Effect of Anger and Anxiety on Choice in Self-Control Dilemmas

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Negative emotions can either facilitate or impair self-control depending on the match between the goals activated by an emotion and the benefits associated with the options in the choice set. Specifically, anger boosts self-control when control facilitates dominance whereas anxiety boosts self-control when control facilitates security.

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Self-Control in Consumption: Novel Antecedents and Consequences
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Paper #1: Effect of Anger and Anxiety on Choice in Self-Control Dilemmas
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Paper #2: Bringing Ulysses to Scale: A Tale of Persistence, Spillovers and Customer Loyalty
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Paper #3: Waste Aversion for Virtue versus Vice
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Paper #4: Pleasure, Guilt and Regret in Consumption: Revisiting the Vice-Virtue Categorization in Theories of Self-Control
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SESSION OVERVIEW
Most theories of self-control in consumption characterize self-control as an effortful process requiring cognitive resources or willpower (e.g., Baumeister et al. 1998; Shiv and Fedorikhin 1999, Baumer et al.1998, Hoch and Loewenstein 1991). According to these theories, consumers in general want to exert self-control but often lack the necessary resources to do so, as epitomized in the Biblical saying “The spirit is willing but the flesh is weak.” The proposed session explores factors beyond the traditional three factors lack of cognitive resources, willpower, and volition, in affecting the antecedents and consequences of exerting self-control.

The first paper by Koley, Warren, and Ramanathan looks at how experienced emotions influence consumers’ propensity to exert self-control. The authors argue that anxiety activates the goal to seek security (Raghunathan, Pham, and Corfman 2006). As a consequence, experiencing anxiety facilitates exertion of self-control when doing so promotes a security goal. Anger, in contrast, activates a goal to seek dominance (Peterson and Harmon-Jones 2012), and facilitates self-control when doing so promotes that goal.

The second paper by Mochon, Schwartz, and Ariely investigates the strategies that people use to constrain unhealthy consumption. In a longitudinal field experiment, grocery shoppers voluntarily committed to a 6-month contract that led to increase in the share of virtues and decreases in the share of vices. This strategy emerged over time, and persisted for 6-months after the intervention ended. Furthermore, there were no signs of negative spillovers on exercising self-control. Furthermore, not exerting self-control can lead to wasting or not exerting self-control on wasting is explored. Specifically, we predict that anger would impair self-control as a lack of cognitive resources or willpower. The findings presented suggest that emotions and self-image consistency can drive self-control. Furthermore, not exerting self-control can lead to wasting. Lastly, the very definition and measure of self-control as choice share of vices may have to be revised. The papers encourage session attendees to critically examine current theories of self-control, and to explore the implications for public policy aimed at helping consumers to exert self-control.

Effect of Anger and Anxiety on Choice in Self-Control Dilemmas

EXTENDED ABSTRACT
Research suggests that negative emotions generally harm self-control. For example, distressed consumers eat more junk food (Gark, Wansink, & Inman 2007), and save less money (Cryder, Lerner, Gross, & Dahl 2008). In contrast, we show that negative emotions can either facilitate or impair self-control depending on the match between the goals activated by the emotion and the benefits associated with the virtuous and gratifying options in the choice set.

A self-control dilemma involves a choice between virtuous options that facilitate long-term goals (e.g., saving money) and gratifying options that facilitates immediate desires (e.g., buying something fun; Tice & Baumeister, 1997). Importantly, these virtuous and gratifying options can be chosen for different benefits (i.e., to attain different goals). For example, consumers may choose to save money in order to accumulate wealth and power (a dominance goal), or to achieve a secure retirement (a security goal). Similarly, gratifying by buying an unnecessary pair of sunglasses, may achieve different immediate benefits, such as eye protection (a security goal) or signaling one’s status (a dominance goal).

Furthermore, just as self-control options are associated with different goals, negative emotions too activate different goals. Negative emotions, which occur in response to threats or obstacles in the environment, activate goals that enable individuals to cope with the threat or the obstacle (Lench, Flore, and Bench 2011). For example, anxiety signals a risk of facing punishing consequences in the future, and therefore activates the goal to seek security (Raghunathan, Pham, and Corfman 2006). In contrast, anger signals that something or someone is obstructing the active pursuit of a reward, and thus activates the goal to seek dominance (Peterson and Harmon-Jones 2012).

These goals activated by emotions in-turn increase choice for options that are consistent with the activated goal (van Osselaer & Janiszewski, 2012), even in unrelated contexts (Lerner & Keltner, 2000). Thus, the effect of any negative emotion on self-control should depend on the match between the goal activated by the emotion and the goals linked to the gratifying and virtuous options in the choice set. Specifically, we predict that anger would impair self-control when the virtuous-option moves the consumer towards a security goal rather than a dominance goal (e.g., saving for a rainy day rather than saving for status). Conversely, anxiety would impair self-control when the virtuous-option facilitates a dominance rather
than a security goal (e.g., saving for status rather than saving for a rainy day).

We test these predictions across four experiments. In study 1 we looked at the effect of anger and anxiety on self-control while manipulating the benefit associated with either the virtuous-option or the gratifying-option in the choice set. The study used a 3 (emotion: anxiety, anger, control) x 2 (benefit provided by: gratifying-option, virtuous-option) x 2 (benefit: dominance, security) between-subject design. Participants ($N=352$) first viewed a pre-tested video that induced anger, anxiety, or no emotion (control). As part of an ostensibly separate study, they were subsequently asked to choose between a relatively virtuous gift-card to a supermarket and a more gratifying gift-card for a pair of Ray-Ban sunglasses. The effect of the emotion manipulation on self-control depended on which gift-card was associated with an additional benefit as well as whether that benefit promised dominance or security (three-way interaction: $p < .01$). Angry (anxious) participants were more (less) likely to gratify when the sunglasses were described as “having a reputation as the most prestigious brand” than when they were described as “having a reputation for offering the best protection from damaging UV-rays” ($ps < .10$). Conversely, angry (anxious) participants were less (more) likely to gratify when the virtuous-option was described as “making individuals appear more confident and powerful” than when it was described as “making individuals more secure” ($ps < .10$).

Study 2 replicated study 1 using a different choice task and emotion manipulation. The study used a 3 (emotion: anxiety, anger, control) x 3 (benefit: dominance, security, neutral) between-subject design. Participants wrote about events that make them feel angry, anxious, or that occurred recently (control condition). As an ostensibly separate study, they next chose between looking at entertaining cartoons (gratifying-option) and reading an article to prepare for job-interviews (virtuous option). Again, the effect of the emotion manipulation depended on whether the virtuous-job-interview article was associated with dominance benefits (e.g., it will help you find a prestigious job) or security benefits (e.g., it will help you find a secure job; interaction: $p < .01$). As predicted, angry (anxious) participants were more likely to choose the job-interview article over the entertaining article when the article was associated with dominance (security) rather than security (dominance) benefits ($ps < .05$).

Studies 3a and 3b use the causal chain approach (Spencer, Zanna, & Fang, 2005) to provide process evidence. Study 3a used a lexical decision task (Fishbach, Friedman, and Kruglanski 2003) to demonstrate that anger activates the goal of dominance, whereas anxiety activates the goal of security. After completing the emotion manipulation described in study 2, participants judged whether a series of letter-strings were words or non-words as quickly as they could. Consistent with our prediction, angry participants were quicker at identifying words related to dominance (e.g., authority, prestige) than security (e.g., protect, insurance), whereas anxious participants were quicker at identifying words related to security than dominance (interaction: $p < .05$).

Study 3b used a goal priming procedure to examine the second step in the causal chain: that individuals with an active dominance (security) goal would exert greater self-control when virtuous behavior benefits a consistent rather than inconsistent goal. Participants unscrambled words to create valid sentences (Bargh and Chartrand 2000). Depending on the goal prime condition, some of the words were either related to dominance (e.g., prestige, authority) or security (e.g., protect, insurance). Participants were subsequently presented with the same choice as in study 2. As predicted, participants primed with a dominance (security) goal were more likely to choose the job-interview article over the entertaining article when the article was associated with dominance (security) rather than security (dominance) benefits (interaction: $p < .05$).

**Bringing Ulysses to Scale: A Tale of Persistence, Spillovers and Customer Loyalty**

**EXTENDED ABSTRACT**

Financial incentive programs are an increasingly attractive way to improve health. While research from the behavioral sciences shows that many such interventions effectively improve a specific health behavior while in place, less is known about the underlying strategies people use to achieve their goals and their extended effects on behavior. These effects are essential to understand when bringing behavioral science insights to scale. If an intervention has positive effects on a targeted behavior, but leads to negative consequences once the program ends, or shows negative spillover effects in other domains, it may not be sustainable.

We address this question by examining the behavioral strategies and extended effects of a penalty-based behavioral health intervention: a voluntary 6-month commitment contract that significantly improved the health of grocery purchases (Schwartz et al. 2014). Member households, who were already receiving a 25% discount on healthy (virtuous) food grocery purchases, put their discount on the line by precommitting to a 5-percentage-point increase above their household healthy food baseline. Those who met the goal kept their discount; those who did not forfeited it. Participants were free to choose any strategy to meet this goal. For example, they could increase the purchase of virtuous items like fruit and vegetables, decrease the purchase of vice items or some combination of both. The results showed that over time, households were best able to meet their and maintain their goal with a strategy that balanced virtue and vice.

Since this precommitment field experiment was run within a comprehensive health rewards program, we could examine the commitment device’s strategic impact beyond the specific time period and targeted behavior (nutrition). Specifically, we examined the penalty effect’s persistence once it was removed, whether it lead to negative spillover effects while in place (i.e., healthier nutrition = less exercise) and, finally, the impact of the penalty on customer loyalty and engagement.

Persistence: Consistent with the persistence prediction, the committed group continued to make healthier grocery purchases during each of the 6-months in the post-intervention period ($β= 2.84, SE = .95, p < .01$). Persistence was strongest for the most loyal customers, as well as those who had the biggest discount on the line, thus demonstrating that penalty-based incentives can be catalysts to promoting long-term healthy change.

Spillovers: We see no evidence of negative spillover effects, especially as households had to give up some vices in order to meet their goal. Committed households exercised slightly more (though not significantly) than control households ($β=.07, SE=.05, n.s.$). Interestingly, there was a significant positive effect on exercise when examining participants who had put the most money on the line during the commitment period, ($β=.23, SE=.07, p<.01$). Our results reinforce the value of incentives as a tool for improving health, by suggesting that they do not lead to negative consequences in other domains, and may even lead to positive spillovers for some.

Loyalty effects: While penalty-only commitment contracts may improve targeted health behaviors, this may come at the cost of customer loyalty—a trade-off many firms are unwilling to make. We test the effect of the intervention on customer loyalty by examining involvement with the health rewards program during the year after the
commitment contract ended. Committed households showed a positive (though non-significant) change in loyalty status (our measure of involvement) during the year after the intervention ended ($\beta=.07$, SE=.12, n.s.). This is an important finding, because most committed households forfeited their discount at least once, which could have resulted in backlash. Consistent with this finding, the results of a follow-up survey further suggested that committed households did not blame the firm for failures. Indeed, 68% assigned more blame to themselves than to the firm for failing (only 15% assigned more blame to the firm). This suggests that consumers took responsibility for their own actions, and consequently for their own failures, which mitigated any negative feelings towards the firm.

Taken together, these results highlight the potential for insights from the behavioral sciences to be implemented on a large scale basis, and that some concerns over negative spillovers and consumer backlash may be overstated.

**Waste Aversion for Virtue versus Vice**

**EXTENDED ABSTRACT**

Consumers are averse to wasting, and like to maximize the use of what they pay for (Arkes 1996; Bolton and Alba 2012). Yet, waste of goods still abounds. Nearly one-third of food produced for human consumption is wasted globally, which amounts to the economic loss of $750 billion per year (FAO 2015). The question of why people waste, despite their inclination to be averse to wasting, is an important problem which has not been explored much (Porpino 2016). In this research, we answer this question of why consumers waste by exploring how they respond to wasting of virtues and vices differently in the context of food waste.

We propose that consumers relax their tendency to be averse to wasting when consuming makes them feel as guilty as does wasting. When does that happen? Past research has shown that there is a difference in how much guilt is elicited when consuming virtues versus vices. The distinction between virtues and vices is characterized by the intertemporal conflict consumers face in choosing between tempting immediate pleasures (e.g., tasty but unhealthy food) and long-term future benefits (e.g., less tasty but healthy food). In general, choosing virtues is viewed as normatively good (Rook 1987), whereas choosing vices induces guilt (Lascu 1991; Ramanathan and Williams 2007).

Importantly, the guilt induced by consuming a vice pulls one’s consumption decision in the direction towards wasting the vice. We propose that relative strength of waste-guilt compared to consumption-guilt determines one’s decision to waste or not. Specifically, we predict that for vices, consumers would feel guilty when wasting as compared to consuming, and thus, they would be more likely to save food from being wasted (i.e., demonstrating the expected pattern of waste aversion). On the other hand, we predict that for vices, consumers would not feel guiltier when wasting as compared to consuming, and thus, they would be less likely to save food from being wasted (i.e., no pattern of waste aversion). Across three studies, we test this hypothesis and demonstrate that one of the reasons why people waste may be because consuming feels as guilty as wasting.

A pilot study ($N=87$) we conducted confirmed our argument related to guilt; for virtues, consuming felt less guilty than wasting ($F(1,83)=4.60, p=.03$) whereas for vices, consuming felt as guilty as wasting.

In the first study, participants ($N=119$) were randomly assigned to one of the two conditions (virtue vs. vice), and asked to imagine that they were at a chocolate-tasting event. They read a description of a chocolate that either framed the chocolate as healthy (virtue) or tasty (vice; Mishra and Mishra 2011). Participants were told that they are last people at the event and the organizer of the event asked them to take some left-over chocolates with them, otherwise, left-overs will be thrown away and wasted. Participants indicated how guilty they would feel if they leave chocolates (therefore wasted) and how likely they are to take some chocolates with them (to prevent from being wasted) on a 7-point scale. As predicted, wasting virtue-framed chocolates ($M=5.93$) felt guiltier than wasting vice-framed chocolates ($M=5.28$; $F(1,117)=4.77$, $p=.031$), and participants were more likely to save virtue-framed chocolate ($M=6.35$) than vice-framed chocolates ($M=5.95$; $F(1,117)=4.16$, $p=.044$) from being wasted. A bootstrap analysis revealed a significant mediation by guilt ($CI_{lower-bound}=.04, CI_{upper-bound}=.40$).

In study 2, we included a control condition wherein the food is not wasted in order to demonstrate that waste aversion is observed for virtues, but not for vices. The study was a 2 x 2 (waste vs. waste-not x framing: virtue vs. vice) between-subjects design and the same chocolate-tasting scenario from the first study was used. Importantly, participants ($N=277$) were told that left-over chocolates would be either thrown away and wasted (waste condition) or given away to other people at the event (waste-not condition). Participants were asked to indicate how likely they are to take some chocolates with them on a 7-point scale. Consistent with our predictions, for virtue-framed chocolates, participants were more likely to take some chocolates with them when they were to be wasted ($M=6.28$) than not ($M=5.53$; $F(1,273)=8.39$, $p=.004$), showing the expected pattern of waste aversion. However, there was no difference in how likely participants were to take some vice-framed chocolates when chocolates were to be wasted versus not ($p>.97$).

In study 3, we replicate our findings from study 2 by employing a real measure of waste aversion. Participants ($N=198$) were randomly assigned to one of the four conditions (waste vs. waste-not x framing: virtue vs. vice), and read a description of lemon drops that were framed as either vitamin-c supplements (virtue) or candies (vice). A cup holding 80 lemon drops was placed in front of participants. To be consistent with the cover story of evaluating lemon drops, participants answered two questions on color and shape of the lemon drops. Afterward, an experimenter came in and told them that they were last people for the study, and they can take some lemon drops with them if they want to, otherwise lemon drops will be thrown away and wasted (waste condition) or given away to other people in the lab (waste-not condition). Then the experimenter left the room to get an exit sign-up sheet to give some time for participants to take lemon drops. The number of lemon drops taken served as our main dependent variable. Consistent with the results from study 2, participants took more virtue-framed lemon drops when they were to be wasted ($M=5.53$) than not ($M=5.17$; $F(1,194)=7.36$, $p=.007$). However, participants did not take more vice-framed lemon drops when they were to be wasted versus not ($p=.2$).

Across three studies, we demonstrate that consumers show waste aversion for virtues but not for vices because wasting virtues makes them feel guiltier than consuming them, a pattern that does not hold for vices.

**Pleasure, Guilt and Regret in Consumption: Revisiting the Vice-Virtue Categorization in Theories of Self-Control**

**EXTENDED ABSTRACT**

Self-control problems are often characterized as intertemporally inconsistent preferences (Ainslie 1975; Loewenstein and Prelec 1992), where a consumer prefers the immediate consumption
of a good to its consumption in the future, but as time passes by she regrets having consumed the good in the past. Based on intertemporally inconsistent preferences, Wertenbroch (1998) introduced a formal definition of vice and virtues: A product X is a vice relative to product Y, and Y is a virtue relative to X, if X is preferred now rather than later, and Y is preferred later rather than now.

We argue that Wertenbroch’s (1998) definition in combination with the corollary that vices are hedonic and virtues are utilitarian has led to the development of theories of self-control that postulate that enjoyment derived from consumption is always accompanied by feelings of guilt and regret. We show this by reviewing the self-control literature, and propose a change to the definition of vice-consumption that recognizes excessive consumption rather than hedonics as its defining characteristic.

Wertenbroch’s definition was highly influential, the vice-virtue distinction has been adopted in the literature on self-control in social psychology and consumer behavior (a comprehensive review of self-control papers published in JEP:G, JPSP, Psych Science, OBHDP, JCR, JM, JMR, Marketing Science, and Marketing Letters from 1995 to 2016 shows that over 70% use the vice-virtue distinction). In the typical self-control experiment (e.g., Baumeister et al. 1998; Shiv and Fedorikhin 1999), participants are given a choice between a vice (e.g., a piece of chocolate cake) and a virtue food (e.g., a fruit salad). Choice shares depend as the variable, where higher shares of the vice are interpreted as a relative lack of self-control. In fewer instances (e.g., Coelho do Vale et al. 2008; Campbell and Mohr 2011), self-control is measured by the absolute amount of vices chosen or consumed.

Khan, Dhar and Wertenbroch (2005, p. 20) postulated: “…by Wertenbroch’s (1998) formal definition, hedonic goods could be characterized as vices and utilitarian goods as virtues in a direct comparison with each other.” (cf. also Alba and Williams 2013; Milkman et al. 2008, 2010; O’Curry and Strahilevitz 2001; Read et al. 1999). According to this corollary, vice products are tempting, elicit more affective responses, and provide for more experiential consumption, fun, pleasure, and excitement than virtue products do. Virtues, in contrast, are primarily instrumental and mainly purchased and consumed on the basis of their functional aspects, that is they promote health and in case of durables efficiency. The idea that self-control conflicts can be characterized as choosing between hedonic and utilitarian consumption opportunities is also present in other theories of self-control, such as the conflict of want versus should selves (Bauman et al. 1998), desire versus willpower (Hoch and Loewenstein 1991), heart versus mind (Shiv and Fedorikhin 1999), and enjoyment versus control (Stroebe et al. 2012).

If vices = hedonic and virtues = utilitarian, pleasure derived from hedonic consumption must be accompanied by feelings of regret because by definition vices are preferred now rather than later, and virtues are preferred later rather than now. Consequently, the consumption of vices will necessarily be regretted at a later stage (Baumeister 2002; Read et al. 1999) and induce feelings of guilt (Kivetz and Simonson 2002). Enjoyment from immediate consumption will be tainted by feelings of guilt and anticipated regret, and post-consumption enjoyment (e.g., memories) will be thwarted by experienced regret. The more enjoyment is derived from hedonic consumption, the more guilt and regret will be anticipated and experienced. So, according to current theories of self-control, the self-disciplined consumer lives a healthy life devoid of enjoyment.

Clearly, this is an incorrect depiction of hedonic consumption. Many people seem to enjoy consuming products without being plagued by feelings of guilt and regret. The consumption of any product, whether hedonic or utilitarian, may be harmless in moderation. In excess, however, consumption becomes problematic and perilous. Pizza for example is typically considered a vice/is per se not bad for one’s health. Millions of Italians eat it several times a week, and they belong to the slimmest people in Europe. Even for addictive and strictly toxic substances such as cigarettes, consumption amount linearly determines health damages (Bjartveit and Tverdal 2005), so a cigarette a day is much less damaging than a pack a day. Likewise the consumption of so-called virtues can be harmful when consumed in excess. Fruitarianism, for example, a diet consisting exclusively of eating fruits, is dangerous and may cause nutritional deficiencies in protein, calcium, vitamins D and B. The deficiency of some of these nutrients can cause severe and irreversible damage, especially to the brain and nervous system (https://en.wikipedia.org/wiki/Fruitarianism). Our argument also holds for vices and virtues other than foods. Spending time with friends and family can be a virtue unless done in excess. Working is a virtue unless done in excess. Praying, running, eating, sleeping, having sex, , any activity is harmless or even beneficial in moderation but perilous in excess.

Realizing that excessive consumption is not hedonics is the defining characteristic of vices leads to a number of straightforward but fundamental implications. First, the definition of vices needs to include consumption amount as its defining characteristic. Second, tests of self-control theories should use consumption amount rather than choice share of vices dependent variable. Third, moral licensing effects (justifying future consumption of vices by past consumption of virtues) rely to a large extent on the binary classification of virtue-versus-vice-consumption. When consumption amount a continuous variable is the defining characteristic, however, moral licensing is much harder to accomplish as it is difficult to define the cutoff of consumption amount at which licensing is psychologically feasible. Finally, the most important implication concerns consumer welfare. Consumers can enjoy hedonic consumption without being plagued by feelings of guilt and regret as long as they consume with moderation. Indulgence is not a matter of too much enjoyment but of too much consumption. Consequently, consumers can exert self-control without depriving themselves of enjoyment derived from consumption (cf., Cornil and Chandon 2015).

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