

# Really Rewarding Rewards: Strategic Licensing in Long-Term Healthy Food Consumption

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Licensing is a well-documented form of justifying individual indulgent choices, but less is known about how licensing affects food decision-making *patterns* over time. Accordingly, we examine whether consumers incorporate licensing strategically and deliberately in their long-term consumption patterns and identify reward programs as a context in which strategic licensing is likely to occur. We propose that members with lower-calorie consumption patterns strategically indulge more on reward purchase occasions, and that forethought is required for such an effect to occur. A longitudinal study analyzing 272,677 real food purchases made by 7,828 consumers over a 14-month period provides striking evidence of our key proposition. An exploration of the inter-purchase time-related aspect of purchase acceleration suggests that forethought on behalf of consumers is necessary for strategic licensing to occur. A subsequent experimental study ( $N = 605$ ) comprising five consecutive choice occasions provides additional evidence of forethought by demonstrating that strategic licensing occurs only when expected (but not windfall reward) occasions are involved, and by showing that anticipated negative affect for *not* indulging is the driving mechanism. We conclude with a discussion of the implications of our results for consumers, managers, and public policy makers.

*Keywords:* licensing, rewards programs, indulgent consumption, food decision making, purchase patterns, self-control

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3 The visceral appeal of such foods as pizza, cookies, and ice cream is incredibly powerful  
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5 in the moment even as more virtuous choices that serve longer-term health goals are viewed as  
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7 the appropriate default (Giner-Sorolla 2001; Hoch and Loewenstein 1991), leading consumers to  
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9 face frequent self-control dilemmas. For most consumers, life does not consist only of  
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11 indulgence or only of restraint, but rather of a blending of the two. Therefore, an understanding  
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13 of how consumers trade off more indulgent and prudent behaviors over time is crucial.  
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17 Important findings from prior food decision-making research demonstrate that vice  
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19 options are often particularly likely to be chosen when the decision context allows consumers to  
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21 justify indulgence (Okada 2005). One effective way of justifying indulgent choices is licensing  
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23 or using a prior virtuous act as an excuse to carry out indulgent behavior (Hui, Bradlow, and  
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25 Fader 2009; Khan and Dhar 2006; Prinsen, Evers, and de Ridder 2016). For example, consumers  
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27 might feel that they deserve a burger and fries after a hard day's work. Fortunately, choosing a  
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29 vice option over a more virtuous option, seen individually, does not have more than negligible  
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31 negative consequences for most consumers. Having ice cream on one single occasion will likely  
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33 do no harm. Unfortunately, having ice cream every day potentially will, which leads Myrseth  
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35 and Fishbach (2009, 247) to refer to individual vice-virtue tradeoffs as "epsilon cost temptation"  
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37 situations in which negative consequences of indulgence are trivially small but potentially severe  
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39 in the case of repeated consumption. In line with this notion, consumption *patterns* have been  
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41 identified as major contributors to the obesity crisis (Khare and Inman 2006; Ma, Ailawadi, and  
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43 Grewal 2013; Seiders and Petty 2004). Despite this recognized importance, a general research  
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45 emphasis on such patterns of behavior is lacking.  
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51 Against this backdrop, one interesting question related to licensing remains largely  
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53 unanswered, namely whether it only occurs relatively spontaneously within narrow time  
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3 horizons, or whether consumers incorporate it strategically in their long-term consumption  
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5 patterns. When adopting a long-term perspective, it becomes apparent that consumers with active  
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7 contradictory goals need to find a *balance* in their consumption patterns between situations in  
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9 which indulgence is acceptable and situations in which restraint is warranted (Dhar and  
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11 Simonson 1999; Fishbach and Dhar 2005; Laran and Janiszewski 2009). However, such a  
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13 balance is not so easy to strike. On the one hand, too frequent indulgence provides continued  
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15 pleasure but may contribute to health-related problems in the long run. On the other hand, while  
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17 consumers may be able to muster the self-control to choose a virtue in a given situation,  
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19 continual hyperopic self-denial of vices may lead to backfire effects (Cochran and Tesser 1996;  
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21 Cornil and Chandon 2016; Haws and Poyner 2008; Kivetz and Keinan 2006). An intriguing  
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23 question to ask, then, is whether and how consumers utilize licensing to balance the consumption  
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25 of vice and virtue in the long run, especially those following an overall healthy diet.  
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31 In response to this gap in the literature, we turn to an examination of what we refer to as  
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33 *strategic licensing*, a functional form of licensing designed to find a healthy balance of vice and  
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35 virtue over time in a way that is both rewarding in terms of overall well-being and sustainable for  
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37 consumers. The goals of the present research are (1) to identify and characterize a specific form  
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39 of strategic licensing in consumers' long-term food consumption patterns, one that is based on  
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41 systematically allowing oneself to indulge in reward-redemption situations in the realm of  
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43 reward programs, (2) to document that not all consumers engage in strategic licensing to the  
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45 same extent and therefore identify a critical moderator of strategic licensing, and (3) to  
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47 demonstrate the forethought essential to strategic licensing, highlighting the importance of the  
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49 role of anticipated negative affect *from missing out* on a particularly rewarding occasion.  
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3 To fulfill our objectives, we employ a multi-method approach consisting of a field study  
4 and an experimental study. The field study examines real customer purchases over a long period  
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6 of time to shed light on the strategic licensing behaviors and explore the inter-purchase time-  
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8 related aspect of purchase acceleration to illuminate the strategic nature of our proposed  
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10 licensing effect. Specifically, we analyze longitudinal data on food orders of customers of a U.S.  
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12 based restaurant chain operating 200+ stores in more than 25 U.S. states (including 272,677  
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14 purchases, of which over 45,000 were reward purchases, across 7,828 customers over a 14-  
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16 month period) from consumers enrolled in a rewards program to provide robust support for our  
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18 proposed strategic licensing behavior. We then conduct an online experiment (N=605) comprised  
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20 of five choice occasions to provide additional support for the strategic licensing effect while  
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22 further demonstrating that the forethought afforded by a reward occasion is essential in  
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24 illuminating the underlying process. Together, we find that overall healthy-eating consumers  
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26 indulge too—but more strategically and deliberately by licensing themselves to indulge  
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28 selectively on reward redemption occasions but not on other ones. Strategic licensing allows this  
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30 consumer type to maximize the benefits of their rewards through indulgence in such a rewarding  
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32 way that it compensates for systematic restraint in the more frequent non-reward occasions.  
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40 Our research provides striking evidence for a specific long-term behavior based on  
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42 licensing that is observable in the real world, adding important new insights into how consumers  
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44 make real, interrelated food decisions over time and the role that rewards programs play in  
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46 shaping these patterns. As such, our findings offer numerous insights for theory, consumers and  
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48 managers related to understanding the dynamics of vice-virtue decision-making over time,  
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50 contributing insight into licensing, the role of anticipated negative affect for *not* indulging , and  
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3 reward program effects. Most notably, we suggest that observed indulgent behavior on a single  
4 occasion may be part of an overarching strategy geared towards virtue rather than vice.  
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## 10 LICENSING INDULGENT CONSUMPTION

### 11 12 13 14 Licensing in Single and Dual Choice Situations

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19 Khan and Dhar (2006, 259) demonstrated in a consumer context that prior commitment to  
20 a virtuous act leads to more hedonic subsequent choice via a boost in self-concept, a process the  
21 authors described as “largely nonconscious”. Subsequent research further documents such  
22 licensing behavior. For example, in two studies involving real purchase data, Karmarkar and  
23 Bollinger (2015) find that bringing their own reusable bags leads consumers to more indulgent  
24 choices, and Hui, Bradlow, and Fader (2009) demonstrate that consumers shopping in store  
25 zones that offer virtue categories are more likely to proceed to zones offering vice categories.  
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35 In recent years, a growing body of literature has argued for a more conscious,  
36 justification-based form of licensing that at least partly resolves the conflict between competing  
37 goals (also sometimes termed “self-licensing”; deWitt Huberts, Evers, and de Ridder 2012,  
38 2014a; Prinsen et al. 2016). This form of licensing relates to the “tendency to rely on reasons and  
39 arguments to justify subsequent gratification” (deWitt Huberts et al. 2012, 490), and we adopt  
40 this view for our research. Unlike limited-resource accounts which consider succumbing to  
41 indulgent temptations as a “failure” of self-control (e.g., Muraven and Baumeister 2000; Vohs  
42 and Heatherton 2000), licensing provides a motivational explanation for indulgent choice which  
43 suggests that consumers might not be *willing* (rather than able) to control themselves on a given  
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3 occasion (May and Irmak 2014; Prinsen et al. 2019; Taylor, Webb, and Sheeran 2014). For  
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5 instance, across two choice situations, Mukhopadhyay and Johar (2009) demonstrate that  
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7 consumers use prior impulse buying restraint for justifying subsequent indulgence. May and  
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9 Irmak (2014) find that consumers may even distort their own perceived progress with regard to  
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11 the health goal in order to license indulgence in the present.  
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15 Notably, this justification-based form of licensing is consistent with extant literature  
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17 highlighting the role of anticipated negative affect for indulging in vice-virtue tradeoffs.  
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19 Specifically, anticipated negative affect serves to prevent people from abandoning their health  
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21 goal (Giner-Sorolla 2001; Haws and Poyner 2008; Vosgerau, Scopelliti, and Huh 2020). For  
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23 example, guilt is associated with vice choices as virtues are considered the appropriate default  
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25 (Okada 2005), and regret is often anticipated by consumers recognizing that their indulgent  
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27 choice compares unfavorably to a healthier option (Sugden 1985; Vosgerau et al. 2020). Thus,  
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29 extant literature considers licensing to be a mechanism operating through reducing anticipated  
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31 negative affect for indulging as indulgence becomes more justifiable (deWitt Huberts et al. 2014;  
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33 Inman and Zeelenberg 2002; Mishra and Mishra 2011; Okada 2005). As we will demonstrate,  
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35 our research departs from this notion by highlighting that a long-term strategy based on licensing  
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37 can rely on an inverse mechanism, namely negative affect for *not* indulging in situations calling  
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39 for indulgence.  
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45 Taken together, extant literature on licensing consistently suggests that consumers  
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47 showing restraint by choosing a healthier or less caloric product may experience a license to  
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49 indulge in a subsequent purchase occasion. However, much of the research leading to this  
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51 conclusion focuses on one such situation or examines the carry-over effect from one situation in  
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53 which a virtuous choice is made to a subsequent one (e.g., deWitt Huberts et al. 2012;  
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Mukhopadhyay and Johar 2009) rather than longer-term patterns. Against this background, it is not surprising that most extant literature considers licensing to be detrimental for achieving one's long-term health goals. How might licensing instead be used in a healthier manner that facilitates the development of sustainable and healthy patterns of consumption?

### Broadening the Scope to Long-Term Patterns of Consumption

Intriguingly, recent research by Prinsen et al. (2018, 2019) suggests the existence of functional forms of licensing that *promote* successful striving for a health goal in the long run. For instance, Prinsen et al. (2018) find that licensed indulgence predicts a better handling of subsequent self-control conflict. Prinsen et al. (2019) compare a dysfunctional form of licensing (e.g., measured through items such as “I reward myself with bad foods too easily”) to a functional form of licensing (e.g., measured through items such as “To adhere to a healthy diet for a long period of time, it is important that I allow myself an occasional treat”). The authors find in a correlational analysis that the functional form of licensing is associated with higher dietary success and higher diet balance satisfaction, whereas the dysfunctional form is associated with lower dietary success and lower diet balance satisfaction.

These initial findings indeed point to potential strategic licensing without identifying and characterizing such strategies in detail. Essentially, consumers successfully pursuing their health goals may engage in “pleasure management” (Hoch and Loewenstein 1991, 449) and employ a strategic plan involving licensed indulgence on occasion, followed by self-imposed periods of relative restriction. The narrow focus of most of the extant licensing literature (and much of the food decision-making literature) on single or two sequential choice situations does not allow

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3 crucial insights into dynamics and interdependencies of multiple choice occasions over time.  
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5 Thus, although a researcher may observe that a consumer feels entitled to a burger and a beer  
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7 after a tough day at work, this observation does not imply that this consumer systematically and  
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9 deliberately indulges in similar situations but not in others. It is thus important for the licensing  
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11 literature to acknowledge that “[t]he consequences of choices can rarely be fully appreciated in  
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13 isolation” (Read, Loewenstein, and Rabin 1999, 171). Following this notion, we now turn to the  
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15 unique context we examine in our research.  
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## 21 22 **STRATEGIC LICENSING**

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26 We next present our arguments for what we call “strategic licensing”, namely a deliberate  
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28 strategy certain consumer types follow that involves occasional, but systematic indulgence  
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30 coupled with more frequent systematic restraint. We first introduce two sources of justification  
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32 for indulgence available through our key context for examining strategic licensing—reward  
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34 programs. We propose that strategic licensing emerges within the context of reward program  
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36 rewards redemption based on identifiable types of consumers (those who typically order a lower  
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38 number of calories versus those who typically order a higher number of calories). We further  
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40 specify the “strategic” aspect of the proposed strategic licensing effect by presenting the critical  
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42 role that forethought plays in developing the healthy but sustainable patterns of consumption  
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44 emerging from strategic licensing.  
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51 Utilizing Reward Programs for Justifying Indulgence  
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3 We focus our examination of strategic licensing on reward programs as they offer a  
4 unique ability to examine patterns of purchase behavior through allowing consumers to both  
5 collect and redeem points by purchasing food items (e.g., *Subway*'s "myway" program; *Smoothie*  
6 *King*'s "Healthy Rewards" program, *Panera*'s "MyPanera" reward program). Such reward  
7 programs incentivize consumers to adopt more long-term patterns of behavior that ultimately  
8 increase their loyalty (Drèze and Nunes 2009; Liu 2007), implying that consumers are likely to  
9 naturally connect the various purchases to one another as they approach a reward redemption  
10 situation (Kivetz, Urminsky, and Zheng 2006). Consequently, we expect that patterns of  
11 licensing are especially likely to be observable in this context. However, even in the absence of  
12 licensing through prior restraint, the occurrence of reward-redemption situations potentially  
13 drives indulgent choice in two ways, which we outline next.

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29 First, reward occasions provide a financial incentive that alone can push consumers  
30 towards indulgence, that is, even in the absence of prior restraint. A myriad of different  
31 marketplace deals provides consumers with such incentives. For example, many consumers  
32 justify the purchase of larger sizes of indulgent products when a price-quantity discount  
33 encourages doing so (Haws and Winterich 2013). Price discounts also serve as a justification for  
34 increased purchase rates of hedonic products (Kivetz and Zheng 2017; Mishra and Mishra 2011).  
35 Further, being able to redeem reward points likely affects the psychological cost associated with  
36 the purchase as reward points represent an alternative form of currency for which the pain of  
37 payment is reduced (Drèze and Nunes 2004; Prelec and Loewenstein 1998). A reduced pain of  
38 paying is again associated with higher indulgence (Thomas, Desai, and Seenivasan 2011). Taken  
39 together, the possibility to redeem reward points provides consumers with the justification to  
40 indulge (Kivetz and Simonson 2002b).  
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3 Second, consumers have exerted effort on numerous prior occasions simply through their  
4 repeated patronage of the reward program company. Indeed, this effort exerted in achieving the  
5 reward has been shown to increase indulgence. Specially, a higher difficulty of meeting the  
6 rewards program requirements (e.g., the number of store visits required until a reward can be  
7 redeemed) shifts consumer preferences to more hedonic rewards (Kivetz and Simonson 2002a).  
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12 Taken together, there are clear and compelling reasons that consumers would be likely to  
13 reward themselves with indulgent purchases when redeeming reward program rewards. But how  
14 might the nature of this rewarding behavior differ across consumers in a meaningful way? In  
15 addition to the justification to indulge through the financial reward and the sense that one's effort  
16 has earned that financial reward, we suggest that reward programs present an externally guided  
17 opportunity for some consumers to manage their long-term consumption patterns through  
18 strategic licensing. We posit that the nature of reward programs allows consumers to make a  
19 strategic plan that involves systematic restraint in reward-point collecting purchase situations,  
20 which then systematically serves as license to indulge in reward-redemption situations. To  
21 account for consumer heterogeneity regarding the extent to which such strategic licensing likely  
22 occurs, we next describe the role that different types of consumers play in the use of strategic  
23 licensing.  
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#### 45 Differentiating Lower-Calories and Higher-Calories Consumers

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49 Adding to the general justification of a financial reward itself and the additional  
50 justification based on the effort involved in earning this financial reward is the nature of the  
51 decisions made prior to the receipt of the reward. Consistent with the research discussed above  
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3 on licensing, we suggest that a persistent pattern of lower-calorie choices on non-reward  
4 occasions further increases the extent to which reward occasions are made indulgent.  
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8 Accordingly, we distinguish consumers based on their long-term patterns of calories  
9 purchased during a longitudinal set of decisions. At one end of the continuum are consumers  
10 with lower-calories consumption patterns over time, suggesting a sustainable vice-virtue balance  
11 that leans towards virtuous choices. On the other end are consumers with higher-calories  
12 consumption patterns over time, suggesting a sustainable vice-virtue balance comprised of  
13 relatively more vice. Thus, aside from extreme behaviors (i.e., rarely if ever indulging or rarely if  
14 ever abstaining), we assume that both types of consumers seek a sustainable balance between  
15 vice and virtue in the long run, but the balance point and the path to achieving it will differ.  
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26 We expect that for lower-calories consumers, the path to a sustainable long-run balance is  
27 through systematic licensing to indulge in reward-redemption situations and systematic restraint  
28 in other situations, thereby creating “really rewarding rewards” through indulgence (i.e., justified  
29 by the reward itself + prior effort + systematic restraint in prior non-reward situations) that  
30 compensate for the longer periods of restraint. On the non-reward occasions, they likely apply  
31 self-control strategies to secure long-term goal pursuit and delay gratification until the next really  
32 rewarding reward purchase (Metcalf and Mischel 1999; Myrseth and Fishbach 2009). In  
33 contrast, the long-term path for higher-calories consumers is characterized by higher indulgence  
34 in all situations, including the non-reward ones. On reward redemption situations, the financial  
35 incentive of the reward as well as the effort put into earning it represent separate but compelling  
36 justifications for indulgence (Arkes et al. 1994; Kivetz and Simonson 2002a; Mishra and Mishra  
37 2011) given budgetary concerns, resulting in more indulgent choices, but without the experience  
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3 of a reward being really rewarding (i.e., justified only by the reward itself + prior effort, but not  
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5 prior restraint).  
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8 Taken together, our key expectation is that the effect of reward occasions (versus no-  
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10 reward occasions) on indulgence is positive and moderated by consumers' consumption patterns  
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12 such that the effect is stronger for lower-calories consumers than for higher-calories consumers.  
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### 15 16 17 The Role of Forethought in Strategic Licensing 18

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21 Next, we suggest that this difference in the extent of indulgence on reward occasions is  
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23 based in part on the opportunity to deliberately plan for this strategic licensing behavior. If  
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25 strategic licensing were indeed based on a deliberate process, lower-calories consumers would  
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27 have pre-set dates or occasions in which the strategic plan calls for indulgence. With such a plan  
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29 underway, not indulging in a really rewarding reward situation would actually lead to negative  
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31 affect at the point of reward-based indulgence, reminiscent of the repenting hyperopia effect  
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33 (Kivetz and Keinan 2006) that can occur under certain conditions when hyperopic (i.e.,  
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35 excessively farsighted) consumers experience or anticipate negative affect for not indulging or  
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37 otherwise missing out on pleasurable experiences. We have highlighted above that prior  
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39 literature on (mostly isolated or dual) vice-virtue tradeoff situations considers a reduced  
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41 anticipated negative affect for indulging as a driver of indulgent choice. However, our proposed  
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43 strategic licensing further extends the notion of hyperopia by suggesting that lower-calories (but  
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45 not higher-calories) consumers experience anticipated negative affect for *not* engaging in the  
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47 indulgent behavior in what is a particularly attractive, pre-determined occasion for guilt-free  
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49 indulgence, allowing them to utilize this anticipated negative affect when faced with a reward  
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3 situation. As such, strategic licensing serves lower-calories consumers as a mechanism to avoid  
4 the downsides of excessively hyperopic behavior. Much in contrast, consumers with higher-  
5 calories patterns will not feel this same anticipated negative affect from missing the opportunity,  
6 because this opportunity is less rewarding for them in the absence of a strong license. Thus,  
7 higher-calories consumers are less likely to pre-commit to indulgence at future reward occasions  
8 in the way lower-calories consumers do.  
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11 Apart from examining the role of anticipated regret of not indulging as a key mechanism  
12 explicitly, which we do in the experimental study, we elucidate two additional propositions  
13 illustrating various ways in which such strategic behavior based on forethought will manifest.  
14 We believe purchase acceleration to be an important way of examining forethought based on the  
15 notion of anticipated regret of not indulging that is addressed in our longitudinal data. Moreover,  
16 comparing an expected reward occasion that one can plan for to an unexpected one in our  
17 experimental data further allow us to illuminate the role of forethought in strategic licensing.  
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21 *Purchase Acceleration.* We also expect differences related to patterns of purchase  
22 acceleration such that interpurchase time is systematically shortened. Specifically, we would  
23 expect all consumers to accelerate purchases shortly before obtaining a reward, consistent with  
24 the goal-gradient hypothesis (Hull 1932; Kivetz et al. 2006; Nunes and Dreze 2006). The goal-  
25 gradient hypothesis is based on the notion that achievement motivation increases with smaller  
26 goal distance, and we posit that lower-calories consumers' sense of achievement will be more  
27 pronounced given they have successfully restrained themselves over the last periods. Our  
28 prediction of purchase acceleration is also in line with the points pressure effect that has been  
29 reported for reward programs. According to Taylor and Neslin (2005), the points pressure effect  
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3 is based on the notion of switching costs in the form of foregone opportunity if a reward is  
4 looming, and again these switching costs should be higher for lower-calories consumers who  
5 have just earned a license to indulge in the looming reward occasion. Notably, both accounts  
6 assume that purchase acceleration will only manifest if consumers are forward looking. Taken  
7 together, in the case of lower-calories consumers and with a pre-planned opportunity for licensed  
8 indulgence within striking distance, we expect that lower-calories consumers accelerate their  
9 purchase toward the reward occasion more than higher-calories consumers.  
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22 *Expected versus Windfall Rewards.* For strategic licensing to be in fact the result of  
23 deliberate planning, we expect it to occur in the context of reward programs only if consumers  
24 are aware of when and how often they will be rewarded. Thus, if a windfall reward is provided as  
25 a surprise, although we might expect licensing in the form of indulgence on average, we would  
26 not anticipate as strong of evidence for the strategic licensing effects demonstrated by lower-  
27 calories consumers. Further, we would expect that for lower-calories consumers (but not higher-  
28 calories) consumers, the effect of a reward on indulgence is mediated by anticipated affect for  
29 not indulging, but only in case of expected (but not windfall) rewards.  
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40 Next, we test our core predictions using longitudinal purchase data and then follow up  
41 with an experimental study that further supports our proposition that our key interaction effect is  
42 in fact strategic and explained in part by a sense that not indulging will increase regret.  
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## 49 **EXAMINING STRATEGIC LICENSING USING LONGITUDINAL CUSTOMER**

### 50 **PURCHASE DATA**

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3 In the first study, we use real customer food purchase data to formulate econometric  
4 models that test the proposed strategic licensing effect. In this section, we first describe our data  
5 characteristics and sample selection criteria followed by key descriptive statistics and  
6 operationalizations of main constructs. Then, we present our model formulation followed by  
7 results and robustness checks.  
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## 14 Customer Purchase Data

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20 *Data Characteristics.* The customer purchase data for the study comes from a large fast  
21 casual deli-style restaurant chain operating in over 25 states in the United States.<sup>1</sup> We use a  
22 unique longitudinal dataset that tracks the actual online food purchase orders of 7,828 customers  
23 of this restaurant chain over a 14-month time period resulting in 272,677 purchase transactions.  
24 Thus, we observe food purchases or orders as a highly-related proxy for consumption (Birch et  
25 al. 1987). The restaurant chain has an online rewards program, and our dataset tracks the number  
26 of redeemed points on each purchase occasion allowing us to clearly distinguish between reward  
27 and non-reward purchase occasions. For each purchase occasion, we observe all the food items  
28 ordered, the prices paid for each item, the reward points earned and/or redeemed, and whether  
29 the order is a pick-up or delivery. We also have information on the number of calories present in  
30 each food item offered through the restaurant's menu. This allows us to calculate the total  
31 number of calories in the purchases made by a specific customer on any given purchase  
32 occasion. Thus, the ability to observe each purchase order along with the number of calories  
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55 <sup>1</sup> For reasons of confidentiality (a signed non-disclosure agreement), we are not able to disclose the name of the  
56 restaurant chain or some of the specifics of their menu and reward program.  
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3 ordered across different purchase occasions (reward vs. non reward) make this unique dataset  
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5 ideally suited to answering our research questions.  
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10 *Restaurant and Reward Program Characteristics.* The deli chain offers delivery, take-out  
11 and sit-down service. It provides a traditional sandwich menu along with numerous healthy  
12 options for consumers to choose from such as low-calorie sandwiches, vegetarian sandwiches,  
13 and salads. Other options such as pastas and salads further extend the range of healthiness of the  
14 options available. The chain also has a selection of desserts such as cakes, brownies, and  
15 cookies. The large variety of options ensures that customers have many options varying in their  
16 calorie levels and perceptions of healthiness, and the general price range leads customers to  
17 frequently order from the deli, leading to consistent patronage and patterns of regular  
18 consumption. The online rewards program is similar to that of competing restaurant chains and  
19 offers points to customers for every dollar spent. These points are redeemable for purchases only  
20 (not for cash) once they reach a critical threshold<sup>2</sup> after which customers are free to redeem them  
21 when they choose. While reward-redemption purchase occasions occur relatively infrequently,  
22 they occur frequently enough to allow for incorporation into a long-term vice-virtue balancing  
23 strategy. We also note that the company did not promote the rewards in any unusual or  
24 aggressive way except in an informative way on the website.  
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47 *Sample Data.* We took several steps to assemble an appropriate sample of customers.  
48 First, we removed all group purchases and catering orders from the data. Group purchases were  
49 identified from the data as orders containing multiple entrées on a given purchase occasion. We  
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56 <sup>2</sup> We are unable to reveal this critical threshold due to the signed non-disclosure agreement.  
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3 realize imposing this condition might eliminate customers who may have ordered two  
4 sandwiches at a time from the restaurant, but this allows us to focus exclusively on individuals  
5 who are clearly ordering food just for themselves. Catering orders are identified as such and  
6 removed from the sample. Second, we impose a cutoff purchase amount of fifteen dollars to  
7 ensure that the food orders considered in the data are indeed individual food purchase orders.<sup>3</sup>  
8  
9 Finally, our sample dataset is comprised of customers who signed up for the online ordering  
10 service during the data time period such that we can track an individual customer's purchases  
11 from the inception of their online relationship with the restaurant. These data filtering steps  
12 resulted in 7,828 customers and 272,677 purchase transactions in our sample dataset. Overall, the  
13 sample dataset includes 45,000 reward redemption occasions.  
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28 *Descriptive Statistics.* Table 1 provides the key descriptive statistics for the data used for  
29 estimation. During the 14-month period, customers averaged 34.83 purchase orders, 5.75 (or  
30 16.5%) of which were reward redemption occasions. On average, each purchase contained  
31 575.49 calories and cost the customer \$10.17, with notable differences between non-reward and  
32 reward occasions, as we will explore in detail subsequently.  
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#### 45 46 Operationalization of Key Constructs 47 48 49

50 The key variables we need to carefully identify and operationalize are occasion type and  
51 consumption patterns, respectively. For occasion type, we create an indicator variable such that if  
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56 <sup>3</sup> We also used a lower cutoff of ten dollars, and our results are robust to the new cutoff.  
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3 a reward redemption of any amount occurs during a purchase occasion, the purchase occasion is  
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5 classified as a reward occasion and a regular or a non-reward purchase occasion otherwise.  
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8 We capture consumers' purchase patterns using an objective measure based on the actual  
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10 level of average calories purchased over time across all of a customer's orders. For example, to  
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12 understand an individual consumer's consumption pattern at a given time, we use the average  
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14 number of calories purchased by the consumer until that time. A higher number of average  
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16 calories would indicate a generally healthier purchase pattern. While this is an objective  
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18 measure based on consumers' actual food choices, we acknowledge that caloric needs can differ,  
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20 for example by gender, age, and physical activity (Institute of Medicine of the National  
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22 Academies 2005). Calories are widely viewed as the most relevant single point of nutrition  
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24 information in impacting choice and ultimately weight loss (Campbell and Warren 2015). Thus,  
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26 in our model formulation, the number of average calories ordered over time represents the  
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28 relative unhealthiness of purchases, and we used this moving average of calories consumed as  
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30 our continuous moderator in all of the estimated models. Using actual purchase data to infer  
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32 consumption patterns will shed light on our key question of how consumers who display less  
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34 indulgence in consumption may use reward occasions as a mechanism to strategically indulge.  
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#### 42 Self-Selection and Control Variables 43 44 45 46

47 One of the challenges in estimating the effect of consumers' consumption choices across  
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49 different purchase occasions is that consumers choose the amount of calories purchased on each  
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51 occasion, and there may be common factors, both observed and unobserved, that influence this  
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53 choice decision and their indulgent purchase behavior across different types of occasions (non-  
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3 reward vs. reward purchase occasions). For instance, customers who spend more and buy more  
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5 desserts may be more likely to order higher-calorie meals. Customers with more familiarity with  
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7 the restaurant over time can make more systematic indulgent choices. Existing research suggests  
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9 that including variables that jointly determine the consumer choice decision and outcome  
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11 variables can help control for potential bias due to self-selection (Ailawadi, Ma, and Grewal  
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13 2018). We include several such variables that reflect customers' prior purchase decisions and  
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15 order characteristics to account for self-selection in our models. Specifically, we control for the  
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17 overall purchase amount paid by the customer for the foods purchased on a purchase occasion,  
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19 number of prior desserts purchased, number of previous purchase orders and whether the order  
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21 was a delivery and/or it was made over the weekend.  
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26 Many customer level, store level, or time related factors can also affect customers'  
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28 purchase behaviors. For example, some customers may prefer a specific item from the restaurant  
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30 such as a particular dessert and continue to order that item every single time, thereby affecting  
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32 the number of calories ordered. There may also be some restaurant-level variation in terms of  
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34 how certain food items are prepared or presented and the times when they may be available on  
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36 the menu that can affect customers' choices. Some items may be more popular in certain store  
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38 locations than others influencing customer choices. To account for such unobserved factors that  
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40 may influence customers' food choices at any given time, we include customer, store, and month  
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42 fixed effects across all of our models (Rossi 2014).  
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47 Customer characteristics such as their age, income, and education level can also influence  
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49 their purchase behaviors. In our dataset, we have information on customers' zip codes. We  
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collected census information on gender, age and education at the zip code level and used these new variables as controls for customer level demographic variables.<sup>4</sup>

## Model Formulation

The key objective of this study is to understand how purchase behaviors differ across non-reward and reward purchase occasions in conjunction with relatively lower- or higher-calorie consumption patterns over time. We focus on two primary customer behaviors that reflect indulgent behavior as our main dependent variables of interest, total number of calories purchased and purchase of a dessert on a given occasion. We formulate and present the models for each of our key variables of interest below.

*Number of Calories Purchased.* The first key dependent variable that we examine is the number of calories in each purchase. We account for customer, store, and time specific factors by leveraging the panel structure of our data and employing the fixed effects formulation. Thus, we estimate the following model:

$$\begin{aligned} \text{Calories}_{it\text{sm}z} = & \beta_0 + \beta_1 \text{Average Prior Calories}_{it} + \beta_2 \text{Reward}_{it} \\ & + \beta_3 \text{Average Prior Calories}_{it} \times \text{Reward}_{it} + \beta_4 \text{Average Purchase Amount}_{it} \\ & + \beta_5 \text{Number of Desserts Purchased}_{it} + \beta_6 \text{Number of Previous Orders}_{it} \\ & + \beta_7 \text{Weekend Purchase}_{it} + \beta_8 \text{Delivery}_{it} + \mu_i + \gamma_s + \tau_m + \delta_z + \varepsilon_{it\text{sm}z} \end{aligned} \quad (1)$$

Where  $\text{Calories}_{it\text{sm}}$  is the total number of calories in the items ordered by a customer  $i$  at a purchase occasion  $t$  in store  $s$  in month  $m$  from zip code  $z$ ,  $\text{Average Prior Calories}_{it}$  is the average number of calories in the orders purchased by a customer until purchase occasion  $t-1$ ,  $\text{Reward}_{it}$  is an indicator variable that takes the value 1 if the purchase occasion is a reward redemption

<sup>4</sup> For a subset of customers (about ten percent of customers), the zip code information was not available in the data and therefore, an average measure of these variables was employed.

occasion, that is, a customer  $i$  redeems reward points at a purchase occasion  $t$  and 0 otherwise (i.e., a non-reward purchase), *Average Purchase Amount* $_{it}$  is the average dollar amount spent by a customer  $i$  until purchase occasion  $t-1$ , *Number of Desserts Purchased* $_{it}$  is the total number of desserts purchased by a customer  $i$  until time period  $t-1$ , *Number of Previous Orders* $_{it}$  is the number of orders purchased by a customer  $i$  until purchase occasion  $t-1$ , *Weekend Purchase* $_{it}$  is an indicator variable that takes the value 1 if customer  $i$  makes the purchase over the weekend and zero otherwise, *Delivery* $_{it}$  is an indicator variable that takes the value 1 if customer  $i$  has their order delivered and zero otherwise.  $\mu_i$ ,  $\gamma_s$ ,  $\tau_m$  are the customer, store and month specific fixed effects and  $\delta_z$  are zip code level demographics included in the model.

*Dessert Purchase.* The next indulgent customer behavior we investigate is a customer's propensity to purchase a dessert, and we specifically examine whether this effect differs across customers based on their consumption pattern and across different purchase occasions. We model a customer's choice of purchasing a dessert on a purchase occasion as a discrete choice variable and adopt the random utility approach. The indirect utility obtained by a customer  $i$  from purchasing a dessert at time period  $t$  in store  $s$  in month  $m$  from zip code  $z$ ,  $U_{itsmz}$ , is expressed as:

$$U_{itsmz} = V_{itsmz} + \varepsilon_{itsmz} \quad (2)$$

The representative utility,  $V_{itsmz}$ , of a customer  $i$  purchasing a dessert at time  $t$  in store  $s$  in month  $m$  from zip code  $z$  is given as follows:

$$\begin{aligned} V_{itsmz} = & \alpha_0 + \alpha_1 \textit{Average Calories}_{it} + \alpha_2 \textit{Reward}_{it} + \alpha_3 \textit{Average Calories}_{it} \times \textit{Reward}_{it} \\ & + \alpha_4 \textit{Average Purchase Amount}_{it} + \alpha_5 \textit{Number of Desserts Purchased}_{it} \\ & + \alpha_6 \textit{Number of Previous Orders}_{it} + \alpha_7 \textit{Weekend Purchase}_{it} + \alpha_8 \textit{Delivery}_{it} \\ & + \mu_i + \gamma_s + \tau_m + \delta_z \end{aligned} \quad (3)$$

All of the variables are as described earlier in equation (1). We model the probability that a customer  $i$  will purchase a dessert  $j$  at a purchase occasion  $t$  as a binary logit model. The probability that a customer  $i$  will purchase a dessert at time period  $t$  at a store  $s$  in month  $m$  from zip code  $z$  can be expressed as:

$$Pr(\hat{d}_{itsmz} = 1) = \frac{\exp(V_{itsmz})}{1 + \exp(V_{itsmz})} \quad (4)$$

where  $\hat{d}_{itsmz}$  is a customer level choice indicator variable that is equal to one if a customer  $i$  purchases a dessert at time  $t$  at a store  $s$  in month  $m$  from zip code  $z$  and zero otherwise. The model is estimated via maximum likelihood.

## RESULTS OF LONGITUDINAL DATA ANALYSIS

### Examining the Differential Shift towards Indulgence in Reward Redemption Situations

We present the results of our model estimations in tables 2 and 3. The tables include results from two models, one that includes only the control variables and one with the focal variables of interest added. We report unstandardized coefficients across all models.

From the results of our model estimation, we note that the effect of a reward redemption occasion on the number of calories purchased in a given purchase order is positive and significant indicating more calories purchased on reward rather than non-reward purchase occasions. We also note that the effect of average prior calories is positive and significant on the calories in a purchase order suggesting that the customers who average a higher number of calories in their previous orders make higher-calorie purchases on any given purchase occasion. Given these results, our main coefficient of interest is that of the interaction term between



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3 average prior calories and reward occasion. From the results of Model 1b in table 2, we note that  
4 this interaction term is negative and significant (coefficient = -0.64,  $p < .001$ ). This suggests that  
5 the effect of reward occasions is greater for consumers with lower average prior calories  
6 suggesting that consumers with lower-calories consumption patterns indulge to a greater degree  
7 on a reward occasion than consumers with higher-calories consumption patterns. In other words,  
8 while all consumers indulge on a reward occasion and higher-calories prior purchases positively  
9 influence the calorie content of a given purchase, we find that the lower-calories consumers  
10 exhibit greater indulgence on a reward occasion than a non-reward occasion as compared to the  
11 higher-calories consumers. Specifically, if we consider two consumers with an average ten  
12 percent differential in terms of average prior calories ordered, on reward redemption purchase  
13 occasions, we can expect the lower-calories consumer to order 6.5% more calories as compared  
14 to the higher-calories consumer. Thus, these results lend support for our proposed strategic  
15 licensing effect.  
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39 To further test our strategic indulgence effect, we next focus on the probability of a  
40 dessert purchase on a given purchase order. Table 3 reports the results of this model, which  
41 provides further support for our predictions using a different outcome variable. Specifically, the  
42 interaction term between average prior calories and reward occasion is negative and significant  
43 (coefficient = -0.653,  $p < .001$ , odds ratio = 0.527).  
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3 Taken together, these findings lend strong support to our proposed strategic licensing  
4 effect particularly as we show the result using two different dependent variables, number of  
5 calories and probability of a dessert purchase. We note that while these dependent variables are  
6 inherently related as purchasing a dessert will typically increase the number of calories in a  
7 purchase order, a consumer may choose to indulge by only purchasing a dessert that can keep the  
8 overall calorie value of the order low. Thus, showing the strategic licensing effect across the two  
9 dependent variables bolsters our core arguments. Next, we utilize the dynamics of the inter-  
10 purchase time-related aspects of purchase acceleration to provide evidence of the forethought we  
11 believe is key for the strategic licensing effect to occur.  
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#### 26 Purchase Acceleration

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31 We next study potential purchase acceleration towards a reward occasion (e.g., Kivetz et  
32 al. 2006), which we predicted to occur more strongly for lower-calorie consumers, while also  
33 accounting for the possibility of differential post-reward effects in terms of the timing to start the  
34 progress towards the next reward. Thus, we formulate a model that includes inter-purchase time  
35 as the dependent variable and two new indicator variables that indicate whether a given inter-  
36 purchase time corresponds to a pre- or a post-reward purchase occasion, along with our focal  
37 average prior calories variable, and two interaction terms.  
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47 The results from the estimation of this model are presented in table 4. Our findings  
48 suggest that while all consumers tend to accelerate their purchases before a reward occasion,  
49 lowering the inter-purchase time between a pre-reward and a reward occasion, these effects are  
50 stronger for lower-calories consumers (coefficient = 0.574,  $p < .01$ ). With respect to the post-  
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3 reward timing, we intriguingly find that inter-purchase time between a reward and a post-reward  
4 purchase occasion tends to be greater for all consumers and this effect is *heightened* for lower-  
5 calories consumers (coefficient = -0.491,  $p < .05$ ). Essentially, lower-calories consumers more  
6 strongly accelerate purchases to obtain a reward whereas higher-calorie consumers are quicker to  
7 return to the restaurant after a reward. The latter effect might be due to reward being relatively  
8 less rewarding for higher-calories consumers such that they need to continue sooner with their  
9 strategy that is more geared towards immediate gratification. We believe that studying these  
10 effects further bolsters our main results and provides additional evidence that the lower-calories  
11 consumers are using the reward program to achieve the strategic licensing effect<sup>5</sup>.  
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24 In sum, customers with patterns of lower- rather than higher-calories purchases 1)  
25 increase the number of calories they order on a reward occasion to a greater degree, 2) increase  
26 the purchase of desserts on a reward occasion more, and 3) accelerate purchases prior to the  
27 reward but wait longer to start approaching the next one.  
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### 39 Robustness Checks and Alternative Explanations 40 41 42

43 We took several measures to test for the robustness of the strategic licensing effect while  
44 addressing potential alternative explanations that we discuss in this section. The respective  
45 results tables are presented in web appendix A.  
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54 <sup>5</sup> We also examined another dynamic aspect, the effect of recency of indulgence. We find that recency of indulgence  
55 mitigates the strategic licensing effect in a reward occasion by essentially reducing the license consumers may have  
56 gained up to that point. Please see the web appendix A and WA table 10 for more details.  
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3 *Alternative Operationalization of the Moderator.* While our moderator is constructed as a  
4 dynamic and continuous (moving average) variable, we alternatively operationalized the  
5 moderator by utilizing an initialization period of four months during which we calculated the  
6 lower- to higher-calories moderator variable to use in our estimation. We included this  
7 initialization period continuous measure as the moderator in our models and assessed the focal  
8 effects based on the data of the remaining 10-month period. The results indicate that the effects  
9 hold such that we continue to observe the strategic licensing effect (see WA table 1; illustrative  
10 descriptive statistics based on this model and additional details regarding sample selection and  
11 variable operationalization are provided in WA table 2).  
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26 *Ceiling Effects.* It is possible that ceiling effects may exist in our results such that  
27 consumers with higher-calories consumption patterns simply cannot display more indulgent  
28 consumption patterns on a given purchase occasion than they do otherwise. To ensure that our  
29 results do not suffer from such ceiling effects, we conducted robustness checks for both of our  
30 main models. Specifically, we eliminated the top and bottom decile of the data (based on number  
31 of calories present in individual customers' purchase orders) and conducted the same analyses as  
32 before. The results reveal that our main results hold in the new sample (WA table 3). Therefore,  
33 we believe that potential ceiling effects or outliers are unlikely to explain our patterns of results.  
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47 *Additional Indulgent Outcomes.* We have thus far assessed indulgence in terms of  
48 ordering more calories overall or specifically desserts. However, prior literature suggests that  
49 indulgence may also be achieved in terms of spending more money as long as consumers  
50 consider the higher spending a treat (Cavanaugh 2014; Haws, Bearden, and Nenkov 2012).  
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3 Hence, we should observe a strategic licensing effect when using amount spent on a given  
4 purchase occasion as an alternate dependent variable and average prior spending as the main  
5 alternative independent variable. The results of this model are presented in WA table 4. We find  
6 that our main strategic licensing results hold for these alternative operationalizations of our key  
7 variables indicating that our results are robust and generalizable to other forms of indulgence.  
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11 Further, we examined whether our effects would manifest as purchasing a greater number  
12 of items on a reward occasion by estimating our model using number of items purchased as the  
13 dependent variable. The results of this estimation are presented in WA table 5. We note that  
14 while more items are purchased on reward versus non-reward purchase occasions, this effect is  
15 greater for consumers with lower-calories consumption patterns consistent with our strategic  
16 licensing account. We explore these findings further by studying the calories per item purchased  
17 as another alternative dependent variable. The results of this model are presented in WA table 6.  
18 Our findings suggest that consumers are purchasing items with greater calories per item on a  
19 reward occasion and these results are stronger for consumers with lower-calories purchase  
20 patterns. Taken together, WA tables 5 and 6 provide further evidence of the strategic licensing  
21 effect wherein while all consumers choose to indulge more on reward occasions, a greater effect  
22 is observed for lower-calories consumers who use the reward occasions more strategically to  
23 achieve their consumption goals.  
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47 *Alternative Explanations.* As evidenced by our primary analysis presented in table 3,  
48 dessert purchases are a key outcome illustrating our strategic licensing effect. However, we  
49 sought to examine whether the effect would emerge even among those customers who never  
50 purchase desserts. Accordingly, we removed all dessert buyers from the data and estimated our  
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3 model again on this new sample of 3,234 customers. After removing the dessert buyers, we still  
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5 obtain a negative and significant coefficient (coefficient = -0.672,  $p < .001$ ) for the interaction  
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7 term between average prior calories and reward occasion suggesting that customers are indulging  
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9 in other ways such as ordering a higher-calorie entrée on a reward occasion. The results are  
10  
11 reported in WA table 7.  
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15 It is also possible that lower-calories consumers also tend to buy with a lower frequency  
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17 that might lead them to indulge more on reward occasions. To test for this alternative  
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19 explanation, we divided our customer sample into low and high frequency customers by using a  
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21 median split of the number of purchase orders and estimating our model using data from only the  
22  
23 high frequency customers. We present the results in WA table 8 where we note that our main  
24  
25 results regarding the effect of average prior calories, reward occasion, and the interaction term  
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27 involving these two variables hold for this subset of customers.  
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31 Finally, it is possible that lower-calories consumers are exposed to a different number of  
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33 prior reward redemption occasions than are higher-calorie consumers, which could potentially  
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35 bias our focal effects. However, we find that the strategic licensing effect is also robust when  
36  
37 controlling for the number of prior reward redemption occasions (WA table 9).  
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## 40 41 42 **EXPERIMENTAL EVIDENCE FOR STRATEGIC LICENSING**

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47 We have thus far utilized a longitudinal dataset to demonstrate that consumers alter their  
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49 actual orders toward higher indulgence in reward redemption purchase situations, and that this  
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51 occurs to a greater extent for customers with lower-calories purchase patterns. Now, we conduct  
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3 a controlled experiment to illuminate the underlying process and provide more explicit evidence  
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5 that the differential patterns are strategic on the part of lower-calories consumers.  
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8 Specifically, in this experiment, we examine the mediating role of the anticipated  
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10 negative affect for not indulging on indulgent choice, and whether this effect is conditional on  
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12 consumers' higher- or lower-calories consumption patterns (moderated mediation) such that the  
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14 mediating effect is stronger (weaker) for lower- (higher-) calories consumers. To further assess  
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16 the strategic aspect of choice, we explicitly differentiate between an expected reward in the  
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18 realm of a reward program (meaning that consumers are aware of the existence and timing of a  
19  
20 reward), and a windfall reward occurring unexpectedly. If the key moderating effect observable  
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22 in the longitudinal study is indeed of strategic nature, the moderated mediation described above  
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24 should occur in case of an expected reward (vs. no reward), but not in case of a windfall reward  
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26 (vs. no reward). Thus, our study involves the manipulation of the reward variable into three  
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28 experimental conditions, namely expected reward, windfall reward, and no reward.  
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### 35 Method

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40 This study examined participants' online ordering behavior over five purchase occasions  
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42 (T1-T5), of which the fifth (T5) was manipulated to be either a non-reward occasion or an  
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44 expected reward occasion in the realm of a reward program or an unexpected windfall reward.  
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46 As such, this experiment employed a 3 (purchase occasion in T5: expected reward vs. no reward  
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48 vs. windfall reward) × average calories ordered from T1-T4 (measured) between-subjects design.  
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51 We aimed for 600 participants. A total of 628 participants were recruited using Amazon  
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53 Mechanical Turk in February 2021 and randomly allocated to the three experimental conditions.  
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3 Prior to analysis, 23 incomplete cases were removed, all other cases were retained, leading to an  
4 effective sample size of  $N = 605$  (median age: 36; 37% female). Participants first read a scenario  
5 describing a new deli restaurant that had recently opened in their neighborhood that offered an  
6 online ordering service. In the no reward and expected reward conditions, participants received  
7 the additional information that the deli offered a reward program for online orders, and  
8 participants were asked to imagine that they participated in this reward program. To hold the  
9 amount of the reward constant, we used a common type of reward different from that in our  
10 study 1 data. Specifically, in the T5 expected reward (no reward) condition, the reward program  
11 was designed such that participants were told they would receive a free dessert with every 5<sup>th</sup>  
12 (6<sup>th</sup>) online order they placed, making the target T5 purchase occasion either an expected reward  
13 occasion or a non-reward occasion. In both the T5 expected and windfall reward conditions,  
14 participants read the same announcement that a free dessert was now available (“Thank you for  
15 your 5<sup>th</sup> visit! Order now and receive a free dessert”), but obviously this was unexpected in the  
16 windfall condition. In each purchase occasion T1-T5, participants were first shown a fictitious  
17 online ordering welcome page, followed by the menu.

18  
19 The menu (see appendix) was designed like a typical online menu and included options  
20 with a range of calorie amounts to be used in calculating our moderator. Specifically, there were  
21 12 entrée options (e.g., wraps, paninis, sandwiches, burgers; calorie range 350 to 1,020), all  
22 priced \$8.99. Each entrée came with the choice of one side, namely house fries (250 cal), potato  
23 chips (250 cal), mixed vegetables (50 cal) or a fresh apple (50 cal). Last, the menu included six  
24 different dessert options, priced at \$3.90; with three healthier alternatives (Greek Yogurt & Fresh  
25 Berries [170 cal], Mango Mousse [190 cal], Oatmeal Strawberry Bar [180 cal]), and three more  
26 indulgent alternatives (Lemon Meringue Cheesecake [750cal]; Peanut Butter Brownie [730 cal]



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3 and Chocolate Chip Cake [710 cal]). The menu was held the same in every purchase occasion,  
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5 with the exception that in the two T5 reward redemption situations, no prices were indicated for  
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7 the dessert but instead a note was provided saying “You may pick a free dessert now”.

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10 In each of the purchase occasions, participants were asked to choose an entrée along with  
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12 one side. They were then asked to make a choice regarding the dessert options, including a no-  
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14 choice option. In the expected reward and windfall reward occasions in T5, participants were  
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16 informed that they could now redeem their free dessert or do so on a later occasion.

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19 Participants responded to our proposed mediator of anticipated negative affect for not  
20  
21 indulging following the T5 dessert choice. The mediator was measured on four seven-point  
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23 items, asking participants to state how they felt before making the focal T5 dessert choice<sup>6</sup>: (“I  
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25 thought that I would regret not ordering a high-calorie dessert,” I thought that this was a great  
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27 opportunity to have some indulgence with very little guilt”, “I thought that the situation made it  
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29 easy to justify choosing a high-calorie dessert,” and “I thought that I would be disappointed with  
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31 my decision later if I did not choose an indulgent dessert,”  $\alpha = 0.87$ ). These items were intended  
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33 to reflect that consumers may fear missing out on indulgence they feel licensed to obtain given  
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35 their previous orders.  
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40 We also included items not central for our analyses (see web appendix B). Of note,  
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42 depletion was assessed on a seven-point item as well as participants’ responses to COVID-19-  
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44 related items capturing consumer behavior compared to a time before the pandemic to ensure  
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46 that the special circumstances did not systematically affect our results. Next, we included several  
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55 <sup>6</sup> In an additional experiment (N=597) using an almost identical set-up, we assessed the mediator prior to the T5  
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57 dessert choice. This additional experiment replicates our key results, suggesting that the position of the mediator in  
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59 the study does not impact the effects we find. This additional experiment is reported in web appendix C.  
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3 items capturing potential alternative mediators as well as some individual difference measures  
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5 along with demographic information.  
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## 10 Results and Discussion

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15 We used SPSS 27 and Hayes' PROCESS (v3.5) Model 7 (5,000 bootstrap resamples) to  
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17 analyze the process by which a reward occasion in T5 impacts indulgence in T5 through  
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19 anticipated negative affect for not indulging in T5. Importantly, we expect this (positive) indirect  
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21 effect to be conditional on the prior calories ordered (T1-T4), but only in case of an expected  
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23 (but not a windfall) reward. To assess the purchasing pattern moderator, we employed the same  
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25 approach as in the longitudinal study, that is, we calculated the total number of calories ordered  
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27 in each purchase occasion prior to the focal purchase occasion (i.e., T1-T4) and used the mean of  
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29 total calories ordered per occasion as a continuous measure for level of calories of the  
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31 participants' ordering patterns ( $M = 1,105.07$ ;  $SD = 344.31$ ).  
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36 To capture this process, we specified the PROCESS command such that the independent  
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38 variable is multicategorical, reflecting our three experimental conditions (no reward in T5,  
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40 expected reward in T5, windfall reward in T5), the mediator is anticipated negative affect for not  
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42 indulging in T5, and the moderator is prior calories ordered. We further specified PROCESS to  
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44 code the IV into two dummy-coded variables (EXPECTED REWARD with expected reward = 1  
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46 and 0 otherwise; and WINDFALL REWARD with windfall reward = 1 and 0 otherwise, making  
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48 the no-reward condition the reference against which the other two conditions are compared).  
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52 The PROCESS results of the linear regression analysis (with the mediator as the  
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54 outcome) and the logistic regression analysis (with the DV as the outcome) appears in figure 1.  
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We report unstandardized regression coefficients. We first examine the regression model with the mediator as the outcome ( $F(5, 599) = 27.914, p < .001, R^2 = 0.189$ ). Specifically, the effect of expected reward on the mediator is positive and significant ( $b = 2.741; t = 5.076; p < .001$ ) while the effect of windfall reward on the mediator is 1.691 ( $t = 3.089; p = .002$ ). The effect of prior calories ordered on the mediator is .003 ( $t = 7.547; p < .001$ ). The effect of expected reward on the mediator is qualified by a negative and significant interaction with prior calories ordered ( $b = -0.0016; t = -3.429; p = .001$ ) while the windfall reward  $\times$  prior calories ordered interaction is not significant ( $b = -0.0008, t = -1.635; p = .103$ ). Thus, expected reward, but not windfall reward, has a conditional effect on the anticipated negative affect for not indulging in T5 such that the effect is stronger (weaker) for lower-calories (higher-calories) consumers, lending support for our overall prediction. The anticipated negative affect for not indulging in T5 in turn has a positive effect (in log-odds metric) on indulgent dessert choice in T5 ( $b = 0.533; z = 8.844; p < .001$ , odds ratio = 1.704). The positive and significant direct effects of expected reward ( $b = 1.412, z = 6.078, p < .001$ , odds ratio = 4.105) and windfall reward ( $b = 0.802, z = 3.513; p < .001$ , odds ratio = 2.229) on indulgent dessert choice suggest partial mediation.

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 Insert figure 1 about here  
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Importantly, in case of the expected reward, the index of moderated mediation is -0.0009 and significant (95% CI [-0.0014; -0.0004]). As figure 2 indicates, in the case of an expected reward, the scope of the indirect effect (being the product of an OLS regression coefficient and a logistic regression coefficient) is 0.810 (in log-odds metric) at one standard deviation below the mean of prior calories ordered (95% CI [0.525; 1.158]). At the mean of prior calories ordered, the indirect effect is reduced to 0.516 (95% CI [0.322; 0.751]). At one standard deviation above the mean of prior calories ordered, the indirect effect is only 0.222 (95% CI [0.008; 0.470]). In

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3 case of the windfall reward, as figure 2 indicates, the scope of the indirect effect is positive but is  
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5 not substantially affected by the level of average prior calories consumed as the index of  
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7 moderated mediation is -0.0004 and not significant (95% CI [-0.0009; 0.0001]).  
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11 Insert figure 2 about here  
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15 Notably, when controlling for depletion, the interaction pattern described above remains  
16  
17 robust, ruling out an alternative explanation based on regulatory resource accounts (significance  
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19 of focal interaction in case of expected reward:  $p < .001$ ; interaction in case of windfall reward  
20  
21 remains not significant with  $p = .126$ ). Furthermore, the interaction remains robust when  
22  
23 including our Covid-19 related variables (significance of focal interaction in case of expected  
24  
25 reward:  $p < .001$ ; interaction in the case of the windfall reward remains not significant with  $p =$   
26  
27  $.097$ ; see WA figure 1 for details).  
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31 Together, these results imply that the indirect effect of reward occasion on indulgent  
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33 dessert choice in T5 through anticipated negative affect for not indulging in T5 are conditional  
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35 on the type of the reward (i.e., being an expected reward) and on the average prior calories  
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37 consumed (see figure 2). The shift in choice behavior towards more indulgence is more  
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39 pronounced for lower-calories consumers. As such, although the purchase decisions are  
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41 hypothetical in this case, the experiment lends further support to our key hypotheses, while also  
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43 allowing us to demonstrate the underlying process of anticipated negative affect for missing out  
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45 on a (planned) indulgence.  
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## 51 GENERAL DISCUSSION

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Despite the importance, our understanding of food consumption patterns over time is still limited. In the present research, we set out to shed light on how consumers may go about strategically developing consumption patterns over time in the realm of reward programs such that a balance between longer-term health goals and short-term indulgence goals is established. To test our proposed strategic licensing effect, we employed a multi-method approach, centered on our longitudinal data analysis of actual food orders obtained from a U.S. based restaurant chain over a 14-month period. This analysis provides strong evidence for different patterns of ordering behavior based on one's purchasing patterns, specifically patterns lower or higher in calories. Further, stronger purchase acceleration effects among lower-calories consumers prior to the reward also supports our strategic licensing process. In a second step, holding purchase timing constant, we provide evidence that anticipated negative affect for not indulging in situations in which indulgence was deliberately set to occur is the process underlying strategic licensing. We also demonstrate that the focal effect is diminished and strategic process is reduced in the case of an unexpected windfall reward. Taken together, this research suggests that lower-calories consumers apply a distinct strategy to achieve a desired vice-virtue balance over time, one that allows for occasional indulgence in reward redemption situations for which indulgence is highly satisfying ("really rewarding reward" occasions).

Although we examine our effects in the specific context of reward programs, we suggest that our findings are more broadly applicable to other forms of strategic measures that individuals might utilize for pleasure management over time. Given that reward redemption situations are relatively infrequent compared to non-reward redemption situations and that they may carry some meaning of "specialness" (Zauberman, Ratner, and Kim 2009), we may more broadly consider them as exceptional occasions (Bhattacharjee and Mogilner 2014; Sussman and

Alter 2012). Yet, there are a variety of contexts that could provide opportunities to build one's consumption patterns to develop sustainable strategies for balancing vice-virtue consumption. Further, although we acknowledge limitations to using calories purchased as a single indicator of healthiness of eating, we suggest that our results speak more broadly to healthier or less healthy patterns of consumption. Considering the present research both as presented and through these broader lenses suggests numerous implications of our work, as described below.

### Theoretical and Practical Implications

First and foremost, our research provides much-needed evidence of how consumers make real, interrelated food decisions over time (i.e., consumption patterns) in the specific context of rewards programs. Our results complement previous findings that licensing behavior occurs in the real world (Hui et al. 2009; Karmarkar and Bollinger 2015) while adding a long-term, strategic perspective that extant research so far has not considered. We specifically identify unique licensing behaviors based on one's long-term food choices, demonstrating a key moderator of significant and practical interest.

*Implications for Theory.* Our research contributes to the literature on licensing effects in consumer choice, specifically food choice (deWitt Huberts et al. 2014; Hui et al. 2009; Karmarkar and Bollinger 2015; Khan and Dhar 2006; Prinsen et al. 2019). We add to the licensing literature by demonstrating that more strategic and functional forms of licensing exist that support the pursuit of long-term health. We do so by being the first to demonstrate and comprehensively characterize a licensing effect over time such that consumers systematically

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3 indulge in exceptional situations only and by identifying that this is in fact *strategic* licensing  
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5 given that we demonstrate that consumers' overall healthier or unhealthier consumption patterns  
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7 drive the extent to which this form of licensing occurs.  
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10 We also extend our understanding of mechanisms underlying indulgence in sequential  
11 choice situations based on negative affect (deWitt Huberts et al. 2014; Okada 2005; Vosgerau et  
12 al. 2020). For instance, Mukhopadhyay and Johar (2009) show that prior restraint makes a  
13  
14 subsequent choice more justifiable. We demonstrate that consumers, particularly those making  
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16 healthier choices, are able to exhibit restraint over a large number of decision-making occasions  
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18 until the "right" moment in which they feel so entitled to indulge that they would in fact  
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20 anticipate negative affect for *not* indulging in this situation. Further, indulgence on a reward-  
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22 redemption (exceptional) occasion does not lead to negative downstream effects on self-control  
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24 for lower-calories consumers in subsequent, ordinary purchase situations as evidenced by the  
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26 return to lower-calories choice patterns. As such, our research combines the literature streams on  
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28 licensing and self-control in one theoretical framework. For lower-calories consumers, strategic  
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30 licensing constitutes a way to avoid the downsides of excessive self-control or hyperopia  
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32 (Cochran and Tesser 1996; Haws and Poynor 2008; Kivetz and Keinan 2006) that leads to a  
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34 healthy and sustainable vice-virtue balance. As such, we extend the literature on hyperopia by  
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36 suggesting a concrete path by which hyperopic tendencies can be carefully managed by  
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38 consumers gravitating towards prudent choices to maximize their long-term welfare. While  
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40 extant literature on myopic behavior assumes the virtue of self-control, which is in effect  
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42 questioned by the literature on hyperopic behavior (Alba and Williams 2013), we demonstrate  
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44 how these two perspectives and inclinations to behave can be reconciled.  
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3 Finally, given the specific context of our investigation, we contribute to the literature  
4 relating to behavioral aspects of frequency reward programs and goal pursuit. By demonstrating  
5 distinct reward redemption behavior patterns, we add to the research acknowledging that  
6 consumer responses to frequency reward programs may depend on consumer-specific  
7 characteristics (e.g., Dorotic et al. 2014; Kopalle et al. 2012). The characteristic we propose is  
8 manifested by actual consumption patterns rather than measurement of consumer traits. Most  
9 notably, the study expands our knowledge about how reward occasions can influence purchases  
10 shortly before and after. While our study adds to existing evidence for a purchase acceleration  
11 effect prior to a reward (Kivetz et al. 2006; Nunes and Drèze 2006; Taylor and Neslin 2005), we  
12 further augment prior literature by showing that these effects are stronger for the lower-calories  
13 consumers who are redeeming even more rewarding rewards.  
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31 *Implication for Consumers and Public Policy Makers.* Our results provide an obvious  
32 implication for those consumers with unhealthy diets who would like to improve their health or  
33 manage their weight. These consumers may learn from and imitate the strategies that consumers  
34 with healthy diets employ, that is, to try to indulge more deliberately only on exceptional  
35 occasions. We suggest that reward programs are one mechanism for drawing clear guidance on  
36 how to license strategically, but other approaches could also be employed. Obviously, our results  
37 do not allow us to make causal inferences in the sense that consumers applying such a strategy  
38 will necessarily lead healthier lives or reduce their weight, but we still note that the patterns we  
39 find are suggestive of distinct strategies that are associated with healthier consumption patterns  
40 over time. Perhaps most important to consumers is knowing that long-term patterns need not be  
41 characterized by continual deprivation.  
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3 For public health experts, gaining insights from actual food consumption patterns over  
4 time is crucial. For example, it may be helpful to encourage less healthy individuals with the  
5 prospect of more rewarding indulgence in exceptional occasions such that a sustainable balance  
6 is achieved. Consequently, individuals may be more likely to sign up for and follow through on  
7 such nutrition programs. Our findings are consistent with Cornil and Chandon's (2016)  
8 conclusion that "eating pleasure needs not be the enemy of healthy eating" (p. 58, see also  
9 Drayer 2018) as well as the potential downsides associated with an overly restrictive approach to  
10 food consumption (Liu and Haws 2020).  
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24 *Implication for Managers.* Even though we argue for a broader applicability of our  
25 results, managers can most specifically use the insights we provide to improve their reward  
26 programs. This is important because managers are increasingly under pressure to attest that their  
27 reward programs are effective (Meyer-Waarden and Benavent 2009; Steinhoff and Palmatier  
28 2016). Our results allow managers to better anticipate what kinds of rewards consumers value,  
29 enabling them to tailor their reward programs to consumer needs (Dorotic et al. 2014).  
30 Furthermore, the fact that purchase acceleration effects may differ based on consumer purchase  
31 patterns enables managers to assess the effectiveness of their reward programs with greater  
32 accuracy.  
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44 In this regard, our research identifies the healthfulness of consumers' consumption  
45 patterns as a relevant segmentation criterion. To improve the impact of their reward programs,  
46 managers should offer a variety of indulgent and non-indulgent options to account for  
47 consumers' preferences. Even businesses specifically targeting consumers with a healthy  
48 lifestyle should offer opportunities for different forms of indulgence, which these consumers like  
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3 to enjoy on occasion. For instance, Smoothie King (2021) targets consumers pursuing a healthy  
4 lifestyle by promoting a “Healthy Rewards” program that highlights the healthiness of the  
5 rewards. Our results instead lead to the suggestion that an indulgent reward may create more  
6 value for these consumers in a reward-redemption situation. To implement the idea of tailoring  
7 the reward programs to the respective consumer groups, managers could improve the  
8 performance of automated recommender systems used in e-commerce settings (e.g. apps) to  
9 suggest rewards based on the observed customer behavior in terms of healthier or unhealthier  
10 consumption patterns (e.g. Häubl and Murray 2003; Häubl and Trifts 2000; Huang, Zeng, and  
11 Chen 2007). The likely resulting increase in customer-program fit ensures that consumers are  
12 more likely to participate (likely with increased frequency), and less likely to give up or dismiss  
13 the program as irrelevant (Kivetz and Simonson 2003; Liu 2007).  
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### 31 Limitations and Further Research

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35 While our study sheds crucial insights into strategic licensing behavior using a multi-  
36 method approach involving a field and an experimental study, our research also has limitations  
37 that future research can seek to address. First, while we leverage actual food purchase data that  
38 spans reward and non-reward purchase occasions and argue that our results are generalizable to  
39 other such exceptional occasions, future research could specifically examine consumption  
40 behavior in other occasions such as paydays or birthdays where consumers may couple the  
41 license to indulge with a different form of justification, for instance, based on social affiliation  
42 (e.g., Lowe and Haws 2014; Ramanathan and McGill 2007).  
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Second, we acknowledge that our longitudinal data includes information on consumers' food purchases, but not actual consumption amounts. Despite literature suggesting that many people eat most of what they order or serve themselves (Birch et al. 1987), we do not know the extent to which this is the case in the present context, and future research could try to validate our results by observing both choice and actual consumption. Further, understanding more specific differences between choice on reward redemption and regular occasions as well as the precise timing of redemption are also potentially informative. While we believe that our data represents a meaningful and consistent component of consumers' diets and is likely to represent larger patterns of food decision-making, it does not capture consumers' entire food purchases or indulgences over this 14-month period of time. Further, although we focused on observable behavior to assess each customer's level on our calories pattern key moderator variable, it would be insightful to examine other potential differences in these customer types (e.g., differences in general anticipated negative affect on any occasion; perceptions of their health consciousness) in order to further understand the links between licensing and self-control.

Third, since our data is only from one specific reward program, we are unable to explore the impact of different types of reward programs in strategic licensing. Future research could examine the effects of frequency of reward occasions and reward thresholds that can incentivize healthier choices. Finally, our experimental study involving a hypothetical choice provides initial evidence for the role of anticipated negative affect for not indulging as part of the justification of the strategic licensing process. However, future research might examine other potential processes that may be contributing to our effects, for example, more visceral responses, the extent to which consumers feel they are restraining themselves on regular purchase occasions, and the role of explicit health and financial goals. Further, while we have cast doubt on depletion as an

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3 alternative explanation in our experiment, depletion effects could emerge over longer periods of  
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5 time if a consumer very explicitly connects the behaviors (as they could potentially do with  
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7 purchases from the same restaurant spaced over time). Overall, we show that healthy consumers  
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10 indulge, too—but more strategically on exceptional occasions.  
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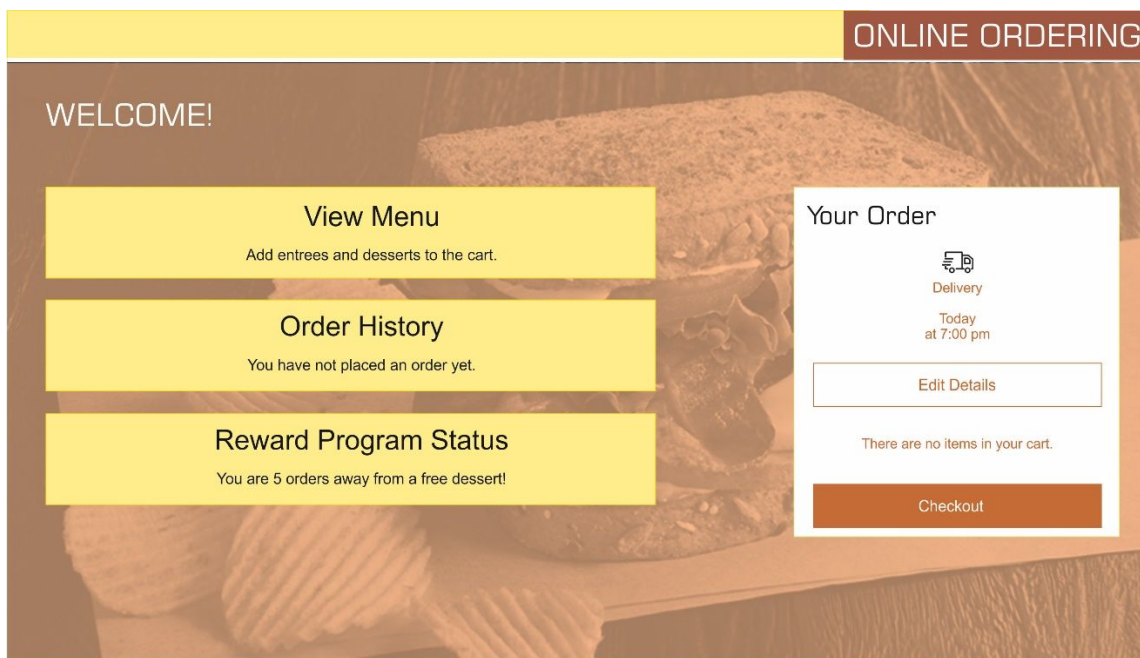
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Use DOI when citing or quoting

### DATA COLLECTION INFORMATION

The data from Study 1 is confidential and protected by a non-disclosure agreement between the first author and the company and was obtained in 2011 and analyzed by the first author. The data is stored on the hard drive of the personal computer of the first author. The data from Study 2 were collected through Amazon's MTurk in February 2021, with the data collection and analyses conducted by the second and third authors. The additional study (Web Appendix) data were collected through Amazon's MTurk in April 2020, with the data collection and analyses conducted by the second and third authors. The data from both Study 2 and the additional study are stored on Dropbox under the management of the second author.

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APPENDIX  
EXPERIMENT SAMPLE STIMULI



Note: The first picture depicts the online ordering welcome page; the second picture depicts the menu on a non-reward redemption situation.

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**TABLE 1**  
**DESCRIPTIVE STATISTICS (LONGITUDINAL STUDY)**

	<b>All Purchases</b>		<b>Non-reward Purchases</b>		<b>Reward Purchases</b>	
	Mean	SD	Mean	SD	Mean	SD
<i>Average calories per order</i>	575.49	416.49	563.86	402.51	634.26	483.87
<i>Average purchase amount per order (\$)</i>	10.17	2.89	9.95	2.57	11.28	3.18
<i>Average number of items in an order</i>	1.69	0.82	1.63	0.79	1.99	0.88
<i>Average number of orders per customer</i>	34.83	7.44	29.07	7.23	5.75	2.08
<i>Average number of desserts per customer</i>	5.48	3.44	2.53	1.35	2.94	1.21
<i>Average number of desserts per order</i>	0.15	0.23	0.08	0.24	0.51	0.27

Note: The dataset includes 7,828 customers, 272,677 purchase orders and 45,043 reward redemption purchases over a 14-month time period.

TABLE 2

**EFFECT OF CONSUMPTION PATTERN AND REWARD OCCASION ON NUMBER OF CALORIES IN THE PURCHASE ORDER**

	<i>Dependent Variable: Number of Calories Ordered</i>	
	<b>Model 1a Controls Only</b>	<b>Model 1b Controls + Proposed Effects</b>
<i>Constant</i>	537.241** (7.017)	501.233*** (7.928)
<i>Average Prior Calories</i>	-	1.412*** (0.174)
<i>Reward</i>	-	77.613*** (6.211)
<i>Average Prior Calories × Reward</i>	-	-0.640*** (0.069)
<i>Average Purchase Amount</i>	1.917*** (0.33)	1.185*** (0.228)
<i>Number of Desserts Purchased</i>	1.682*** (0.116)	1.026*** (0.108)
<i>Number of Previous Orders</i>	0.488*** (0.069)	0.483*** (0.075)
<i>Weekend Purchase</i>	1.335* (0.632)	1.340* (0.641)
<i>Delivery</i>	1.001** (0.32)	1.006** (0.328)
Store Fixed Effects	Yes	Yes
Customer Fixed Effects	Yes	Yes
Month Fixed Effects	Yes	Yes
Delivery Zip Code Variables	Yes	Yes
Number of Observations	272,677	272,677
R-square	0.31	0.53

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$   
Standard errors are in parentheses.



**TABLE 3**  
**EFFECT OF CONSUMPTION PATTERN AND REWARD OCCASION ON PURCHASE OF A DESSERT**

	<i>Dependent Variable: Dessert Purchase</i>	
	<b>Model 2a</b> <b>Controls Only</b>	<b>Model 2b</b> <b>Controls + Proposed</b> <b>Effects</b>
<i>Constant</i>	-1.703*** (0.035)	-1.693*** (0.039)
<i>Average Prior Calories</i>	-	0.51*** (0.059)
<i>Reward</i>	-	1.213** (0.391)
<i>Average Prior Calories × Reward</i>	-	-0.653*** (0.174)
<i>Average Purchase Amount</i>	0.083*** (0.022)	0.081* (0.021)
<i>Number of Desserts Purchased</i>	0.058*** (0.005)	0.057*** (0.005)
<i>Number of Previous Orders</i>	0.007* (0.003)	0.007* (0.003)
<i>Weekend Purchase</i>	0.06*** (0.007)	0.06*** (0.006)
<i>Delivery</i>	0.03*** (0.001)	0.031*** (0.001)
Store Fixed Effects	Yes	Yes
Customer Fixed Effects	Yes	Yes
Month Fixed Effects	Yes	Yes
Delivery Zip Code Variables	Yes	Yes
Number of Observations	272,677	272,677
Log-Likelihood	-130,119.91	-129,915.48

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$   
Standard errors are in parentheses.

TABLE 4

**EFFECT OF CONSUMPTION PATTERN AND PRE- AND POST-REWARD OCCASIONS ON INTER-PURCHASE TIME**

	<i>Dependent Variable: Inter-purchase Time</i>
<i>Constant</i>	8.005*** (1.927)
<i>Average Prior Calories</i>	-1.599** (0.281)
<i>Pre-Reward Occasion</i>	-1.050*** (0.256)
<i>Post-Reward Occasion</i>	1.392* (0.442)
<i>Average Prior Calories × Pre-Reward Occasion</i>	0.574** (0.199)
<i>Average Prior Calories × Post-Reward Occasion</i>	-0.491* (0.226)
<i>Average Purchase Amount</i>	1.126*** (0.209)
<i>Number of Desserts Purchased</i>	0.620* (0.258)
<i>Number of Previous Orders</i>	0.207*** (0.061)
<i>Weekend Purchase</i>	1.452* (0.606)
<i>Delivery</i>	1.0002* (0.415)
Store Fixed Effects	Yes
Customer Fixed Effects	Yes
Month Fixed Effects	Yes
Delivery Zip Code Variables	Yes
Number of Observations	272,677
R-square	0.48

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

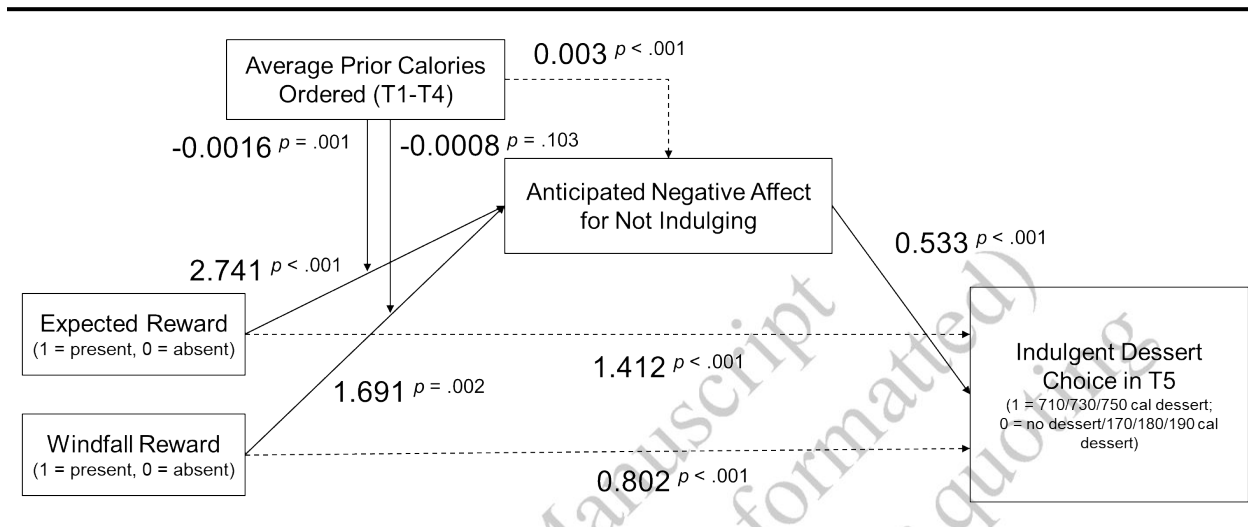
Notes: *Pre-Reward Occasion* takes value 1 if the inter-purchase time between two consecutive purchase occasions corresponds to a pre-reward occasion and a reward purchase occasion, and 0 otherwise.

*Post-Reward Occasion* takes value 1 if the inter-purchase time between two consecutive purchase occasions corresponds to a reward purchase occasion and a post-reward occasion, and 0 otherwise.

Standard errors are in parentheses.

FIGURE 1

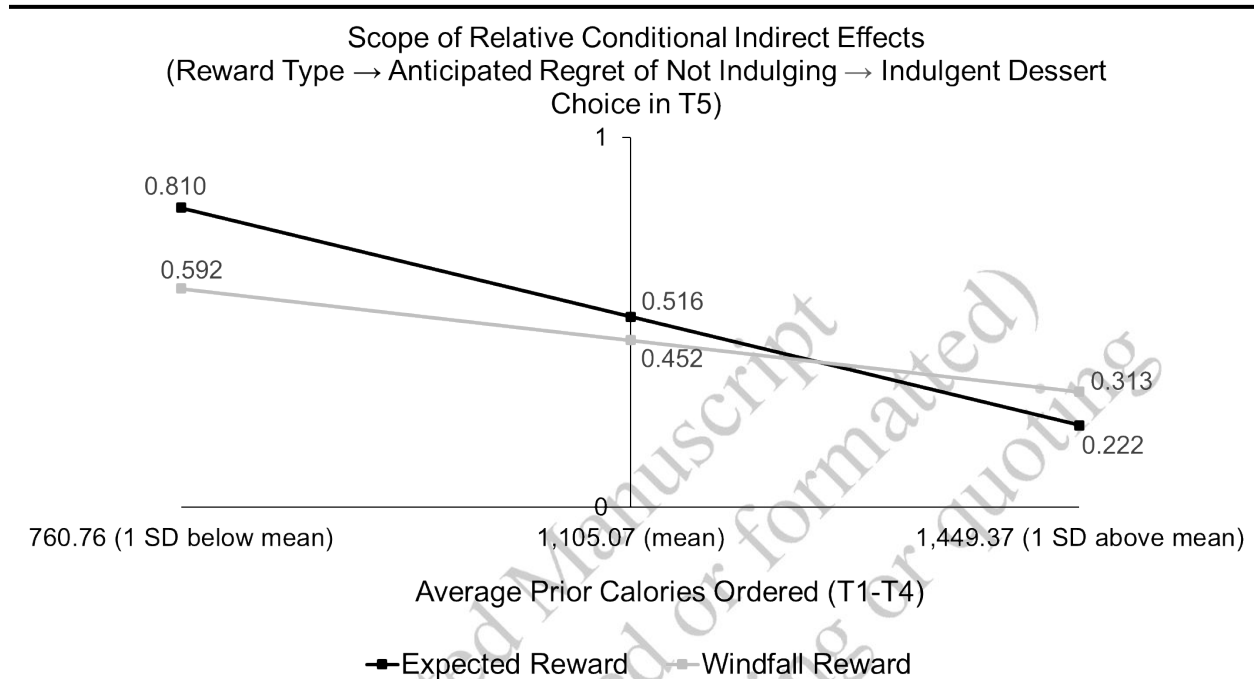
## ANALYSIS OF PROCESS



Note: The reference condition is “no reward in T5”.

**FIGURE 2**

**SCOPE OF INDIRECT EFFECTS**



Notes: The reference condition is “no reward in T5”. Indirect effects are in log-odds metric.

## HEADINGS LIST

### 1) LICENSING INDULGENT CONSUMPTION

- 2) Licensing in Single and Dual Choice Situations
- 2) Broadening the Scope to Long-Term Patterns of Consumption

### 1) STRATEGIC LICENSING

- 2) Utilizing Reward Programs for Justifying Indulgence
- 2) Differentiating Lower-Calories and Higher-Calories Consumers
- 2) The Role of Forethought in Strategic Licensing
- 3) *Purchase Acceleration*
- 3) *Expected versus Windfall Rewards*

### 1) EXAMINING STRATEGIC LICENSING USING LONGITUDINAL CUSTOMER PURCHASE DATA

- 2) Customer Purchase Data
- 3) *Data Characteristics*
- 3) *Restaurant and Reward Program Characteristics*
- 3) *Sample Data*
- 3) *Descriptive Statistics*

### 2) Operationalization of Key Constructs

### 2) Self-Selection and Control Variables

### 2) Model Formulation

### 3) *Number of Calories Purchased*

### 3) *Dessert Purchase*

### 1) RESULTS OF LONGITUDINAL DATA ANALYSIS

### 2) Examining the Differential Shift towards Indulgence in Reward Redemption Situations

### 2) Purchase Acceleration

### 2) Robustness Checks and Alternative Explanations

### 3) *Alternative Operationalization of the Moderator*

### 3) *Ceiling Effects*

### 3) *Additional Indulgent Outcomes*

### 3) *Alternative Explanations*

### 1) EXPERIMENTAL EVIDENCE FOR STRATEGIC LICENSING

### 2) Method

### 2) Results and Discussion

### 1) GENERAL DISCUSSION

### 2) Theoretical and Practical Implications

### 3) *Implications for Theory*

### 3) *Implication for Consumers and Public Policy Makers*

### 3) *Implication for Managers*

### 2) Limitations and Further Research