian Consumer Decisions

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Acknowledgments

Dan, thanks for opening a new world for me these past 3 years.

Lee, thanks for being my guide.

Abstract

In this digital age, over 2 billion people are making increasingly important financial and health decisions on digital interfaces of computers and mobile devices. Yet we know people fail to have enough self-control to resist temptations time and time again. How can we help people make better decisions in a digital environment? We hypothesize that using broad bracketing to present decisions will increase utilitarian decision making by decreasing the licensing effect. In 2 experiments, we used the context of choosing videos to watch, which we presented in two conditions: a broad or narrow bracket. The broad bracket shows all 7 days on one page whereas the narrow bracket shows each day separately on 7 different pages. Participants chose whether they would choose to watch a hedonic or utilitarian video on each day. In Experiment 1, each day was labelled generically (ie. Day 1, Day 2...etc). Participants in the broad bracketing group chose more utilitarian choices than did those in the narrow bracketing group. To increase relevance, Experiment 2 showed the days of the week instead (ie. Monday-Sunday). Participants in the broad bracketing group chose more utilitarian choices; however this effect was only seen during the weekdays. There was no effect of broad bracketing on the weekends. Findings from these 2 experiments indicate that broad bracketing can help people make better self-control related decisions.

Broad Bracketing Induces Utilitarian Consumer Decisions

Our self-control determines the quality of our everyday decisions. Over time, these decisions add up to significantly influence the trajectory of our lives. However, people consistently fail to exert self-control in times of temptation. How can we help people increase their levels of self-control? In this article, we propose using choice bracketing to present decisions on digital interfaces to increase utilitarian decision making. We explore this mechanism in the context of choosing videos to watch because the accumulated value from watching them is concrete and quantifiable (i.e. the number of facts learned). Based on previous research, we hypothesize that presenting decisions in a broad as opposed to a narrow bracket will lead people to make more utilitarian over hedonic decisions by enhancing their self-control.

Imagine planning to watch either a lowbrow reality TV show or a highbrow educational video for just one day versus every day for an entire week. These two scenarios showcase the same decision but in broad versus narrow choice brackets, which can elicit very different self-control decisions from people (Read, Loewenstein, Rabin, Keren, & Laibson, 2000). This article examines how a choice is visually bracketed on a mobile device can affect peoples' decision making. Specifically, we propose that presenting choices in broad brackets can help people make better self-control decisions in the context of digital interfaces.

Overview of the Effects of Narrow Versus Broad Bracketing

Choice bracketing affects decision making in various ways depending on the scope of the bracket (Read, Loewenstein, Rabin, Keren, & Laibson, 2000). A broad bracket causes people to consider their actions in aggregate while a narrow bracket induce an isolation view of an action. The contrasting nature of a broad and narrow bracket influences peoples' attitude towards risk tolerance (Moher & Koehler, 2010; Thaler, 2004), their judgment (Simonsohn & Gino, 2013),

and their decision making (Read et al., 2000). Moreover, broad bracketing can help people make more ethical decisions because it allows people to examine the consequences of all of their actions at once (Fishbach & Woolley, 2015).

Benartzi and Thaler (1998) and Samuelson (1963) tested a theory on the “fallacy of large numbers” through a coin flip gambling game. The researchers offered people either 1 (narrow bracket) or 100 trials (broad bracket) and found that people were more likely to take the gamble in multiple trials than a single trial. Samuelson (1963) contends wanting to partake in multiple trials of a gamble people did not want with just one trial is irrational.

Moher and Koehler (2010) also ran a similar experiment using a virtual gambling task. Participants were given a certain amount of virtual money for each trial of the task, which they could use to make a risky investment. The narrow bracket group was shown one trial at a time while the broad bracket group was shown three trials at a time. They found that participants were more risk tolerant in the broader bracket and, thus, more likely to make larger investments (Moher & Koehler, 2010).

Effect of narrow bracketing on judgment. Simonsohn and Gino (2013) analyzed the effect of narrow bracketing on the judgment of admissions officers and how it can lead to assessment of applicants. Most admissions officers have had years of experience and, therefore, are able to anticipate a certain expectation of what the outcome from a given pool of applicants should look like. After analyzing interviews by MBA applicants spanning over 10 years, this study found that, on a given day, if the average score for previous applicants showed an increase, the expected score of future applicants on that day decreased. The researchers argued that since admission officers reviewed each applicant in isolation, they were thinking in a narrow bracket and were unwilling to deviate from what they believed to be the expected result from a pool of

applicants. This is because in a narrow bracket, people tend to disregard the effects of the choices they have made in the past or will make in the future (Simonsohn & Gino, 2013).

When making decisions between utilitarian and hedonic options, overcoming temptation is a critical step in being able to make optimal decisions. Myrseth and Fishbach (2009) posit that simply facing the temptation is not enough to be able to act against it. The ability to overcome temptation lies in first identifying a self-control conflict in the first place. They confirmed their hypothesis that presenting a decision in an interrelated versus isolated choice frame can help people identify self-control conflicts. At the time, the researchers did not use the term “choice bracketing”; however, the researchers’ definitions of an interrelated and isolated choice frame directly parallel broad and narrow brackets. Myrseth and Fishbach (2009) devised an experiment in which participants were made to decide how many chips to eat in one sitting. However, all participants had to look at a calendar before making their decisions. In the “narrow frame” group, participants were shown a calendar with clear grid lines surrounding all the days. The current day was clearly marked on the calendar. In the “wide frame”, participants were shown a calendar with no grid marks and no special marking to indicate the current date. Participants in the “narrow frame” consumed more chips than those in the “wide frame” group. If people frame the temptation as one action among many others as opposed to a one-shot opportunity, they are more likely to overcome it. The researchers contend that the narrowly framed calendar induced participants to think that the current date was separate from the rest of the days that month whereas the widely framed calendar did not visually separate the current date.

Choice Bracketing and decision making. Seminal works have explored how bracketing influences decision making behavior in a variety of contexts (eg. Read, Lowenstein, and Rabin 1999). Read and Lowenstein (1995), it was found that broad bracketing leads to people making

more diverse choices, a phenomenon they termed the diversification bias. Read, Lowenstein, and Rabin (1999) discussed the effects of bracketing in other situations, some of which include scheduling, risk tolerance and habit formation. One of their results, which is of particular interest to our present research, was that people considering in broader brackets tend to make higher utility choices when compared to people in a narrower bracket. Broad brackets make the cumulative effects of a combination of choices more salient, whereas in a narrow bracket people consider the consequences of a choice in isolation, which may lead to suboptimal decision making. For example, the damage caused by one cigarette may seem trivial, but assessing the consequences of a lifetime of smoking may lead someone to quit smoking (Read, Lowenstein, & Rabin, 1999).

Another study by Myrseth and Fishbach (2009) shows how choice bracketing affects peoples' self-control related decisions. One of their experiments measured potato chip consumption after all participants were presented with one of two calendar types. In the "narrow frame" group, participants were shown a calendar with clear grid lines surrounding all the days. The current day was clearly marked on the calendar. In the "wide frame", participants were shown a calendar with no grid marks and no special marking to indicate the current date. Participants in the "narrow frame" consumed more chips than those in the "wide frame" group. Myrseth and Fishbach (2009) contend that the narrowly framed calendar induced participants to think that the current date was separate from the rest of the days that month whereas the widely framed calendar did not visually separate the current date. Though the authors did not use the term choice bracketing to describe this phenomenon, the concept directly connects.

Research Goals

As mentioned previously, a broader bracket allows people to consider the collective consequences of their choices, which leads to utility maximization since the collective benefit or cost may greatly outweigh the benefit or cost of a single action (Read, Loewenstein, & Rabin, 1999). People choosing from a broader bracket also tend to perceive time intervals to be shorter, since they are making present and future decisions at the same time. This makes it easier to make higher utility choices for the future because broader brackets put people in a more future-oriented mindset (Read & Loewenstein, 1995). Since broad bracketing helps people think long-term, could broad bracketing help people choose more utilitarian decisions over hedonic ones?

The aim of our research was to further explore the influence of choice bracketing on decision-making in the context of a temptation. In particular, we sought to investigate the effect of bracketing on people's preference for utilitarian versus hedonic choices. We hypothesized that people would make more utilitarian choices in broader brackets and more hedonic choices in narrower brackets.

The novelty of our research lies in the presentation of the broad and narrow brackets and their heightened relevancy to our everyday lives. Specifically, our research presents visual brackets evident in our daily lives: days as well as days of the week. Since the advent of the digital age has led to people spending increasingly more time on their personal devices, our research can have important implications for digital user interface design, user experience research and for increasing our understanding of factors that drive consumer behavior.

Overview of the Experiments

We describe 2 experiments to test our predictions. Experiment 1 establishes that people make more utilitarian choices when a decision is presented for a set of days presented in a broad

bracket as opposed to a narrow bracket. Experiment 2 extended this effect into days of the week (Monday, Tuesday...etc.) but found that there is no effect of bracketing on the weekends.

Together, these studies indicate that broad bracketing can help people make better self-control related decisions.

Experiment 1: Broad Bracketing Across Generic Days

The goal of Experiment 1 was to see whether broad bracketing can induce people to make more utilitarian choices in the context of choosing videos to watch for the next week. Seven generic days (Day1, Day 2..etc.) were either shown all at once as a broad bracket or one at a time per page as a narrow bracket. Participants chose between a fun and educational video for each day. We predicted that people would choose more educational videos in the broad bracket.

Method

Participants. One hundred ninety-nine U.S. participants (mean age = 35.66; 42.71% female) were recruited via Amazon Mechanical Turk in exchange for \$0.30 in compensation. All participants gave informed consent to participate in this study, which was approved by the Duke University Institutional Review Board. Participants were randomly assigned to one of two conditions: the narrow bracket and the broad bracket.

Design and Procedure. Participants were presented with a web-based questionnaire in either the narrow or broad bracket condition. At the beginning of the survey, participants in all groups were presented with the following dilemma that read:

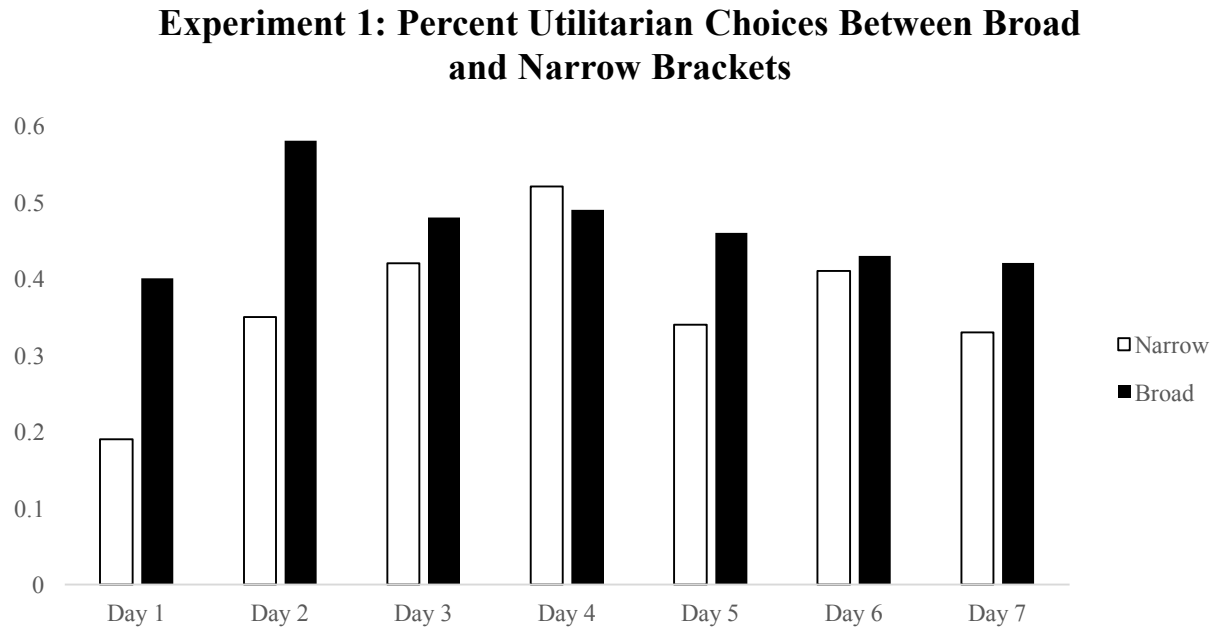
It's 9pm at night. You're pretty tired because it's been a long day. Before you go to sleep, you want to end the day by watching a video. You have a list of educational lectures and tutorials you've been meaning to watch, but you're also tempted to watch something fun instead.

All participants chose between “A fun video” and “An educational video” for seven generically labelled days “Day 1, Day 2...etc.). In the broad bracket, participants saw all 7 boxes for each day into which they would click and drag their video choices. However, in the narrow bracket, participants saw a box for one day at a time per page.

Measures. Our primary measure was the percentage of educational videos chosen by the participants. We coded educational videos to indicate utilitarian choices while fun videos were coded as hedonic. Additionally, we asked people to predict how much they would enjoy their video selections on a 100-point scale, with 0 = “not at all” and 100 = “very much.” We ensured that the slider bar was set at the center mark by default, in order to minimize possible biases that could arise if the slider’s initial placement was too far to either extreme.

Results

A repeated-measures ANOVA showed a significant interaction between the days and bracketing conditions, $F(6, 1182) = 2.33, p < .001$. This effect tells us that the conditions had a different effect on the proportion of utilitarian choices across the 7 days. A subsequent t-test showed that those who made their video decisions under the broad bracket chose a higher proportion of educational videos ($M = .47, SD = .23$) than those who chose under the narrow bracket ($M = .36, SD = .27$); $t = 10.63, p < .001$. When the proportions of utilitarian choices chosen between the broad and narrow brackets are divided by each day, we note the effects of broad bracketing appear strongest in the first two days (see Figure 1.)

Figure 1. Experiment 1: Percent Utilitarian Choices Between Broad and Narrow Brackets

The results indicate that presenting a decision in a broad bracket can help people make better self-control related decisions. In this experiment, we showed generic labels for the different days: Day 1, Day 2, Day 3...etc. However, it is important to determine the effect of bracketing in contexts that are more relevant to our daily lives. When considering future decisions, people naturally tend to think in days of the week. For the next experiment, we presented days of the week (Monday, Tuesday, Wednesday...etc.) as opposed to generic days (Day 1, Day 2, Day 3...etc.).

Experiment 2: Broad and Narrow Bracketing Across Days of the Week

The goal of Experiment 2 was to determine how broad bracketing affects decision-making within the context of a week. In line with our previous results, we predicted that people would choose more utilitarian choices in a broad bracket as opposed to a narrow bracket.

Method

Participants. Two hundred three U.S. participants (mean age = 35.24; 51.50% female) were recruited via Amazon Mechanical Turk in exchange for \$0.30 in compensation. All participants gave informed consent to participate in this study, which was approved by the Duke University Institutional Review Board. Participants were randomly assigned to one of two conditions: the narrow bracket and the broad bracket.

Design and Procedure. For this experiment, we followed the same design used in Experiment 1, save for the labels of the different days. Instead of labeling each day generically (Day 1, Day 2, Day 3...etc.), we presented the days of the week (Monday, Tuesday, Wednesday...etc.). All participants chose between “A fun video” and “An educational video” for all seven days of the week. In the broad bracket, participants saw all 7 boxes for each day of the week into which they would click and drag their video choices. However, in the narrow bracket, participants saw a box for one day of the week at a time. (i.e. Monday, April 15th on the first page, then Tuesday, March 24th on the second...etc.) We purposefully included random dates with the days of the week to prevent inducing a broad bracketed mindset since people may quickly realize they are meant to schedule their videos for the entire week.

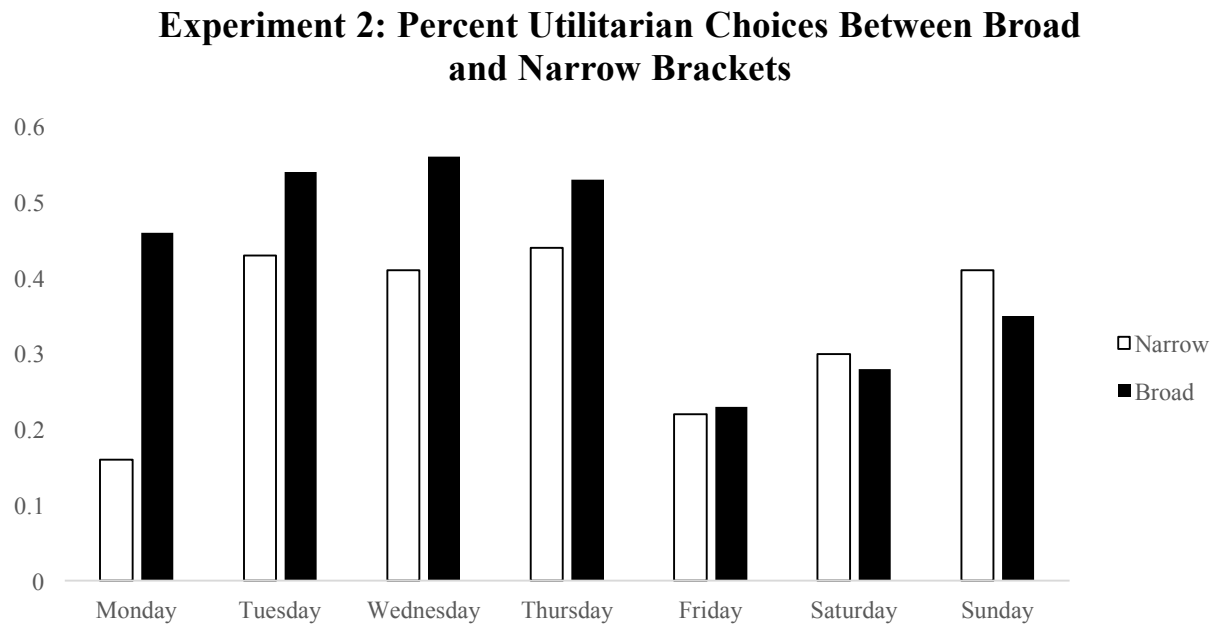
Measures. Our primary measure was the percentage of educational videos chosen by the participants.¹ Like the other experiment, we coded educational videos to indicate utilitarian choices while fun videos were coded as hedonic.

¹ We included additional secondary measures for self-control and cognitive reflection to further explore potential interactions. See the Appendix for more details.

Results

A repeated-measures ANOVA showed a significant interaction between the days of the week and bracketing conditions, $F(6, 1206) = 3.96, p = .001$. This effect tells us that the conditions had a different effect on the proportion of utilitarian choices across the days of the week. A subsequent t-test showed that those who made their video decisions under the broad bracket chose a higher proportion of educational videos ($M = .42, SD = .21$) than those who chose under the narrow bracket ($M = .34, SD = .27$); $t = -2.50, p = .01$).

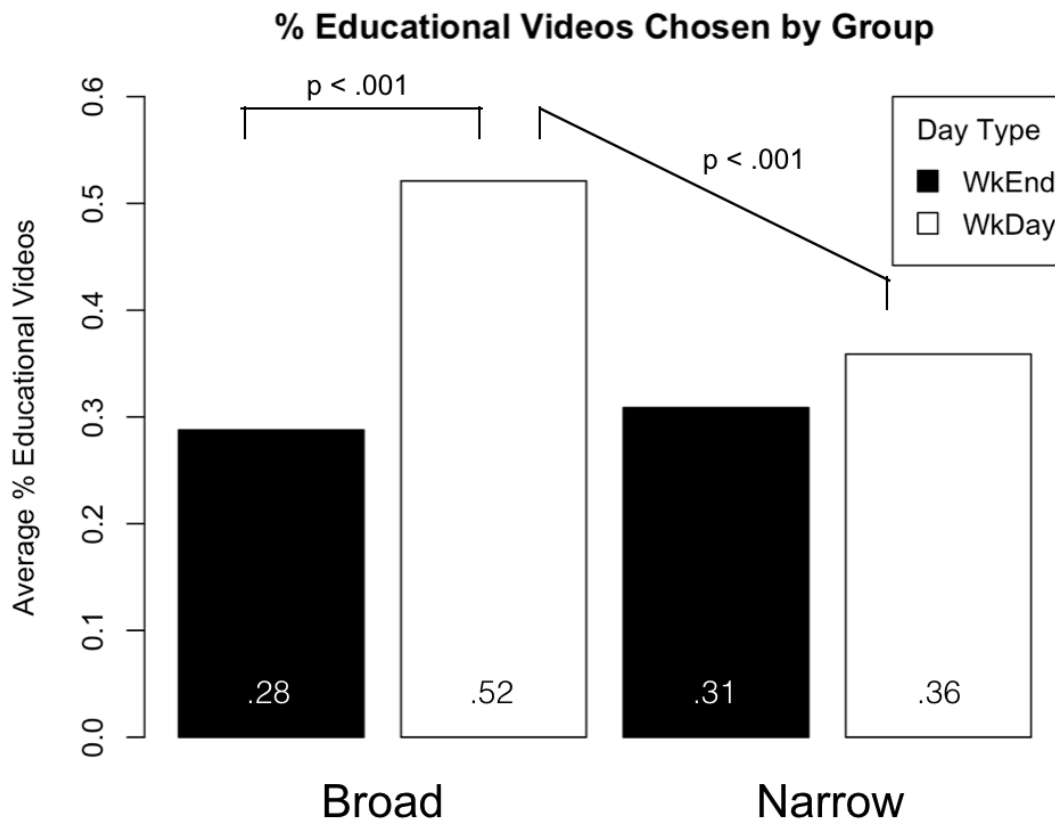
Figure 2. Experiment 2: Percent Utilitarian Choices Between Broad and Narrow Brackets



Exploratory Data Analysis of the Effect of Day Type on Bracketing Effects. The graph for the percentage of utilitarian choices chosen over each day between the broad and narrow bracket indicates what seems to be a significant drop on the weekend, which include Friday, Saturday and Sunday (see Figure 2). Upon first glance, it seems that the effects of bracketing cease on the weekends. We conducted further data analysis to explore this observation.

A repeated-measures ANOVA showed a significant interaction between the type of day and the bracketing condition, $F(1, 201) = 13.97, p < .001$.² This effect indicates that the type of day (weekday vs. weekend) affects utilitarian choices chosen differently across the two bracketing conditions.

Figure 3. Percent Utilitarian Choices Chosen by Group



The broad bracket is significantly more effective on weekdays ($M = .52, SD = .30$) as opposed to the weekend ($M = .29, SD = .26; t = 5.74, p < .001$). In the narrow bracket, there is no significant difference between utilitarian choices chosen on weekdays ($M = .36, SD = .32$) versus the weekend ($M = .31, SD = .31; t = 1.20, p = .23$). In weekends, there is no statistically

² Note: Sphericity could not be determined because the analysis relied on two levels of repeated measures, thus it also cannot be violated. We report from the output in which sphericity was assumed rather than the Greenhouse-geiser output.

significant difference between the broad ($M = .29$, $sd = .26$) and narrow brackets ($M = .31$, $SD = .3$) in utilitarian choices chosen ($t = -.54$, $p = .59$). In weekdays, the broad bracket ($M = .52$, $SD = .30$) elicits more utilitarian choices than that of the narrow bracket ($M = .35$, $SD = .32$; $t = -.54$, $p < .001$). It is interesting to note that the effect of bracketing only appears during the weekdays. This result provides material for further investigation. In line with our hypothesis, we found that people do indeed choose more utilitarian choices under the conditions of broad bracketing as opposed to narrow bracketing.³

Discussion

We show how broad bracketing can increase the number of utilitarian choices made on mobile devices in the context of choosing TV shows to watch. Experiment 1 showed people who were presented with a broad bracket showing all the days at once were more likely to choose utilitarian over hedonic options throughout the days as opposed to those who saw each day one at a time in the narrow bracket. Experiment 2 replicated Experiment 1 by showing the days of the week rather than generic day labels (Day 1, Day 2...etc.). The results showed the same effect of broad over narrow bracketing during the weekdays; however, there was no effect of broad bracketing on the weekend.

When we break down the proportion of hedonic versus utilitarian choices by each of the days and conditions in both experiments, we notice that the difference between the narrow and broad brackets on the first day is the largest compared to the rest of the days. People in the narrow bracket exhibit the smallest proportion of utilitarian choices. As we move onto subsequent days, this difference flattens out. This pattern indicates a potential licensing effect

³ See the Appendix for results on self-control scores, cognitive reflection scores and bracketing.

taking place in peoples' decision making, implicating that broad bracketing may alleviate the licensing effect.

Decisions we make in the past and decisions we plan to make in the future can affect our current decisions by acting as a license. A "licensing effect" occurs when a previous intention to be virtuous increases the likelihood that a subsequent decision will be indulgent (Khan & Dhar, 2006). As a result, the licensing effect leads to indulgent behavior (Inzlicht & Schmeichel, 2012).

A study by Zhong and Mazar (2010) highlights how the licensing effect can lead to subpar subsequent behavior. Mere exposure to an environmentally friendly or "green" product made people act more altruistically afterwards than if they were exposed to a conventional product. However, purchasing a green product made people less likely to act altruistically and more likely to cheat and steal than after purchasing a conventional product. The decision to purchase a green product triggered a licensing effect that gave participants the moral license to act indulgently afterwards. Chandon and Wansink (2007) showed that people are more likely to underestimate calories at fast-food restaurants that claim to be healthy (such as Subway) than when they do not. As a result, people end up eating more calories at "healthier" fast-food restaurants than at regular fast-food restaurants. Choosing to eat at a "healthy" fast-food restaurant triggers a health halo effect that then gives people the license to indulge.

People also take their future decisions as a license as well for indulgent behavior in the present (Khan & Dhar, 2007). In Khan and Dhar's (2007) experiment, one group of participants was told they would be coming into the lab once a week for the next 2 weeks. Their compensation would be a free Blockbuster movie rental for each week. Another group was told to come in for a one-time visit, so they would only get one free movie rental. People in the long-term condition were more likely to choose a lowbrow video because they licensed their future

actions into account. Since they planned to choose a better option later, they allowed themselves to indulge in the present. The repeated-choice condition is akin to a broad bracket while the isolated-choice condition is analogous to a narrow bracket. Given these findings in conjunction with our study's results, we posit that broad bracketing can help people overcome the licensing effect and help them make better self-control related decisions.

Since the effects of broad bracketing shown in our study was demonstrated in one particular context, we suggest future research to extend the current findings into different domains. Other options to explore include but are not limited to decision-making in the domain of food choices, goal-setting, consumer purchases and finances.

In previous research, the effects of bracketing were typically in contexts involving in-the-moment decisions occurring in-person. Our research extends our understanding of the effects of broad bracketing on decision making to a digital context for decisions to be made in the future. Together, our studies suggest that broad bracketing can be used in digital interface design to help people make more utilitarian decisions—at least on the weekdays.

Appendix

- 1.) We included additional secondary measures for self-control and cognitive reflection to further explore potential interactions. We included the 13-question version of the Brief Self Control Scale (BSCS; Tangney, Baumeister, & Boone, 2004), since self-control could be a possible confound when deciding between utilitarian and hedonic choices. The self-control scale was followed by the Cognitive Reflection Test (CRT; Frederick, 2005), which contains three problem-solving questions used to assess whether participants provide thoughtful answers or if they tend to go with their instinct. Moreover, the CRT is correlated with self-control and temporal preferences.
- 2.) Self-Control, Cognitive Reflection and Bracketing:

To explore how different levels of a person's self-control would affect their choices, we administered the Brief Self-Control Scale to participants (BSCS; Tangney, Baumeister, & Boone, 2004). A multiple linear regression was calculated to predict the percentage of educational videos chosen based on the type of bracket, participants' self-control scores and the interaction between the two factors. The results of the regression indicated the three predictors explained 4.94% of the variance ($R^2 = .05$, $F(3, 196) = 3.40$, $p = .02$). It was found that self-control scores significantly predicted the percentage of educational videos chosen over fun videos ($\beta = .01$, $p = .05$). However, the coefficient .01 denotes a very weak relationship, so the result is not meaningful.

Participants also took the Cognitive Reflection Test (CRT; Frederick, 2005). We ran another multiple linear regression to predict the percentage of educational videos chosen based on the type of bracket, participants' score on the Cognitive Reflection

Test and the interaction between the two factors. The three predictors explained 3.57% of the variance; however, the model was not significant ($R^2 = .04$, $F(3, 196) = 2.41$, $p = .07$). The type of bracket significantly predicted the percentage of educational videos chosen over fun videos ($\beta = .12$, $p = .03$). The choice share of educational videos is 12.06% higher in the broad bracket than in the narrow bracket.

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