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When dessert comes close: The effects of anticipating indulgent consumption and dietary restraint on healthy food preference at restaurants

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Abstract

When dining in restaurants, diners often anticipate indulgent consumption, such as enjoying a dessert. This study examined the effects of anticipating such indulgence on preferences for healthy food among restrained and unrestrained eaters. Two experiments revealed that anticipating indulgent consumption reduced restrained eaters’ preference for the immediate consumption of healthy food. Conversely, unrestrained eaters’ expectation of indulgent consumption increased or did not change their preference for a healthy option. The interactive effect of indulgence anticipation and dietary restraint on healthy food preference held regardless of availability of nutrition information. The findings suggest that, despite increasing concern for healthy eating, restrained consumers ironically show a preference for unhealthy food options when anticipating a dessert consumption opportunity. The present study provides theoretical implications for consumption anticipation, sequential consumption, and dietary restraint, and practical implications for restaurateurs as well as for consumers, health professionals, and policymakers regarding healthy eating.

1. Introduction

Eating at restaurants continues to be increasingly popular in the US. Indeed, estimated annual sales in the restaurant industry reached $863 billion in 2019 (National Restaurant Association, 2019). However, frequently eating outside of the home is related to an augmented risk of becoming overweight and even obese, which is a dire public health issue (Nago et al., 2014; Bhutani et al., 2018). In recent years, responding to the need for healthy eating promulgated by policymakers and consumers, restaurants increasingly offer more healthy food options (National Restaurant Association, 2017) and introduce healthier alternatives to conventionally indulgent food (i.e., relatively unhealthy but tasty food) (Wilcox et al., 2009).

Despite such restaurant initiatives, consumers do not always prioritize consuming healthful food alternatives (International Food Information Council, 2017). In fact, consumers’ preferences for healthy food can be changed by how they perceive their consumption occasion. When the consumption occasion is perceived as extraordinary (e.g., “once-in-a-lifetime experience”), consumers augment their indulgent food intake (Minton and Liu, 2018). When they have a justifiable reason for indulgence, they prefer indulgent food (e.g., chocolate cake) to non-indulgent food (Mukhopadhyay and Johar, 2009) and consume a higher number of calories of the given food (Prinsen et al., 2019). Prior research has noted the importance of examining under which conditions consumers opt for healthy versus indulgent food options at restaurants. Following this charge, the current study introduces anticipation of future indulgence as a novel situational factor that may influence healthy food preference at restaurants.

When dining in restaurants, diners often expect to engage in indulgent consumption. For example, when choosing an entrée, diners may expect dessert options to follow. In fact, waiting to engage in indulgent consumption of a dessert, for example, at a restaurant is prevalent (e.g., a free piece of cake on birthdays and anniversaries; Bai et al., 2006; “Cheesecake Day on July 30th in the US,” Schaltegger, 2019). Although particularly palatable, such offerings are perceived to be unhealthy (Her and Seo, 2017) and, indeed, contain a high number of calories (Bleich et al., 2016), which is conducive to excessive energy intake.

Although anticipation of indulgent food consumption is prevalent, prior research has primarily explored the effect of consumption anticipation on the emotional and hedonic experiences related to anticipated consumption (Frederick et al., 2002; Hur and Jang, 2015; Kumar et al., 2006; Schaltegger, 2019). The present research was undertaken prior to the Covid-19 pandemic. As such, its focus pertained solely to pre-pandemic dining norms and trends in the restaurant industry. Because the pandemic has affected consumer confidence and consumption patterns (Rivera, 2020; Sheth, 2020), the implications of our investigation would be more relevant to a restaurant context when concerns about the pandemic or similar incidents are markedly reduced.

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et al., 2014; Mandel and Nowlis, 2008). For example, scholars have found that anticipating experiential consumption is more pleasurable than anticipating material consumption (Kumar et al., 2014). Notwithstanding extant work, little is known about whether a situation affording indulgence anticipation affects diners’ healthy food preferences in the context of sequential decision making.

Prior literature on sequential consumption decisions provides two opposite predictions (Dhar and Simonson, 1999): as a function of indulgence anticipation, people may prefer either healthy food (i.e., to balance out future indulgence, which is inconsistent with future indulgence) or unhealthy food for the immediate consumption (i.e., to highlight a hedonic goal, which is consistent with future indulgence). Although previous empiricism in sequential decision making generally predicts a balancing pattern (i.e., preferring healthy food for immediate consumption when anticipating future indulgence) (Dhar and Simonson, 1999; Kivetz and Zheng, 2006; Khan and Dhar, 2006; Sim and Cheon, 2019), what determines the patterns of sequential decisions is largely unknown. Thus, we investigate how anticipating indulgent food consumption (i.e., a dessert) impacts consumers’ healthy food preferences prior to indulgent consumption (i.e., selection of the entrée) in the sequential consumption context at restaurants.

Building on extant literature on dietary restraint, we examine the foregoing issue by considering whether the effect of anticipation varies depending on a particular consumer segment at restaurants: restrained versus unrestrained eaters. Restrained eaters are motivated to control their weight through eating regulation; unrestrained eaters, in contrast, are not motivated to do so (Polivy and Herman, 1999). Thus, restrained and unrestrained eaters tend to respond differently to situational factors regarding dietary regulation (Bublitz et al., 2010). Because restrained eaters have strong motivational conflict between a goal of dietary regulation and one of eating enjoyment, they are prone to eating more indulgent food when tempted by indulgent food cues (Stroebe et al., 2008). Adding to prior findings concerning restrained eaters’ ironic vulnerability to such enticing situations (Heatherton et al., 1990; Polivy and Herman, 1999; Stroebe et al., 2008), we propose that the effect of anticipating future indulgence varies across consumer segments based on one’s degree of dietary restraint.

In addition, many countries have introduced menu labeling to inform consumers and promote healthy eating (European Food Information Council, 2018), thus inducing restaurateurs to employ such labeling. At a restaurant offering both relatively healthy and unhealthy choices, providing nutrition information might help consumers readily discern the healthiness of different items by highlighting the positive (negative) aspects of healthy (unhealthy) food choices (Trudel and Murray, 2011). Thus, we explore whether providing nutrition information is a necessary contextual condition for the effect of anticipating indulgence and dietary restraint on preference for healthy food in a restaurant.

The present research provides important implications for restaurateurs by suggesting that promotion or recommendations of food items can be targeted differently to different consumer segments (i.e., restrained versus unrestrained eaters here), depending on whether indulgent food consumption is anticipated. Our findings also offer suggestions for consumers, nutrition and health experts, and policymakers by showing how healthy food preference can be affected by anticipation of indulgent food consumption.

In the present study, to test our predictions for the interactive effect of indulgence anticipation and dietary restraint on healthy food preference, we focus on behavioral response measured by preference for or choice of healthy food for immediate consumption in restaurant settings. We also test whether providing nutrition information should precede the interactive effect of anticipation and dietary restraint on preference for healthy food. Our hypotheses are tested in two studies adopting a scenario-based experiment. The theoretical underpinnings of the research objectives and our predictions, as well as the implications of the present study, are elucidated below.

2. Literature review and research hypotheses

2.1. Dietary restraint

Dietary restraint refers to individual differences in behavior and motivation to manage weight through dietary regulation (Bublitz et al., 2010). It is an important antecedent of eating decisions (Rideout et al., 2004; Polivy and Herman, 1999). Individuals high in dietary restraint—restrained eaters—tend to restrict food intake by setting rules (e.g., forbidding consumption of indulgent food items, such as milkshakes or cake), rather than follow their internal energy needs (Knight and Boland, 1989).

Ironically, unlike health-conscious consumers who maintain persistent preferences for healthy food items (Her and Seo, 2017), restrained eaters do not always avoid eating unhealthy foods. Indeed, they sometimes increase their intake of “forbidden” foods, dampening their regulatory interests. Such instances arise when they lack sufficient cognitive resources to follow the rules (Ward and Mann, 2000) or have already violated their restraint goals (Polivy and Herman, 1999; Polivy et al., 1988). Also, restrained eaters give in to temptation when indulgent food is presented in small sizes and packages (Scott et al., 2008). As such, their preference for healthy food weakens in the presence of tempting food cues (Van Koningsbruggen et al., 2012).

According to Stroebe et al.’s (2008) goal conflict model of eating, restrained eaters’ vulnerability to temptation is attributed to conflict between their goal of a strong desire to enjoy indulgent food and a dietary regulation goal for weight control. Once accessibility of the goal of consumption enjoyment is heightened by situational cues, the goal of eating regulation, which is incompatible with the goal of consumption enjoyment, is inhibited. The consequence is that restrained eaters seek more indulgent food (Stroebe et al., 2008).

Conversely, unrestrained eaters have no strong interest in regulating their food intake (Polivy and Herman, 1999). As such, they do not have motivational conflict regarding consuming indulgent foods and are not susceptible to indulgent food cues (Stroebe et al., 2008). Rather, unrestrained eaters have a tendency to balance their consumption across consumption episodes, as they follow their natural internal cues (e.g., satiation, hunger). For example, one study found that, after unrestrained eaters drank a chocolate milkshake, they ate less ice cream (Polivy et al., 1988). The foregoing findings suggest that restrained eaters respond to opportunities to eat indulgent food differently from unrestrained eaters owing to differences in their respective interests to regulate food intake and resultant goal conflict between eating enjoyment and weight control.

2.2. Anticipating indulgent consumption and dietary restraint

Consumers often decide what to eat in the context of anticipated indulgence (Zemack-Rugar and Corus, 2018). For example, at a restaurant offering a three-course dinner, consumers know they will receive dessert after finishing the entrée. When consumers anticipate pleasurable experiences, the anticipation generates positive reactions associated with the prospective consumption (Frederick et al., 2002; Nowlis et al., 2004; Ryan et al., 2018). Similarly, when diners anticipate a dessert, they conceivably would have positive reactions to the upcoming opportunity to indulge.

However, depending on individuals’ dietary restraint, the expected pleasure from anticipating indulgence might differ. When restrained eaters think of indulgent foods, they experience more hedonic thoughts than unrestrained eaters (Papies et al., 2007). Such increased hedonic thoughts would induce a desire for indulgence. For example, exposure to indulgent food cues (e.g., pizza) increases one’s desire and craving for the cued food, as well as its actual intake, only for restrained eaters, but not for unrestrained eaters (Fedoroff et al., 1997). Similarly, when indulgent consumption is anticipated, restrained eaters might focus more on the hedonically pleasurable aspects of indulgent food, further
impelling their desire for eating indulgent food. The heightened desire would be translated into increased preference for indulgent food, as once the desire arises, tempering it becomes difficult (Hofmann et al., 2012). Consequently, anticipation of indulgent food may make restrained eaters prefer relatively unhealthy food for immediate consumption. After all, such consumption may well slack their hedonic craving for indulgent food.

In the context of sequential consumption decisions (e.g., ordering a dessert after an entrée has been served and consumed in a restaurant) (Her and Seo, 2017), prior research has shown that, despite restrained eaters’ concerns for weight control, when encountering challenges to dietary goals, they tend to forgo restraint goals and willingly consume indulgent food. This prior consumption of indulgent food tends to have deleterious effects on their persistent goal pursuit (Heatherton et al., 1990; Polivy et al., 1988; Polivy and Herman, 1999). For example, Knight and Boland (1989) found that, after restrained eaters had consumed a milkshake, they ate more ice cream than when they had not consumed a milkshake earlier. This ironic outcome, termed the “what-the-hell” effect (Cochran and Tesser, 1996), stems from violating one’s goal of restricting food intake.

Because prior indulgent food consumption triggers perceptions of a goal violation among restrained eaters, anticipating indulgent food consumption might also create a sense of prospective goal violation, due to restrained eaters’ sensitivity to dietary goal challenges. As a result, not only realized but also anticipated goal failures (e.g., eating dessert in the future) might negatively impact their adherence to a goal of dietary restraint. For example, those who are highly sensitive to their goal failure have difficulty in returning to the goal when they expect to violate their goal in the future (Zemack-Rugar and Corus, 2018). Similarly, dieters regard indulgent food items as “tempting sins” (Elffron et al., 2013) and restrained eaters see them as “forbidden food” (Lemmens et al., 2010). Therefore, anticipating indulgent food can signal a future goal violation to restrained eaters, which may demotivate them from pursuing their dietary goals (e.g., “What the hell—my diet will be ruined anyway.”). Thus, restrained eaters might be more willing to select indulgent food alternatives instead of healthy ones for immediate consumption.

Furthermore, anticipating future indulgent consumption might lead restrained eaters to justify indulgent food consumption in the present. Although indulgent consumption produces guilt (Giner-Sorolla, 2001), justifications can reduce guilt associated with indulgence (Khan and Dhar, 2007), thus contributing to augmented indulgent consumption. Moreover, as temptations increase, so do justifications (van de Ven et al., 2018). Likewise, when anticipating eating indulgent food, which is an obvious temptation to restrained eaters (Fujita et al., 2018), restrained eaters might become motivated to reason that deviating from their restraint goal temporarily (e.g., “It’s a cheating day”) is permissible. Such reasoning is conducive to subsequent regulatory failure among those with low resilience for returning to their goal pursuit (Zemack-Rugar et al., 2012). Indeed, restrained eaters are known for their reluctance to return to their regulatory goal after realizing a previous goal failure: they tend to believe that maintaining their dietary goal is unnecessary if it has already been violated (Polivy and Herman, 1999). As a result of the justifications for future indulgence, restrained eaters may willfully abandon healthy alternatives and choose indulgent alternatives while experiencing reduced guilt.

In contrast, unrestrained eaters have relatively weak interest in controlling food intake, owing to a low concern with restricting what they eat; as such, they do not experience conflict between indulgence and self-control in food consumption (Stroebe et al., 2008). Thus, unrestrained eaters tend to be less tempted by palatable food cues than are restrained eaters (Papies et al., 2007; Fedoroff et al., 1997). Merely thinking about indulgent food in a social context activates hedonic thoughts in restrained eaters but does not activate them in unrestrained eaters (Papies et al., 2007). This finding suggests that anticipating eating indulgent food might not strongly lead to unrestrained eaters’ prolonged desire to consume indulgent food. In fact, indulgent food cues do not increase unrestrained eaters’ desire for the indulgent food or actual indulgent food intake (Fedoroff et al., 1997). Moreover, due to the absence of dietary restraining goals of unrestrained eaters (Bublitz et al., 2010; Polivy and Herman, 1999), such individuals are unlikely to experience a sense of goal failure as there is no restrictive dietary goal to violate from the beginning. Thus, they are not likely to be as responsive to the anticipation as are restrained eaters. For the same reason, unrestrained eaters seemingly have no need to justify their upcoming indulgent consumption; thus, anticipating indulgent food might not especially encourage them to justify continued indulgence.

Given the foregoing, we propose that, when unrestrained eaters anticipate future indulgent consumption, they will increase healthy food preference for immediate consumption. Though unrestrained eaters are not dedicated to restrictive diet rules as are restrained eaters, extant literature suggests that unrestrained eaters naturally seek a balance regarding what they consume across consumption episodes. For example, after drinking a milkshake, unrestrained eaters reduced their intake of another indulgent food in the subsequent consumption episode (Polivy et al., 1988), which suggests that they apparently have a compensatory eating tendency. Unlike restrained eaters who rely on external cues (e.g., the presence of attractive foods) (Scott et al., 2008), unrestrained eaters attend to internal cues for their organic intake regulation (e.g., their own hunger, how filling they perceive foods to be) (Polivy and Herman, 1999). In other words, unrestrained eaters’ inclination to rely on internal cues would contribute to their tendency to balance caloric intake across consumption decisions. When unrestrained eaters anticipate indulgent food consumption, they may expect a sense of fullness from eating indulgent food later and, as a result, try to balance their food choices in advance. Choosing healthy food items that are often lighter than unhealthy items can be a prospective way to buffer the upcoming expected feeling of satiation from anticipated indulgence. Thus, given relatively healthy and unhealthy food choices, unrestrained eaters will prefer healthy food for immediate consumption more when they know indulgent consumption will follow.

In summary, we propose that the effect of anticipating indulgent food on preference for healthy food will depend on dietary restraint. Formally, our hypotheses are as follows:

H1 (a). When anticipating indulgent food consumption, restrained eaters will be less likely to prefer healthy food.

H1 (b). When anticipating indulgent food consumption, unrestrained eaters will be more likely to prefer healthy food.

2.3. The role of nutrition information provision

We further investigate the role of nutrition information in the interactive effect of anticipation and dietary restraint on healthy food preference. Over the last decade, provision of nutrition information for food items has become prevalent; menu labeling has been mandated for foods at restaurants and food retailers with 20 or more locations in the US since 2018 (Food and Drug Administration, 2016). Despite expectations that menu labeling would enhance healthy eating, a meta-analysis revealed only a negligible effect on choices of lower-calorie options (Zlatevska et al., 2018). Nonetheless, disclosure of calorie information influences food choices depending on contextual factors, such as perceived healthiness of retailers (Wei and Miao, 2013) and other items on the menu (Yoon and George, 2012). Thus, we do not expect providing nutrition information to have a main effect on the preference for healthy food.

However, disclosure of nutrition information, such as menu labeling, can help consumers readily detect the difference between relatively healthy and unhealthy foods. First, disclosing nutrition information increases the salience of the information (Goswami and Urminsky, 2015; Trudel and Murray, 2011), which can highlight the
relative healthiness of choices. Second, providing nutrition information about food items influences individuals’ attitudes towards them (Kozup et al., 2003), since the link between information suggestive of food healthiness and attitude is mediated by perceptions of healthiness (Shin and Mattila, 2019). This suggests that providing nutrition information would influence the perceived healthiness of food items and facilitate identification of relatively healthy and unhealthy foods from the menu.

Moreover, providing nutrition information can influence perceptions of another critical attribute: tastiness. Consumers tend to perceive unhealthy options as tastier than healthy options (Raghunathan et al., 2006). If anticipating indulgence increases restrained eaters’ preference for indulgent food, provision of nutrition information might help them find and choose unhealthy foods that can meet their desire for indulgent food. Conversely, if unrestrained eaters seek options to balance their expected future indulgence, they might readily find seemingly healthy foods by using nutrition information. However, when nutrition information is unavailable, people might not easily detect the differences between food items in terms of healthiness and tastiness. Put simply, the absence of nutrition information might deter both restrained and unrestrained eaters from identifying healthy or unhealthy food. As a result, when anticipating future indulgence, in the lack of nutrition information provided for food options, restrained eaters might not reduce their preference for healthy food for immediate consumption; unrestrained eaters, though, might not increase their healthy food preference. In short, we predict that provision of nutrition information will be necessary for the interactive effect of anticipation and dietary restraint on preference for healthy food.

H2. The interactive effect of anticipation and dietary restraint on healthy food preference will be pronounced only when nutrition information is provided for healthy and unhealthy foods. In the absence of nutrition information, this interactive effect will not be observed.

The conceptual framework of this study is shown in Fig. 1. H1a and H1b are tested in both Studies 1 and 2; H2, in Study 2.

3. Study 1

Study 1 aims to test the different effects of anticipating future indulgence on the preference for healthy and unhealthy options among restrained versus unrestrained eaters (H1a; H1b).

3.1. Design and participants

This study employed a 2 (anticipation of future indulgence: no vs. yes) x measured dietary restraint design with the first factor manipulated as between-subjects. At a university in a large Asian city, four hundred twenty-six undergraduate students (244 female; 182 male, $M_{age} = 20.34$) participated in exchange for partial course credit in 2015. Students unwilling to participate were offered the alternative of working on another assignment to achieve the same course credit; thus, participation was voluntary. We received written informed consent before the study. Students were allowed to terminate participation in the middle of the experiment if they wished. Participants were between 17 and 42 years old, with 99.8% under 25 years old.

3.2. Materials and procedures

The study was introduced as a restaurant study. The survey was programmed on a Qualtrics survey webpage. Participants worked on a PC in a separate cubicle in a lab. At the beginning of the experiment, participants were instructed to imagine that they were about to choose an entrée option. They were then randomly assigned to either the anticipation or the no-anticipation condition. In the anticipation condition, participants learned that they might eat a dessert after the entrée; in the no-anticipation condition, participants were not informed of this. In both conditions, participants received the same entrée menu listing two options with accompanying nutrition information: rib eye steak and strawberry avocado salad (see Supplementary material A). Nutrition information was provided to enable participants to distinguish the healthiness of the items.

Participants subsequently chose an entrée and then rated how healthy each entrée option was. Before asking demographic questions at the end of the experiment, we measured participants’ dietary restraint. We included two attention check questions in the middle of the survey to ensure that participants paid attention to the instructions. These questions had five options, but the instructions clearly mentioned that participants should not choose any of them (“This question is meant to check if you are really paying attention to our questions. Please don’t click any answer, and instead go directly to the next page.”). Participants who chose any item in either attention check question were regarded as having failed the attention check. This kind of attention check has been used to discard unqualified data (Oppenheimer et al., 2009). We planned to exclude participants who failed these two attention checks.

3.3. Measures

Preference for healthy versus unhealthy food was measured with a binary choice measure ($0 = \text{choice of an unhealthy option}; 1 = \text{choice of a healthy option}$). We measured the perceived healthiness of the two food options with a one-item scale for each option (“How healthy do you think each option is?”; $1 = \text{very unhealthy}, 7 = \text{very healthy}$) to confirm that the participants perceived the two items as healthy and unhealthy as intended. We also assessed the number of calories participants recalled each item had. To measure participants’ dietary restraint, we used Herman and Polivy’s (1980) 10-item dietary restraint scale ($\alpha = .783, M = 12.89, SD = 5.58$). To ensure participants’ anticipating dessert differed between the two experimental conditions as intended, we asked if they expected to have dessert after their entrée choice (yes vs. no) as a manipulation check. Additionally, before asking them demographic questions, we also inquired about the number of hours that had elapsed since they had eaten their most recent meal; this was done to estimate their hunger level during the study to control for it.

3.4. Results

3.4.1. Data exclusion and manipulation check

Before analyzing the data, we excluded eleven participants because they failed to pass the attention check. We then analyzed the remaining participants ($N = 415; 238 \text{ female}; 177 \text{ male}, M_{age} = 20.35; n = 207$ in the no-anticipation condition; $n = 208$ in the anticipation condition).

We compared the perceived healthiness of the two choices. Participants perceived the salad ($M = 5.09$) as healthier than the steak ($M = 3.19; F(1, 414) = 562.24, p < .001$), thus suggesting the high-calorie option was perceived as less healthy than the low-calorie option.
For the manipulation check, we asked if participants expected to eat dessert when making an entrée choice. As intended, 54.8% of the participants in the anticipation condition indicated they expected to have dessert after the entrée. In contrast, in the no-anticipation condition, only 20.3% of participants anticipated eating dessert (Pearson’s χ²(1) = 52.69, p < .001). This indicates that our manipulation of anticipation was successful.

Additionally, though all participants received identical nutrition information regarding menu items, we tested whether anticipating future indulgence might unexpectedly influence recalled calories. Manipulation of anticipation did not affect the recalled calorie counts of healthy (M_no-anticipation = 553.11 calories; M_anticipation = 576.63 calories; t(1, 410) = .185, p = .667; analysis conducted with three missing values) or unhealthy (M_no-anticipation = 736.03 calories; M_anticipation = 772.60 calories; t(1, 410) = .185, p = .667; analysis conducted with three missing values) options.

3.4.2. Hypotheses testing

We used a binary logistic regression with anticipation as the independent variable and dietary restraint as a moderator by adopting the Hayes (2013) PROCESS model 1 with 5000 iterations of bootstrapping. The dependent variable was choice of a low-calorie option (0 = choice of a high-calorie option; 1 = choice of a low-calorie option). Anticipation was a binary variable (0 = no anticipation; 1 = anticipation), and the dietary restraint scale was treated as continuous after standardization, rather than dividing the data into two groups. Recent research has recommended using continuous variables and avoiding dichotomizing data, as dichotomization (i.e., splitting the data based on the median) loses information from the available data and imposes the risk of spurious results (Fitzsimons, 2008; Hou et al., 2017; Spiller et al., 2013). As predicted, the binary logistic regression revealed that, although the main effects of dietary restraint (z = 1.11, p = .267) and anticipation were not significant (z = −.62, p = .533), the two-way interaction was significant (z = −2.17, p = .030; see Table 1).

To test the simple effects of anticipation, using PROCESS model 1, we conducted a Johnson-Neyman analysis (Johnson and Fay, 1950) using a non-standardized value of the dietary restraint scale to find the regions of values of dietary restraint (0–30 in the present data) in which the simple effect of anticipation becomes significant (Mohr et al., 2012). Johnson-Neyman analysis revealed that more restrained eaters and unrestrained eaters in previous research (Herman and Polivy, 1980; Polivy et al., 1988). This approach is compatible with recent recommendations regarding statistical analyses (Spiller et al., 2013; Krishna, 2016) and previous research adopting a similar model (Sharifi, 2020). As reflected in Table 2, due to anticipation, those having high dietary restraint scores (e.g., dietary restraint = 18.70, 20, 25) were significantly less likely to choose a healthy entrée; those with low dietary restraint scores (e.g., dietary restraint = 10, 5, 0), however, were not more likely to choose a healthy entrée.

We conducted the similar regression analysis to the main analysis, after adding a control variable that might influence a preference between relatively healthy and unhealthy food items. We measured the number of hours since participants had consumed their last meal (M = 3.37; SD = 4.03, after excluding one unrealistic response) as a proxy for hunger. The hours since the last meal might be related to higher preferences for an unhealthy option, since high-calorie foods can marginally significant (b = .999, z = 1.78, p = .076) at the lowest point of the scale (2.31 SD below the mean or restraint score of 0), which corresponds to the most unrestrained individuals. Thus, the results do not support H1b. However, consistent with the prediction, the direction of the effect suggests that unrestrained eaters tend to show higher preference for relatively healthy food when anticipating dessert.

To supplement the Johnson-Neyman approach, spotlight analyses (Spiller et al., 2013) were also conducted at various spotlighted values of dietary restraint (Table 2) to test whether the simple effects of the independent variable (manipulated anticipation) were significant at seven spotlighted values of the continuous variable (measured dietary restraint), in addition to the Johnson-Nayman point. We adopted several values, with the value of 15 as a reference value in the middle (0, 5, 10, 15, 20, 25, 30), as the restraint value of 15 has been used to classify restrained eaters and unrestrained eaters in previous research (Herman and Polivy, 1980; Polivy et al., 1988). Thus, the preference was estimated only within this range.

Table 1

| Predictors      | B    | SE   | z     | p       | LCLI | UCLI |
|-----------------|------|------|-------|---------|------|------|
| Constant        | −0.965 | 0.156 | −6.181 | < .001* | −1.271 | −0.659 |
| Anticipation    | −0.140 | 0.225 | −0.623 | 0.533   | −0.582 | 0.301 |
| Dietary Restraint | 0.168 | 0.151 | 1.11   | 0.267   | −0.129 | 0.465 |
| Anticipation x  | −0.493 | 0.227 | −2.169 | 0.030*  | −0.939 | −0.048 |

Table 2

| Dietary restraint | B    | z     | p       | LCLI | UCLI |
|-------------------|------|-------|---------|------|------|
| 0                 | .999 | 1.776 | .076    | −.104 | 2.101 |
| 5                 | .557 | 1.448 | .148    | −.197 | 1.310 |
| 10                | .115 | .461  | .645    | −.374 | .604 |
| 15                | −.327 | −1.337 | .181    | −.806 | .152 |
| 18.70 (Johnson-Neyman point) | −.454 | −1.960 | .050    | −1.308 | .000 |
| 20                | −.769 | −2.053 | .040    | −1.503 | −.035 |
| 25                | −1.211 | −2.197 | .028    | −2.291 | −.131 |
| 30                | −1.652 | −2.228 | .026    | −3.106 | −.199 |

Note. Anticipation: Condition (0 = no anticipation; 1 = anticipation); Dietary restraint (standardized).

* Represents 5% significance level.

** Represents .1% significance level.

Fig. 2. The choice probability of a healthy alternative as a function of anticipating food consumption and dietary restraint—Study 1.

Note. Although the dietary restraint scale can range from 0 to 35, in the present data it ranged between 0 and 30. Thus, the preference was estimated only within this range.
better satisfy hunger. Even when controlling for hours since the last meal \((b = -0.057, z = -1.742, p = .08)\), the results remained similar to those without a control in terms of the pattern and significance of the effects found in hypotheses testing (See Tables B.1 and B.2 for the analysis results controlling for hours since the last meal in Supplementary material B).

3.5. Discussion

In Study 1, expecting future dessert consumption reduced restrained eaters’ preference for relatively healthy food for immediate consumption (the entrée), consistent with H1a. Merely expecting dessert consumption decreased restrained eaters’ pursuit of dietary regulation even though they had not consumed dessert and, thus, had not yet failed to keep their restraint. Although restrained eaters could have proactively compensated for their future dessert consumption by choosing a healthy option for immediate consumption, they preferred unhealthy food more in the present. On the contrary, among unrestrained eaters, the effect of anticipation was not significant even at the lowest point of the dietary restraint, not supporting H1b. However, the directionality of the results suggests that unrestrained eaters became more likely to make a relatively healthy choice in response to the anticipation.

While Study 1 provides initial evidence of the interactive effect of anticipated indulgence and dietary restraint on current preference for healthy food, it has several limitations. We recruited only undergraduate students from an Asian city, most (99.8%) who were less than 25 years old. As younger adults tend to place lower importance than older adults on attributes related to nutrition and weight control in making dietary choices, such as consuming fewer fruits and vegetables (Glanz et al., 1998), the overall choice probability of a healthy option was quite low. Additionally, evidence for H1b was weak, as only a marginally significant effect was found at the lowest end of the scale. Therefore, in Study 2, to expand the generalizability of our findings, we aimed to test these hypotheses (H1a; H1b) on American consumers having a broader age range. Additionally, in Study 1, we did not consider participants’ dietary restrictions, such as being vegetarian, and provided only non-vegetarian options. Despite the low prevalence of vegetarian diets in the city (2.5% in 2016; Lee, 2019), the responses of vegetarian participants might have affected the results. To address this concern, in Study 2, we recruited only non-vegetarian participants by introducing a screening question prior to the study. Finally, in Study 1, all participants received nutrition information regarding options. These nutrition data might have contributed to the effect of expecting future indulgence because of their salience (Goswami and Urmsinsky, 2015; Trudel and Murray, 2011), potentially helping consumers distinguish the relative healthiness of different items. In the absence of nutrition information, consumers might not be able to find an item that matches their preference for healthy food consumption (H2). Thus, in the next study, we aimed to replicate the findings of Study 1 with a different sample and to test whether the interactive effect of anticipation and dietary restraint on healthy food preference holds only in the presence of nutrition information (H2).

4. Study 2

As noted above, Study 2 examined whether the availability of nutrition information could moderate the effect of anticipating future consumption. We added the nutrition information availability factor to the design from Study 1 and tested whether the interactive effect of anticipation and dietary restraint on healthy food preference is observed only when nutrition information is presented (H2). Furthermore, although Study 1 used an Asian sample, in Study 2, we attempted to replicate the findings utilizing American participants.

4.1. Design and participants

The present study used a 2 (anticipating future indulgence: no vs. yes) x measured dietary restraint x 2 (nutrition information: available vs. unavailable) design with the first and last factors as between-subjects.

In Study 2, we recruited participants living in the US for an online experiment in exchange for $0.25 compensation on Amazon Mechanical Turk (MTurk) in 2015. MTurk was employed to reach participants of diverse ages in the US beyond undergraduate students, as MTurk has a demographically diverse sample pool (Buhrmester et al., 2018). The results of experiments relying on data obtained through MTurk have been shown to be reliable and compatible with data obtained through student samples or community samples (Crichter and Lee, 2018; Goodman et al., 2013; Kees et al., 2017). Moreover, MTurk was used in recent studies of consumer behavior in restaurants and hospitality service encounters (Ahn and Seo, 2018; Fan et al., 2015; Im and Qu, 2017; Line et al., 2018; Shin et al., 2019), thus showing the reliability of the data obtained.

We predetermined to recruit only non-vegetarian participants to eliminate noise, as we offered solely non-vegetarian choices. On the first page of the survey, we asked participants several questions to filter out vegetarians. As advised by Zhou and Fishbach (2016), to use an MTurk sample cautiously, we report the attrition of participants below. Initially, 387 participants started the survey, but 53 participants (13.7%) did not answer any questions before being assigned to an experimental condition. Additionally, prior to the condition assignment, 26 participants who indicated that they were vegetarian were not allowed to participate. After being assigned an experimental condition, only six participants quit in the middle of the survey (two in the nutrition information and anticipation condition, three in the nutrition information and no-anticipation condition, and one in the no-nutrition information and anticipation condition). This study revealed a relatively low dropout rate (15.2%); dropout rates of MTurk studies are often higher than 20% (Zhou and Fishbach, 2016). More importantly, the dropout rates of participants did not depend on the experimental condition (Pearson \(\chi^2(1) = .000, p = 1.00\)), thus suggesting that attrition is not likely to have reduced the validity of the conclusions of the present research (Zhou and Fishbach, 2016). Finally, we received completed responses from the remaining 302 participants (113 female; 188 male; \(M_{\text{age}} = 32.02\), aged 19–68 years old.

4.2. Materials and procedure

A Qualtrics survey was programmed for an online experiment. At the beginning, participants received a menu of two sandwich options for lunch: Black Angus Steak and Turkey Lite (see Supplementary material A). We manipulated anticipating future indulgence in the same way as in Study 1. We also manipulated nutrition information availability by showing the nutrition information panel only in the nutrition information condition, not in the no-nutrition information condition. All participants indicated their preference between the two options. They also rated the perceived healthiness of each option and recalled or estimated the calories in the two options. We measured participants’ dietary restraint using the same scale as in Study 1. Although recent investigations suggest that the attention levels of MTurk participants are no lower than those of student or alternative Internet samples (Thomas and Cliford, 2017), to ensure the quality of attention as with the student sample in Study 1, two attention check questions were asked in the middle of the survey.

To test whether the scenarios led to the intended anticipation manipulation, we pretested the anticipation manipulation method by separately recruiting American participants (\(N = 155\); 79 female; \(M_{\text{age}} = 32.92\), with one missing response) from MTurk. As in Study 1, we asked whether participants knew that they might have dessert after the entrée (yes vs. no). As expected, in the anticipation condition...
(n = 76), 86.8% of participants indicated they expected that they might have dessert after the entrée; in the no-nutrition condition (n = 79), only 10.1% indicated so (Pearson $\chi^2(1) = 91.37, p < .001$). This suggests that the method successfully produced the intended manipulation of anticipation.

4.3. Measures

The relative preference for the two food options was measured on a five-point scale (1 = “strongly prefer Black Angus Steak”; 5 = “strongly prefer Turkey Lite”). The healthiness of each option was measured with the same question as in Study 1. Additionally, we assessed participants’ recalled calorie counts for the two options in the nutrition information condition, while we measured participants’ estimated calorie counts for the two options in the no-nutrition information condition to ensure that the information we provided was not surprisingly different from what people could guess without being informed. We measured participants’ dietary restraint using the same 10-item restraint scale as in Study 1. Additionally, we assessed participants’ recalled calorie counts for the two options in the nutrition information condition but simply increased the salience of the information.

4.4. Results

4.4.1. Data exclusion and manipulation check

Before analysis, six participants were excluded for failing to clear the attention check questions (2% exclusion rate). Thus, we tested our hypothesis using the remaining sample (N = 296; 111 female; 185 males; $M_{age} = 32.0$; $n_{no-nutrition\ information/no\ anticipation} = 74$; $n_{no\ nutrition\ information/\ anticipation\ of\ dessert} = 75$; $n_{nutrition\ information/no\ anticipation} = 73$; $n_{nutrition\ information/\ anticipation\ of\ dessert} = 74$).

As intended, the turkey sandwich ($M = 5.32$) was perceived as healthier than the steak sandwich ($M = 2.85$; $F(1, 295) = 947.20, p < .001$). Additionally, we compared the recalled and estimated calories of the two options in the nutrition information condition versus the no-nutrition information condition. The calorie estimates of the two options in the no-nutrition information condition ($M_{steak} = 835.09$ calories; $M_{turkey} = 522.92$ calories) were not significantly different from the recalled values in the nutrition information condition ($M_{steak} = 791.71$ calories; $F(1, 294) = 1.91; p = .169$; $M_{turkey} = 505.48$ calories; $F(1, 294) = .54, p = .464$). This thus suggests that the calorie information did not provide additional information to participants in the nutrition information condition but simply increased the salience of the information.

4.4.2. Hypotheses testing

We conducted a regression analysis to test the three-way interaction, (anticipating dessert consumption: no vs. yes) x measured dietary restraint x (nutrition information availability: no vs. yes) by using Hayes’ (2013) PROCESS model 3 with 5000 iterations of bootstrapping. Anticipation was treated as the main independent variable (0 = no anticipation; 1 = anticipation), dietary restraint as a first moderator, and nutrition availability as a second moderator (0 = no nutrition information; 1 = nutrition information). The dietary restraint scale was standardized before analysis. The three-way interaction was not significant ($b = .05, t(288) = .86, p = .393$). This shows that nutrition information availability did not moderate the interactive effect of anticipation and dietary restraint on healthy food preference, thus failing to support H2. However, the two-way interaction of anticipation and restraint was significant ($b = .10, t(288) = -.230, p = .022$), consistent with Study 1. Due to the insignificant moderation by nutrition information availability, we collapsed the nutrition information conditions and tested the interactive effect of anticipation and dietary restraint on healthy food preference in a separate regression (see Table 3) by using PROCESS model 1 (Hayes, 2013) with 5000 iterations, consistent with Study 1. As predicted, the regression revealed a significant interaction of anticipation and dietary restraint ($b = -.07, t(292) = -2.39, p = .017$; see Fig. 3) with an insignificant main effect of anticipation ($b = .02, t(292) = 1.11, p = .916$) and a significant effect of dietary restraint ($b = .30, t(292) = 2.18, p = .03$).

To probe the significant interaction, we again adopted the Johnson-Neyman technique (Johnson and Fay, 1950) and applied a non-standardized scale of dietary restraint measurement. Among restrained eaters (1.58 SD above the mean of the scale or restraint score > 23.36), expecting to eat indulgent food in the near future reduced their healthy food preference for immediate consumption ($b = -.69, t(292) = 1.97, p = .05$; at restraint score = 23.36; see Fig. 3), consistent with the findings of Study 1 and supporting H1a. On the contrary, among unrestrained eaters (1.304 SD below the mean of the scale or restraint score < 5.73), anticipating food consumption increased their preference for a healthy option for immediate consumption ($b = -.60, t(292) = 1.97, p = .05$; at restraint score = 5.73). This was consistent with the hypothesis regarding the positive effect of anticipation on healthy food preference among unrestrained eaters (H1b). In other words, the results showed that expecting to eat indulgent food reduced restrained eaters’ healthy food preference, whereas it increased healthy food preference among unrestrained eaters. Consistent with Study 1, we conducted spotlight analyses (Spiller et al., 2013) at varying spotlighted values of dietary restraint (0, 5, 10, 15, 20, 25, 27) in addition to the Johnson-Neyman points to test simple effects of anticipation in the full range of the dietary restraint score (Table 4). The analyses revealed that, as a function of anticipation, those having high dietary restraint scores (e.g., dietary restraint = 23.36, 25, 27) preferred a healthy entrée significantly less, whereas those having low dietary restraint scores (e.g., dietary restraint = 5.73, 5, 0) preferred a healthy entrée significantly more.

Also, we analyzed the data after adding hours since the last meal ($M = 4.94; SD = 5.42$, after excluding one unrealistic response) as a control variable to the regression conducted to test the two-way interaction of anticipation and dietary restraint on healthy food preference.

| Predictors         | B     | SE    | t     | p     | LLCI  | ULCI  |
|--------------------|-------|-------|-------|-------|-------|-------|
| Constant           | 2.961 | .132  | 22.414| < .001**| 2.701 | 3.221 |
| Anticipation       | .020  | .006  | .106  | .916  | -.347 | .386  |
| Dietary restraint  | .013  | .006  | 2.177 | .030  | .029  | .574  |
| IV (anticipation)  | -.448 | .053  | -2.393| .017* | -.817 | -.080 |

* Represents .5% significance level.
** Represents .1% significance level.

![Fig. 3. Preference for a healthy alternative as a function of anticipation and dietary restraint—Study 2.](image-url)

Table 3

Results of the regression (y = preference for a healthy alternative)—Study 2.
Dietary restraint  | B        | t(292)   | p        | LLI CI  | ULI CI  
--- | --- | --- | --- | --- | --- 
0    | 1.024  | 2.231  | .026      | .121    | 1.927    
5    | .657   | 2.023  | .044      | .018    | 1.297    
5.73 (Johnson-Neyman point) | .604   | 1.968  | .050      | .000    | 1.208    
10   | -.291  | 1.336  | .183      | -.138   | .720     
15   | -.075  | -.395  | .693      | -.450   | .299     
20   | -.442  | -1.647 | .101      | -.969   | .086     
23.36 (Johnson-Neyman point) | -.688  | -1.968 | .050      | -1.376  | .000     
25   | -.808  | -2.057 | .041      | -1.581  | -.035    
27   | -.954  | -2.132 | .034      | -1.836  | -.073    

Although the effect of the hours since the last meal was not significant (b = -.007, t(290) = -.42, p = .678), the results and the significance of effects did not change compared to the results without controlling for this variable (See Tables B.3 and B.4 in Supplementary material B).

4.5. Discussion

In Study 2, inconsistent with our prediction (H2), the interaction of anticipation and dietary restraint on healthy food preference was not dependent on the availability of nutrition information. Because the names of the food items in the study unequivocally suggested food healthiness even before adding the nutrition information, the provision of nutrition information did not increase the salience of the information from the menu. Nonetheless, anticipating having dessert in the near future reduced restrained eaters’ preference for healthy food, replicating the findings of Study 1 and supporting H1a. In contrast, unrestrained eaters exhibited the opposite response to anticipating indulgent food consumption, thus supporting H1b.

The insignificant effect of the anticipation in increasing healthy food preference among unrestrained eaters (H1b) in Study 1 might be partly due to the relatively small calorie difference between the two entrées (80 calories). In the case of a large gap between the calorie counts of unhealthy and healthy entrées (230 calories) in Study 2, anticipating eating dessert increased the preference for a relatively healthy option among highly unrestrained eaters, consistent with our hypothesis (H1b). Presumably, when the calorie gap is large, unrestrained eaters might perceive an unhealthy alternative to be too filling and decide on a lighter option.

5. Conclusion

5.1. Summary

This research demonstrated that the effect of anticipating future indulgence on healthy food preference was moderated by individuals’ dietary restraint. When expecting to consume indulgent food later, restrained eaters were less likely to choose healthy food for immediate consumption (H1a), the result consistently found in both studies. In contrast, the opposite effect of anticipation among unrestrained eaters (H1b) was only shown in Study 2. Unlike our prediction (H2), the interactive effect of dietary restraint and anticipating future dessert consumption on healthy food preference was not moderated by the availability of nutrition information but, in fact, persisted regardless. In short, anticipating future indulgence reduced restrained eaters’ preference for healthy food and tended to increase unrestrained eaters’ preference for healthy food.

5.2. Theoretical implications

The present study contributes to knowledge about consumption anticipation, sequential consumption decision making, and dietary restraint. First, the findings extend extant work on consumption anticipation by introducing consumers’ healthy food choice and preferences in restaurant contexts beyond simply measuring general intention to indulge (Zemack-Rugar and Corus, 2018). Although previous research has examined the effect of anticipating healthy food consumption (Hur and Jang, 2015; Sim and Cheon, 2019), the impact of anticipating indulgent food consumption has received minimal attention (see Zemack-Rugar and Corus, 2018 for an exception). Our results show that anticipating indulgent food, such as dessert, can change healthy food preferences for immediate consumption (an entrée here) in a restaurant setting. Specifically, we showed the moderating role of dietary restraint in the effect of consumption anticipation. When anticipating indulgent consumption, restrained eaters preferred healthy food less, whereas unrestrained eaters preferred healthy food more in a restaurant setting.

Second, previous research on sequential decision making regarding food items has predominantly shown a balancing strategy such that, once consumers choose a healthy food, they subsequently select an unhealthy food and vice versa (Dhar and Simonson, 1999; Fishbach and Dhar, 2005; Khan and Dhar, 2006; Kivetz and Zheng, 2006; Mukhopadhyay and Johar, 2009; Sim and Cheon, 2019). This study reveals the condition under which consumers choose a balancing strategy or opt to indulge now and later, advancing knowledge on sequential consumption decisions. When indulgent food consumption was impending, unrestrained eaters tended to exhibit a balancing strategy by increasing their preference for a healthy food option, which is consistent with prior research (Khan and Dhar, 2006; Sim and Cheon, 2019). However, restrained eaters sought indulgent consumption immediately and later, forgoing the balancing strategy. As such, restrained eaters pursued an eating enjoyment goal in both present and future consumption occasions, showing that they used a “highlighting” strategy (Dhar and Simonson, 1999). This strategy refers to the tendency to highlight one consumption goal (e.g., enjoyment) while sacrificing a competing goal (e.g., health) across consecutive consumption decisions (Dhar and Simonson, 1999). This study suggests that consumers do not always adopt a balancing strategy as a response to anticipation of indulgent consumption. Rather, the interplay of dietary restraint and anticipating future indulgence shapes whether consumers choose a balancing or highlighting strategy vis-a-vis healthy and unhealthy food choices.

Lastly, this research contributes to knowledge about dietary restraint by showing the divergent responses of restrained versus unrestrained eaters to anticipating indulgent food consumption on healthy food preferences. The results are consistent with the implications of extant literature, which demonstrates that in stressful and goal-violating situations restrained eaters give in to tempting foods and fail to retain their dietary restraint (Heatherton et al., 1990; Herman and Polivy, 1980; Lowe and Kral, 2006; Polivy et al., 1988). Our findings suggest that, in addition to the realized goal violation by previously consuming indulgent food (Polivy et al., 1988; Knight and Boland, 1989), the mere anticipation of future indulgent consumption can thwart restrained eaters’ restraint goals, which is a prospective version of the “what-the-hell effect” (Cochran and Tesser, 1996). This is another novel situation under which restrained eaters’ weaknesses manifest in a dietary goal violation.

By contrast, unrestrained eaters’ healthy food preference tended to increase when anticipating future indulgence although unrestrained eaters’ anticipation effect was significant solely in Study 2, which only weakly supports our hypothesis (H1b). This result might be partly due to the prospective nature of anticipating future consumption, unlike the effects found in prior research based on actual past food consumption (Polivy et al., 1988). Because satiation and hunger can be psychologically influenced by imagining consumption (Morewedge et al., 2010), when unrestrained eaters merely anticipate future dessert consumption, their satiation might be similarly influenced. However, the biological effects of actually eating food on satiation or hunger are not likely to
occur owing to the anticipation. Thus, in the absence of such internal biological cues that suggest the need for compensation, unrestrained eaters may have a weaker drive to prefer healthy food immediately. Thus, the balancing tendency between unrestrained eaters’ consecutive consumption decisions might be weaker when indulgent consumption is only anticipated. In sum, the present findings provide stronger evidence for restrained eaters’ continuing indulgence than for unrestrained eaters’ compensation when they expect indulgent consumption to follow.

5.3. Practical implications for restaurateurs

The current findings also provide practical implications relevant to the restaurant industry. First, despite increasing attention to healthy eating from consumers and business (Jeong and Jang, 2015; Shin and Mattila, 2019), our empiricism reveals that even restrained eaters, who otherwise may prefer healthy food items, showed an increased preference for unhealthy food when anticipating indulgent food; unrestrained eaters, though, responded in an opposite way to the anticipation. This knowledge can be utilized by restaurateurs in designing effective targeting and promotion strategies by varying food items in terms of healthiness. For example, restaurants that provide indulgent items that can induce anticipation (e.g., dessert) can target consumers differently depending on their dietary restraint: a set of relatively indulgent entrées would better be recommended to restrained consumers, but an array of relatively healthy entrées would be especially valuable for promotion to unrestrained consumers. Similarly, a promotional offer consisting of an unhealthy entrée and indulgent dessert together might be better directed at restrained eaters, whereas a promotional offer of a relatively healthy entrée and indulgent dessert together might be more appealing to unrestrained eaters. For restaurants that chiefly provide healthy alternatives that are not likely to induce an anticipation effect, they could seek to attract those who prefer healthy choices, such as restrained eaters (Polivy and Herman, 1999) and health-conscious consumers (Her and Seo, 2017; Shin and Mattila, 2019). Matching recommendations and promotions to healthy preferences of diners with varying degrees of dietary restraint may further contribute to their satisfaction with the dining experience.

5.4. Implications for consumers, nutrition and health experts, and policymakers

Our findings provide implications for consumers, nutrition and health experts, and policymakers vis-a-vis consumer health. Although dessert-related promotions (e.g., a free giveaway on a birthday or an anniversary) are often used to incentivize restaurant visits (Lee et al., 2010) and to build consumer loyalty (Lee et al., 2006; Bai et al., 2006), they can unexpectedly lead restrained eaters to like indulgent food more and become vulnerable to continued unhealthy food consumption and excessive energy intake. Because people’s self-regulatory failure is positively related to their body mass index (Papies et al., 2008), if indulgent consumption becomes too frequent, it would pose potential harm to consumers’ weight management and health (Her and Seo, 2017). Accordingly, consumers, nutrition and health experts, and policymakers should be aware of this unintended effect of indulgence anticipation. To achieve a more balanced diet for consumers, health professionals and policymakers could use educational communications that emphasize the importance of consumers’ being circumspect when they are likely to anticipate future indulgence. For example, the messages could depict situations in which indulgent items are likely to be available and suggest the benefits of individuals’ focusing on the tastiness and hedonically pleasurable aspects of relatively healthy food items for the immediate consumption. In fact, this approach would be worth applying to the current context of anticipation, owing to extant research which has shown that focusing on positive tasting experiences of eating healthy food items can increase selection of healthy food choices (Petit et al., 2016).

5.5. Limitations and future research suggestions

Despite the aforementioned contributions, our study has limitations. First, in both studies, we measured a hypothetical choice or preference that should be tested in more realistic consumption settings. Second, because we did not measure which specific kinds of dessert they imagined, we cannot rule out the possibility that the manipulation of future indulgence could activate representations of qualitatively different kinds of foods across participants. Third, though the possibility of future indulgence did not assume any responsibility of participants regarding a decision to indulge, perceived lack of responsibility might have contributed to the current findings. Because low responsibility regarding decisions about indulgent consumption liberates people from regulating their consumption (Hagen et al., 2017), consumers might behave differently depending on how responsible they feel for their future indulgence (e.g., being offered a free dessert vs. choosing to order a dessert). Future research could examine whether perceived responsibility for future indulgence can moderate the interplay between anticipating indulgence and dietary restraint. Fourth, whereas various mechanisms to predict the interactive effect of anticipation and dietary restraint on healthy food preference were discussed, the present investigation did not demonstrate specific mechanisms. Future work on the underlying mechanism would advance our knowledge of the underlying process of how anticipating indulgent food consumption influences restrained (versus unrestrained) eaters’ preference for healthy food. Lastly, when expecting to eat dessert in the near future, restrained eaters show a dysfunctional response contrary to their concern for dietary restraint. To minimize setbacks from future lapses among restrained eaters, researchers might develop a strategy to help them retain their restraint. Framing current healthy food consumption as an opportunity to gain license might help restrained eaters achieve a balance preemptively before having an indulgent dessert (Khan and Dhar, 2006; Mukhopadhyay and Johar, 2009).

Declaration of Competing Interest

None.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at https://doi.org/10.1016/j.ijhm.2020.102614.

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