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Investigating Affective Pathways for the Influence of Justification on Self-Control

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Investigating Affective Pathways for the Influence of Justification on Self-Control

A thesis submitted in partial fulfillment
of the requirements for the degree of
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by

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This thesis is approved for the recommendation to the Graduate Council.

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Abstract

People struggle with temptation in their everyday lives. Research often attributes failures in self-regulation to overwhelming and uncontrollable impulses. However, research also supports the idea that cognitive factors (e.g., justification) can license tempting behavior and allow individuals to behave in ways that run counter to their long-term goals. In addition, it is likely that affect plays a role in justification-based self-control failure. The current set of three studies investigated the role of affect in justification-based self-control failure. Study 1 tested the prediction that recall of past successes would result in increased positive affect. Study 2 assessed whether justification results in an increased propensity to engage in temptation following a hypothesized increase in positive affect. In addition, attention to emotion was hypothesized to facilitate self-control (i.e., resulted in the selection of a healthy food item). Study 3 tested an alternative prediction that justification increases both the subjective enjoyment of food and positive emotion experienced during food consumption. Finally, it was hypothesized that individual differences (e.g., emotional reactivity, trait self-control) may moderate the relationship between justification and self-control failure. Across the three studies, results indicated that thinking about past healthy choices did not consistently result in increased positive affect. We also found that participants who thought about past healthy choices were more likely to select a healthy, rather than unhealthy, food item compared to individuals in both a positive affect and control condition. Finally, thinking about past healthy choices did not result in increased positive affect during indulgence, nor did it increase subjective food enjoyment during imaginal consumption. Overall, results suggest recall of past healthy behavior does not consistently increase positive affect, nor does it increase the likelihood one will engage in temptation.

Keywords: emotion, cognitive processes, justification, self-control, temptation

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Table of Contents

Introduction.....	1
Dual Process Model of Self-Control.....	1
Justification and Self-Control.....	2
Emotion and Self- Control.....	6
Emotion, Justification, and Self-Control.....	8
The Current Studies.....	11
Study 1.....	12
Participants.....	12
Measures.....	13
Procedure.....	14
Results.....	15
Discussion.....	16
Study 2.....	17
Participants.....	17
Measures.....	18
Procedure.....	19
Results.....	20
Discussion.....	26
Study 3.....	30
Participants.....	30
Measures.....	30
Procedure.....	31

Results.....	33
Discussion.....	36
General Discussion.....	37
The Link Between Justification and Positive Affect.....	37
Justification vs. Self-Licensing: Are They Distinct Processes?.....	38
Justification and Enjoyment.....	42
Strengths and Limitations.....	43
Summary of Results.....	44
References.....	46
Appendix.....	51

Introduction

People face a number of temptations in their daily lives. Whether it is resisting the urge to lash out at a coworker, overindulging in a tempting dessert, or participating in a morally questionable activity, opportunities to forgo pleasure and work towards a longer-term goal are undoubtedly present in our everyday lives. When faced with a tempting situation, an individual can react in one of two ways: (1) “give in” to the temptation, which results in immediate gratification, or (2) use self-regulation to resist the temptation, which prevents immediate gratification, but allows the individual to remain in accordance with a long-term goal. This process is what is described by the term self-control: one’s ability to forgo temptation and engage in the effortful pursuit of a long-term goal (Hofmann, Kotabe, & Luhmann, 2013).

Dual Process Model of Self-Control

Most models of self-control failure posit that individuals give in to temptation as a result of an overpowering “hot” or impulsive system, especially when one has already exerted self-control (Metcalf & Mischel, 1999; Muraven & Slessareva, 2003). Specifically, the dual process model of self-control asserts that two key systems are involved in the ability to regulate one’s behavior: an impulsive or “hot” system, and a reflective or “cool” system (Hofmann, Friese, & Strack, 2009; Strack & Deutsch, 2004). While the impulsive system is rapid and automatic, the reflective system operates in a slower, more controlled fashion. As a result, the impulsive system requires less cognitive capacity when compared to the more cognitively taxing reflective processes. From a cursory view of this theory, it is clear that an overactive “hot” system will likely result in impulsive, discordant behavior. However, when an individual possesses sufficient cognitive resources, the reflective system is able to override impulsive behavior. As a result, subsequent behavior is much more likely to fall in line with one’s long term goals (Hofmann,

Friese, & Wiers, 2008). Notably, this model also asserts that overwhelming impulses impede or prevent a person's ability to engage in reflection and restraint, both of which are typically construed as antecedents to logical behavior (Metcalf & Mischel, 1999). Thus, a majority of the research praises the reflective system while indicting the under-controlled impulsive system as responsible for self-control failure (Metcalf & Mischel, 1999; Pizzaro, Uhlmann, & Salovey, 2003).

Justification and Self-Control

In contrast, recent research suggests that the reflective system may also contribute to self-control failure (De Witt Huberts, Evers & De Ridder, 2012, 2014). This process is called justification, and it is defined as the application of reasons for self-regulation failure *before* engaging in the tempting behavior (De Witt Huberts et al., 2014). The provision of an “acceptable” reason is believed to reduce inner conflict surrounding the choice to engage in an ego-dystonic and tempting behavior. A similar process, rationalization, is defined as the post-hoc generation of a reason for one to engage in a tempting behavior (Brown et al., 2011). Thus, people may justify their behavior beforehand (leading to an increased propensity to engage in a questionable behavior) or rationalize their behavior after the act is complete.

Both justification and rationalization stem from prior work in the moral licensing domain, which posit that individuals “allow” themselves to engage in morally questionable behavior when they recall prior altruistic behavior (Merrit, Effron, & Monin, 2000). Rationalization is likely reinforcing; however, it is not likely an overt use of reasoning processes during the decision-making process as it occurs *after* self-control failure. Past research on these specific reasoning processes (e.g., justification, rationalization) has typically focused on issues of consumer choice, prejudice, and altruistic behavior (Khan & Dhar, 2006; Monin & Miller, 2010;

Mukhopadhyay & Johar, 2009) and how individuals justify their decisions when engaging in morally questionable behavior. The provision of a reason (via justification) gives license for one to engage in questionable behaviors. For example, in a study examining moral licensing and altruism (Sachdeva, Iliev, & Medin, 2009), participants were first exposed to a single list of words of either positive, negative, or neutral valence. Following exposure to the list, they were then asked to write a story about themselves and to include the words from the given list. Thus, participants were primed to think of themselves in either a positive, negative, or neutral light. After a filler task, participants were then asked if they would like to make a donation (up to \$10) to a charity of their choosing. The dependent variable was the amount of money participants chose to hypothetically donate to charity. Results indicated that participants primed to think of themselves in a positive light were both less likely to donate money overall, and to donate less money when compared to those in both the neutral and negative conditions. Thus, it appeared that moral licensing “allowed” participants to take a pass with regard subsequent altruistic behavior; they felt as if they were justified in their actions.

While the previous study examined reasoning processes via moral licensing, it did not examine justification with regard to a *self-control* decision (i.e., a decision between a temptation and perseverance toward a long-term goal). Additional studies have attempted to inch closer to actual processes related to self-control. For example, in one study (De Witt Huberts et al., 2014), participants were asked to rate how tempted they were by a new candy bar. Then, participants were asked to assist in a “thought listing” task, which would ostensibly help the creators market the new product. Participants were instructed to select up to thirty different reasons that would allow them to consume the indulgent food. Results indicated that temptation predicted the number of reasons selected to “allow” them to indulge, suggesting that the more tempting the

stimulus, the more likely individuals are to reason themselves into approaching the temptation. Thus, the reflective process of motivated reasoning appeared to influence participants' decisions, suggesting that greater reflective functioning via more reasons contributed to self-control failure. While this study investigated the effect of temptation on justification-related cognitions, it used reasons for the dependent variable (i.e., reasons as opposed to actual behavioral outcomes). In addition, both of these studies (De Witt Huberts et al., 2014; Sachdeva et al., 2009) looked at reasoning processes with regard to domains *other* than self-control. Additional research is needed to investigate the role of justification specifically (as opposed to moral licensing) on self-control outcomes.

We recently conducted a vignette study to evaluate the effect of justification processes on self-control via a licensing manipulation (Hill & Veilleux, in preparation). We conducted an online scenario study in which undergraduates ($N = 237$) were asked to respond to questions about a hypothetical student ("Taylor") who values health and physical fitness. In this study, participants had to indicate whether Taylor decided to either go home and do nothing (self-control failure) or to go to the gym (self-control success). We randomly assigned participants to a justification condition, where the justification group learned that Taylor remembered eating a salad for lunch and thus had already engaged in "healthy behavior" that day, or a control group which did not mention past success. It was hypothesized that individuals in the justification condition would "allow" Taylor to forgo an activity consistent with a long-term goal of weight loss (e.g., going to the gym) in favor of a more pleasurable activity (e.g., going home). Results revealed that, as predicted, individuals in the justification condition were more likely to think Taylor would go home compared to participants in the control condition. These results provide

preliminary evidence that use of justification, specifically, thoughts of past success in the realm of self-control, may lead to greater self-control failure.

Theories in the realm of substance use and eating also lend credence to the idea that conscious cognitive processes contribute to self-control failure. In the case of both eating behavior and substance use, individuals often perceive any failure as a reason for complete return to the initial problematic behavior (i.e., “Because I had a drink, I have failed at my goal of abstinence, so I might as well just go back to drinking a lot”). Originally termed the “abstinence violation effect” by Marlatt and Gordon (1985), this tendency to forgo a long-term goal after failure often results in a decreased tendency to persevere in the face of temptation. A similar phenomenon, known as the “What the hell effect” exists in the eating domain (Polivy & Herman, 1985). Notably, the abstinence violation effect often results in a constellation of negative cognitions and emotions following indulgence (Grillo & Shiffman, 1994). This cognitive error is related to justification in that both attributions seem to give an individual permission to act out of accordance with their long-term goals. The difference lies in the individual’s use of justification in the presence of past successes or recent failures. Individuals may engage in justification by recalling past successes (i.e., “I deserve to indulge because I’ve been successful in the past) or based on recent failure (i.e., “I might as well indulge because I’ve already failed). Thus, moral licensing and the abstinence violation effect may be different sides of the same justification coin. Evidence appears to suggest that rational processes, in line with the dual-process model of self-control (e.g., self-licensing, justification), can lead to self-control failure (De Witt Huberts et al., 2014; Merritt, Effron, & Monin, 2010).

Emotion and Self-Control

Extant research supports the notion that negative affect plays a significant role in self-regulation failure (Evers, Stok, & De Ridder, 2010; Tice & Bratslavsky, 2000). We also know that self-regulation failures often result in negative affect (“I was unable to resist the urge to eat the chocolate cake”; Marlatt & Gordon, 1980). From a learning perspective, it would seem to reason that feelings of shame or guilt would discourage one from engaging in a behavior in the future, yet we know people continue to engage in impulsive behavior despite the negative emotional consequences (Wohl, Pychyl, & Bennett, 2010). Pleasure associated with a temptation can be fleeting; thus, giving in to temptation may feel good in the moment and result in negative feelings after the fact. If we assume that people strive to maximize pleasure and minimize pain, it makes sense that people would also engage in behaviors that result in positive emotions (Tamir, 2009). Because temptations often involve immediate pleasure (and delayed consequences), individuals are often left in a state of conflict – they simultaneously want to engage in a temptation to feel good *and* not feel bad about doing so.

Thus, both positive and negative emotions appear to be involved in self-control processes. This is consistent with prior research examining positive and negative urgency, or one’s tendency to act impulsively while in either a positive or negative affective state (Cyders et al., 2007; Whiteside & Lynam, 2001). In other words, the experience of positive or negative emotions may make the ability to resist temptation in favor of a long-term goal exceptionally difficult for certain individuals. In addition, simply paying attention to one’s current emotional state can influence self-control decisions. In one study (Veilleux & Skinner, 2016), smokers were randomly assigned to view a set of neutral or smoking images. For each image, half of the participants completed a set of questions measuring craving and emotion, while the remaining

participants completed a set of filler questions. Both groups then completed a delay discounting task, which required participants to choose between a smaller, more immediate reward and a larger, yet delayed reward (Duckworth & Kern, 2011). Smokers who completed the questions on craving and affect (i.e., those required to attend to their current state) were more likely to choose the smaller, more immediate reward (i.e., an index of self-control failure).

Veilleux and colleagues (2018) conducted a similar study of craving, affect, and self-control in a sample of restrained and unrestrained eaters. Restrained eaters tend to cognitively monitor and restrict their food intake, while unrestrained eaters typically pay attention to internal hunger cues to regulate eating (Fedoroff et al., 2003). Results revealed an interesting effect of introspection (i.e., attention to craving and affect) on self-control failure (as measured by a purchase task) that varied by restrained eating status. Restrained eaters showed more impulsive valuation (i.e., reported they would pay high sums of money for luxury items) when asked to reflect on their craving and affect; however, unrestrained eaters showed *less* impulsive valuation (i.e., were more likely to “spend” less on rated luxury items) when asked to reflect on their craving and affect (Veilleux, Skinner, & Pollert, 2017). These results suggest that the process of simply thinking about one’s emotions and desires can facilitate self-control in some, while harming self-control in others. The notion that introspection can facilitate self-control in unrestrained eaters is consistent with the mood-as-information effect (Schwarz & Clore, 1983), in which awareness of cravings and desires serve as a signal to engage in self-control in an attempt to resist the urge to eat. Consistent with the “hijack” theory of desire, introspection in restrained eaters appears to overwhelm self-control attempts by placing an intense focus on food cues (Hofmann & Van Dillen, 2012). For smokers and restrained eaters, both of whom

experience conflicting goals (i.e., to approach and avoid a desire), introspecting on emotion and craving appears to result in an increased likelihood of self-control failure.

In sum, it stands to reason that positive and negative emotional states can differentially influence the degree to which an individual is motivated to persevere in the face of temptation (e.g., positive urgency), and also suggests that for people at risk for addictive behaviors (e.g, restrained eaters, smokers), attending to one's emotional state and desires can impair self-control. Conversely, attending to emotion may actually facilitate self-control in others.

Emotion, Justification and Self-Control

While theorists suggest emotions play a role in justification and that negative mood influences self-control, the specific function and fluctuation of emotion in justification-based self-control failure has yet to be examined (De Witt Huberts et al., 2012; Evers, Stok, & De Ridder, 2010).

Several options seem plausible. First, it is possible that justification itself could make people feel better about their choices after the fact, thereby resulting in less negative affect immediately following “giving in” to temptation. For example, simply telling oneself “I deserve to eat the cake” may be enough to curtail the resulting negative affect. The provision of a seemingly-rational reason to engage in a tempting behavior may be enough to prevent higher levels of negative affect immediately following the temptation. While this explanation is possible, the vignette study referred to earlier assessed mood both before and after the self-control decision to be able to assess for changes in mood based on justification. In addition to assessing the effect of justification on self-control decision (whether hypothetical student “Taylor” would go home or to the gym), we hypothesized that justification participants would rate Taylor as feeling fewer negative emotions (i.e., “less bad”) after the decision compared to

control participants. We asked participants to rate Taylor's mood both before and after the decision. The results suggested no differences between the justification and control group's mood ratings after the decision, controlling for pre-decision mood. However, and importantly, participants who indicated that Taylor went home (self-control failure) rated Taylor's post-decision mood as more negative when compared to participants who decided that Taylor went to the gym (self-control success). This is evidence that self-control failure makes people feel bad, and suggests that the effect of justification on mood likely occurs earlier in the decision-making process.

We are then left with two options: justification influences behavior *before* the decision or *during* the decision. Because the temptation may be in direct discordance with the long-term goal, the decision to engage in a temptation may be dependent on a person's ability to generate reasons for doing so. Individuals may recall past successes and experience positive emotions (e.g., pride), and this "mood boost" may encourage the decision to engage in the temptation to maintain hedonic increase. People likely feel a mix of both positive and negative emotions when faced with self-regulation challenge, and these emotions probably play a role in decision-making (Schwarz, 2000). People often struggle to make decisions when overwhelmed by emotion, particularly when such emotions are of high intensity (Vohs et al., 2008). In addition, the act of contemplation (e.g., making a choice) hinges on a person's ability to give conscious consideration to a menu of choices (Vohs et al., 2008). Thus, in a moment of overwhelming positive emotion ("I am so proud of myself because I ate healthy this week") may actually propel the individual toward the temptation. While the previous hypothesis places justification's effect on mood *after* the decision, this hypothesis places the emphasis *before the decision*, or during the contemplation stage.

Justification could also occur *during* the temptation. When engaging in justification during indulgence, an individual may relish the feeling of engaging in a temptation *and* feel as though they deserve it. This may be reinforcing as a result of momentary pleasure and incentive learning. Incentive learning theory posits that stimuli or contexts previously paired with a reward acquire an “incentive value,” and as result, increase behaviors associated with the obtainment of the reward (Balleine & Dickinson, 1991). Importantly, various emotional and motivational states can serve as a context for memory recall (Watkins, Mathews, Williamson, & Fuller, 1992). Thus, an individual learns that performing a particular behavior when in a specific motivational state (e.g., desire) leads to reward or a pleasurable experience. It may be possible for people to learn that specific strategies or processes (e.g., justification) allow one to simultaneously access their desires and feel less guilty when doing so. In addition, the overwhelming experience of positive emotion (as a result of recalling prior-goal consistent behavior) may result in a narrowing of attention (Gable & Harmon-Jones, 2008). The tempting stimulus may appear both *deserved* and *overwhelmingly pleasurable*. When returned to a similar motivational or emotional state, the person then recalls the “successful” use of a particular process or behavior (e.g., justification) along with the increased momentary pleasure of indulgence, and becomes increasingly likely to use the process in the future. The use of justification is reinforced when the individual experiences the pleasure while indulging (“This cake is especially delicious *because I deserve it*”). Thus, the individual learns that employing justification results in both momentary pleasure and reduced negative affect during indulgence. To my knowledge, neither explanation (i.e., the idea that justification influences self-control before or during the temptation) has been explicitly examined. As such, both hypotheses seem plausible.

The Current Studies

The following three studies tested the role of positive affect in justification-based self-regulation failure. In all three studies, a licensing-based justification condition was compared to a positive affect condition and no-affect control condition on self-reported affect and (in Studies 2 and 3) imaginal (i.e., hypothetical) temptation decisions. The aim of Study 1 was to determine whether justification results in an increase in positive affect. I predicted that individuals in the justification condition would report an increase in positive affect after thinking about past healthy behaviors similar to a positive affect condition and greater than participants in a control condition.

Then, the aim of Study 2 was to determine if justification increases the likelihood of engaging in temptation following an increase in positive affect. I predicted that people in the justification condition would be more likely to select an unhealthy (versus healthy) food item compared to people in the positive affect and control conditions. I also predicted that attention to emotion would moderate the effect of condition on choice, such that people who justified would be less likely to engage in temptation (i.e., to select an unhealthy food item) compared to individuals in the positive affect and control conditions.

Finally, the aim of Study 3 was to test the alternative prediction that instead of influencing positive affect prior to making a self-control decision, perhaps justification influences food enjoyment (i.e., increase positive affect during consumption of a temptation). I predicted that people in the justification condition would report greater imagined enjoyment of a temptation compared to people in the positive affect and control conditions. I also predicted that people in the justification condition would report greater imagined positive affect when hypothetically consuming a tempting (i.e., unhealthy) food item.

Study 1

The goal of Study 1 was to assess whether recalling past successes results in increased positive momentary emotion. I hypothesized that individuals in the justification condition would report an increase in positive affect following recall of past successes similar to individuals in the positive affect condition and greater than participants in the control condition.

Participants

Participants were 304 adults recruited through the general psychology subject pool ($n = 152$) and Amazon Mechanical Turk ($n = 152$) with a combined mean age of 26.62 ($SD = 10.49$). The majority of the sample identified as female (53.9%) and participants were primarily Caucasian (77.0%). Participants were excluded if they reported taking the survey more than once ($n = 9$), if they indicated they were not paying attention during the survey ($n = 4$), or if they responded “Yes” to a question asking if we should not keep their data ($n = 25$). Participants were also excluded if they took longer than 90 minutes to complete the study ($n = 8$), or if they gave responses to the narrative questions that were inconsistent with the prompt (e.g., writing “GOOD” when asked to describe a clothing item ($n = 16^1$)). These exclusions left a total of 265 participants included in the final analyses. See Table 1 for demographic information. An independent samples t -test revealed that the average age of mTurk participants was higher than that of subject pool participants (see Table 1 for means and significance test). Additionally, a

¹ Midway through analyses of these studies, concerns arose about the integrity of Mechanical Turk data, as other researchers identified data that were suggestive of ‘robot’ or ‘bot’ non-human responses (Bai, 2018; Ryan, 2018). Due to these concerns, we re-analyzed all of the studies using suggested methods, including identifying duplicate longitude and latitude responses and examining the quality of the responses to the narrative manipulation items. As legitimate duplicate longitude and latitude responses are possible (e.g., people in the same office or home completing this study), we elected to examine the qualitative responses more carefully across all three studies, and ultimately chose to exclude participants whose narrative responses did not match the question being asked.

chi-square test of independence revealed a significant difference in gender based on sample, with a greater number of males in the mTurk sample compared to the subject pool. There were no differences in minority status based on sample.

Measures

Positive and Negative Affect. The Scale of Positive and Negative Experience (SPANE; Diener et al, 2009) is a 12-item scale that measures positive and negative experience. Items are rated on a 5-point Likert scale from 1 (*very rarely or never*) to 5 (*very often or always*). The measure is comprised of two subscales, positive experience and negative experience, both of which contain six items. The two subscales can be scored separately to assess positive experience and negative experience independently. The original instructions were modified to ask participants to rate their current emotions in the present, as opposed to over the previous two weeks. In the current study, the SPANE demonstrated good reliability across both positive (Time 1: $\alpha = .88$, Time 2: $\alpha = .90$) and negative subscales (Time 1: $\alpha = .92$, Time 2: $\alpha = .93$).

Trait Emotional Intelligence. The Trait Meta-Mood Scale (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) is a 30-item self-report scale that measures attention to mood, clarity of mood, and efforts to repair negative mood states. Items are rated on a 5-point scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale measures individual differences in people's tendencies to attend to their moods and emotions, discriminate among them, and regulate them. These tendencies are thought to represent aspects of emotional intelligence. Although there are subscales, in the current study the overall score was used to measure total emotional intelligence. The scale demonstrated excellent reliability $\alpha = .90$).

Impulsivity. The Short UPPS-P Impulsive Behavior Scale (Cyders et al., 2014) is a 20-item self-report measure derived from the longer UPPS-P Impulsive Behavior scale (Cyders et

al., 2007). The UPPS-P is a revised version of the UPPS Impulsive Behavior scale (Whiteside & Lynam, 2001). The scale measures multiple aspects of impulsivity, like tendencies to engage in impulsive behavior when in positive or negative moods, sensation seeking behaviors, and the tendency to act without thinking about consequences. Although there are subscales, in the current study only the overall score was used to measure total impulsivity. The scale demonstrated good reliability ($\alpha = .86$).

Procedures

Participants first completed the Scale of Positive and Negative Experiences (SPANE; Diener et al., 2010) which served as a baseline measure of positive and negative affect. Next, participants completed measures of emotionality and impulsivity (TMMS; Salovey et al., 1995; UPPS; Cyders et al., 2014), both to assess individual differences and to serve as a filler between the initial emotion measure and the thought-listing task.

Participants were then randomized to a justification, positive affect, or control condition via a thought listing task. Participants in the justification condition were provided with the following instructions: “In the space below, please list three healthy choices you made in the past week (the past 7 days). The choices can be anything health-related, including exercise, and healthy eating. These should be specific choices that you made in one moment in time. For example, Ted might say, “On Tuesday, I went to the gym for an hour and did both cardio and weight-lifting.” For another example, Aileen might say, “On Saturday, I ate a salad for lunch instead of eating a hamburger.” Participants in the positive affect condition were asked to list three nice things others did for them, and participants in the control condition were asked to list items of clothing worn during the previous week. See Appendix A for a selection of participant responses to manipulation prompts.

Upon completion of the thought-listing task, participants were asked to complete the SPANE a second time, in an effort to assess their emotional state immediately after reflecting upon recent healthy choices. Next, participants completed a series of demographic and response integrity questions. Participants were asked if they paid attention while taking the survey and if they completed the survey more than once. In addition, participants were asked if there were any additional reasons why we should not keep their data, and were given the opportunity to elaborate on the reason without fear of penalty. Participants were paid \$0.75 for completing the 6-minute study.

Results

Two 3 x 2 mixed-factorial ANOVAs were conducted with condition (justification, positive affect, or control) as the between-subjects factor and time (pre-task and post-task) as the within subject factor, and affect (positive and negative) as dependent variables.

There was a main effect of time on positive affect, $F(1, 262) = 16.88, p < .001$, with positive affect increasing from Time 1 ($M = 20.46, SD = 4.94$) to Time 2 ($M = 21.12, SD = 5.17$). In addition, there was a main effect of condition on positive affect, $F(2, 266) = 3.06, p = .08$, when collapsed across time periods. However, this effect was superseded by an interaction between time and condition, $F(2, 262) = 8.74, p = .001$ (see Figure 1). Positive affect increased over time for individuals in both the positive affect, $F(1, 83) = 11.31, p = .003$, and justification, $F(1, 82) = 15.62, p < .001$ conditions; however, positive affect did not change over time for those in the control condition $F(1, 97) = 1.09, p = .30$.

There was a main effect of time on negative affect, $F(1, 262) = 13.10, p = .001$, with negative affect decreasing from Time 1 ($M = 9.49, SD = 4.42$) to Time 2 ($M = 8.97, SD = 4.43$). There was no main effect of condition on negative affect, $F(2, 262) = 1.03, ns$, when collapsed

across time periods. There was a marginally significant interaction between time and condition for negative affect, $F(2, 262) = 2.71, p = .07$. Negative affect decreased over time for individuals in both the positive affect, $F(1, 83) = 39.05, p = .002$, and justification, $F(1, 82) = 5.49, p = .02$ conditions; however, negative affect did not change over time for those in the control condition $F(1, 97) = .27, p = .60$.

We also evaluated whether sample (i.e., subject pool versus mTurk) moderated the above effects by re-running the above analyses as a three-way mixed ANOVA with sample as a between-subjects factor. This was done in an effort to examine whether the previous results differed based on sample type. There were no three-way interactions between condition, time, and sample type for either positive affect, $F(2, 259) = .02, p = .98$, or negative affect, $F(2, 259) = 3.61, p = .30$.

Moderation analyses were conducted to examine if individual differences influenced the effect of condition on positive affect using the PROCESS macro for SPSS (Version 3.0; Hayes, 2018). Self-reported emotional intelligence and impulsivity were entered separately as predictors of positive affect at Time 2, with condition entered as a multi-categorical moderator and positive affect at Time 1 as a covariate. Greater self-reported emotional intelligence did not predict higher positive affect at Time 2 ($B = .01, SE = .01$), and did not moderate the effect of condition on positive affect ($B = -.004, SE = .01$). There was no main effect of impulsivity ($B = -.02, SE = .39$), nor did impulsivity moderate the effect of condition on positive affect ($B = .86, SE = .47$).

Discussion

Study 1 sought to examine whether recalling past successes results in increased positive momentary emotion. We found that justification (via a self-licensing manipulation), does result

in a small, albeit reliable, increase in positive emotion. In fact, justification influenced emotion similar to that of a more general, positive affect manipulation. Negative affect also decreased for participants in the justification and positive affect conditions, but not for control participants. Justification via self-licensing resulted in an increase in positive emotion similar to a more general, positive affect manipulation.

Importantly, while Study 1 did show that justification via self-licensing has an uplifting effect on mood, it did not test whether the increase in positive affect actually influenced behavioral outcomes. Given past research on positive emotion and behavior (Gable & Harmon, 2008), we would expect an increase in positive affect to exert some influence over subsequent behavioral decisions. A primary goal of Study 2 was to investigate whether justification resulted in an increased tendency to engage in temptation following an increase in positive affect.

Study 2

The goal of Study 2 was to assess whether justification results in an increased propensity to engage in temptation following an increase in positive emotion. I hypothesized that individuals in the justification condition would be more likely to engage in a temptation compared to individuals in the positive affect and control conditions. In addition, I hypothesized that attention to emotion would moderate the effect of condition on food choice, such that individuals in the justification condition who attend to their emotions will be less likely to engage in a temptation (i.e., select an unhealthy food item) compared to individuals in the both the positive affect and control conditions.

Participants

Participants were 330 adults recruited through Amazon Mechanical Turk with a mean age of 33.17 ($SD = 10.46$). The majority of the sample identified as male (62.7%) and participants

were primarily Caucasian (63.3%). Participants were excluded if they responded “Yes” to a question asking if we should not keep their data ($n = 4$), or indicated they chose a food item (which served as the primary outcome variable) at random ($n = 17$). We also excluded 40 participants for suspicion that their responses were not provided by a human (e.g., if they were identified as potentially being a robot; see Study 1 participants section), by examining qualitative responses and excluding any participant whose narrative responses were not reasonable answers to the question). These exclusions left a total of 269 participants included in the final analyses.

Measures

State emotion (SPANE; Diener et al., 2010), trait emotionality (TMMS; Salovey et al., 1995), and impulsivity (SUPPS-P; Cyders et al., 2014) were assessed the same as in Study 1. In the current study, the SPANE demonstrated good reliability on both positive (Time 1: $\alpha = .94$, Time 2: $\alpha = .94$) and negative subscales (Time 1: $\alpha = .97$, Time 2: $\alpha = .97$). Relatedly, both the TMMS ($\alpha = .90$) and SUPPS-P ($\alpha = .87$) demonstrated good reliability.

Restrained eating. Participants also completed the Revised Restraint Scale (RRS; Herman & Polivy, 1980) in an effort to determine if restrained eating status influenced the relationship between justification and self-control failure. The RRS is a 10-item measure of restrained eating behaviors (e.g., altering or limiting eating behavior as a result of image or weight perception). Participants respond to each item on scale of 0 (*never*) to 10 (*always*). Scores are then summed, and range from 0 to 40 with higher scores indicating restrained eating behavior. Unrestrained eaters are classified as males with scores of 12 or above and females with scores of 15 or above. The RRS demonstrated good reliability ($\alpha = .85$).

Procedure

Participants first completed the Scale of Positive and Negative Experiences (SPANE; Diener et al., 2010) which served as a baseline measure of positive and negative affect. Next, participants completed measures of emotionality and impulsivity (TMMS; Salovey et al., 1995; SUPPS; Cyders et al., 2014), both to assess individual differences and to serve as a filler between the initial emotion measure and the thought-listing task.

Participants were then randomized via the same method used in Study 1. Participants in the justification condition were asked to list three healthy choices they made in the past week (the past 7 days), participants in the positive affect condition were asked to list three nice things others did for them, and participants in the control condition were asked to list items of clothing worn during the previous week. Upon completion of the thought-listing task, half of the participants were asked to complete the SPANE a second time, which was designed to 1) assess their emotional state immediately after reflecting upon recent healthy choices, and 2) serve as a manipulation of attention to emotion.

Participants were then given the following instructions, “Imagine that you are hungry right now. On the next page, please select the food item that appears most appetizing, and that you would most like to eat.” They then viewed six food images, where choices included three healthy (strawberries, snack mix, roasted potatoes) and unhealthy (chocolate cake, French fries, lasagna) food items, which were selected to represent sweet, salty, and savory options, respectively. The pictures of foods were selected from the food-pics database (Blechert, Meule, Busch, & Ohla, 2014). Food items from the same flavor profiles (e.g., salty, savory) were selected, and foods within domain (healthy, unhealthy) were matched in terms of fat content and kilocalories (See Appendix B for descriptive information for each food).

Following the food selection, participants completed a series of questions designed to assess the desirability of each food item (“How desirable is this food right now?” and “How appetizing does this food look?”). Participants were also asked the degree to which they believed they deserved to eat the chosen item (“How much do you deserve to eat this food?”). Desirability, appeal, and perceived deservingness were measured on a scale of 0 (*not at all*) to 100 (*extremely*). Participants also indicated how likely they are to consume each food item in everyday life (daily, weekly, monthly, rarely, never), and indicated if they were allergic to a number of common foods (e.g., milk/dairy, gluten, peanuts), or if they abstain from consuming any food item for personal or religious reasons. Next, participants completed the Revised Restraint Scale (Herman & Polivy, 1980), and rated each presented food item as healthy or unhealthy. Finally, participants completed a series of demographic and response integrity questions. Participants were asked if they paid attention while taking the survey and if they completed the survey more than once. In addition, participants were asked if there were any additional reasons why we should not keep their data, and were given the opportunity to elaborate on the reason without fear of penalty. Participants were paid \$1.50 for completing the 11-minute study.

Results

Food Selection Decision. Participants were asked to select one food they wanted to eat from a set of three healthy (strawberries, snack mix, potatoes) and three unhealthy (chocolate cake, French fries, lasagna) foods items. See Appendix B for food selection percentages by item. For analytic purposes, healthy items were coded as “0” and unhealthy items were coded as “1.” Due to concerns that participants with food allergies and/or restrictions might select particular food items, we asked participants to report if they had any food allergies, or if they refuse any

foods for religious or personal reasons. We classified participants ($n = 43$) as “food restricted” if they indicated they are either allergic to or unwilling to eat milk, eggs, peanuts, wheat, or “other” foods (i.e., not one of the options given), as these are the allergies or food preferences that would be most applicable to the foods depicted. A chi-square analysis was conducted to determine if food choice (coded dichotomously as healthy or unhealthy) differed by food restriction status. Results revealed no effect of food restriction on food choice, $X^2(1, N = 269) = 2.62, p = .13$. Thus, we decided to include participants with food allergies and/or restrictions in the subsequent analyses.

Main Predictions.

Replicating Study 1. To replicate the findings from Study 1 (that justification increased PA similarly to a positive affect condition), we conducted two 3 x 2 mixed-factorial ANOVAs were conducted with condition (*justification, positive affect, or control*) as the between subjects factor and time (*pre-task and post-task*) as the within subject factor, and affect (*positive and negative*) as dependent variables. This analysis was conducted on about half of the participants, as only half of the participants (i.e., those in the ‘attention to emotion’ condition, $n = 122$) completed the SPANE again at Time 2.

There was a main effect of time on positive affect, $F(1, 144) = 9.62, p = .002$, with positive affect increasing from Time 1 ($M = 19.21, SD = 6.77$) to Time 2 ($M = 20.10, SD = 6.78$). There was no main effect of condition on positive affect, $F(2, 144) = 2.46, p = .08$, when collapsed across time periods. However, there was an interaction between time and condition, $F(2, 144) = 5.17, p = .007$ (see Figure 2). Positive affect increased over time for individuals in the positive affect condition $F(1, 48) = , p < .001$; however, positive affect did not increase over time for individuals in the control $F(1, 58) = 1.43, p = .24$, or justification conditions, $F(1, 38) =$

.02, $p = .89$. These results did not replicate those found in Study 1, as justification did not increase positive affect from Time 1 to Time 2.

There was a main effect of time on negative affect, $F(1, 144) = 4.89, p = .03$, with negative affect decreasing from Time 1 ($M = 9.05, SD = 5.05$) to Time 2 ($M = 8.60, SD = 5.58$). There was no main effect of condition on negative affect, $F(2, 144) = 1.99, p = .14$. There was no interaction between time and condition, $F(2, 144) = .89, p = .41$. These results are inconsistent with those found in Study 1.

Food Choice. Overall, 53.2% of participants chose an unhealthy option. A chi-square analysis was conducted with condition as the independent variable and food choice (coded dichotomously as *healthy* or *unhealthy*) as the dependent variable. Results indicated food choice differed by condition, $X^2(2, N = 269) = 6.18, p = .04$. Fewer participants in the justification condition (43.2%) selected an unhealthy food item compared to participants in either the positive affect (61.9%) or the control (54.6%) conditions.

Because justification did not increase the likelihood of selecting an unhealthy food item (i.e., a temptation), nor was justification associated with increased PA, we did not test the hypothesis that positive affect was the reason for justification-based self-control failure.

Effect of Justification and Attention to Emotion on Food Choice. To examine whether attention to emotion influenced the rates of healthy vs. unhealthy food choice following justification, we conducted a log-linear analysis. Results of the log-linear analysis suggested that the emotion condition did not statistically moderate the results (i.e., there was no three-way interaction between attention to emotion condition, justification condition and food choice). To determine whether attention to emotion influenced the relationship between condition and food choice, we examined food choice by justification separately for each attention to emotion

condition using exploratory chi-square analyses. Results revealed no significant relationship between condition and food choice for those in both the attention to emotion $X^2(2, N = 147) = 2.17, p = .34$, though there was a marginally significant effect for the no attention to emotion conditions, $X^2(2, N = 122) = 5.15, p = .08$. To understand the quality of the marginal effect, we then conducted a topographical analysis to understand patterns of food choices across condition.

For those who attended to emotion, 46.2% of people in the justification condition chose an unhealthy food item, whereas this was 40.8% for the people who did not attend to emotion. Thus, attention to emotion appeared to hinder, rather than facilitate, self-control. The opposite pattern emerged for participants in both the control and positive affect conditions. 50.8% of control condition participants in the attention to emotion condition selected an unhealthy food item, and 60.5% of control condition participants who did not attend to emotion chose an unhealthy item. Similarly, 61.2% of positive affect condition participants who attended to emotion chose an unhealthy food item, while 62.9% of positive affect condition participants in the no attention to emotion chose an unhealthy food item. See Figure 3 for breakdown of food choice by justification and emotion conditions.

Secondary Analyses. Secondary analyses were conducted to determine if the desirability, deservingness, or appearance of the food items influenced participant's food choices. When thinking about why justification may influence food choice, we wondered if participant's desire for the foods and how much they perceived they "deserved" the foods might have influenced their decision. Additionally, we were interested in examining whether the appearance of the food items could have influenced their decision (i.e., the degree to which participants found the food pictures appetizing). For each of the three food enjoyment variables (desirability, deservingness, appeal), we compared the participant's chosen food to the average

rating of the other 5 (i.e., non-chosen) foods and examined if these differed by justification condition using 3 (between subjects condition: *justification, positive affect, control*) x 2 (within subject: chosen food versus average of non-chosen foods) mixed ANOVAs.

With regard to desirability, there was no overall main effect of condition $F(2, 266) = .50, p = .61$. There was no main effect of food choice (chosen vs. non-chosen) on desirability $F(1, 266) = .002, p = .96$. The interaction between chosen vs. non-chosen foods and condition was marginally significant, $F(2, 266) = 3.04, p = .05$. We conducted exploratory analyses to investigate the marginal interactions, as there is limited research regarding the effect of justification on emotion and self-control outcomes. Simple effects tests using the Bonferroni correction examining chosen versus non-chosen foods for each condition revealed no significant differences between desirability ratings for chosen and non-chosen foods for participants in the control condition, $F(1, 96) = .000, p = .99$. However, differences between ratings of chosen and non-chosen foods for participants in both the positive affect, $F(1, 83), = 2.86, p = .09$, and justification conditions, $F(1, 87), = 3.34, p = .07$, were marginally significant, such that chosen foods were rated as marginally less desirable for those in the positive affect condition, but marginally more desirable for those in the justification condition, compared to non-chosen foods. See Table 2 for desirability means of chosen and non-chosen foods by condition.

For deservingness, there was no main effect of condition, $F(2, 266) = .81, p = .45$ or food choice (chosen vs. non-chosen), $F(1, 266) = .02, p = .90$. Similarly, the interaction between chosen vs. non-chosen foods and condition on deservingness was marginally significant, $F(2, 266) = 2.96, p = .05$. Post-hoc comparisons using the Bonferroni correction revealed no significant differences between desirability ratings for chosen and non-chosen foods for participants in the control, $F(1, 96), = .20, p = .65$, and positive affect conditions, $F(1, 83), =$

2.72, $p = .10$. Chosen foods were rated with marginally higher deservingness compared to non-chosen foods for participants in the justification condition, $F(1, 87) = 3.31, p = .07$. See Table 2 for deservingness means of chosen and non-chosen foods by condition.

For the outcome of food appeal, there was no main effect of condition, $F(2, 266) = 1.44, p = .24$ or food choice $F(1, 266) = .12, p = .73$. There was also no interaction between chosen vs. Non-chosen foods and condition on appeal, $F(2, 266) = 1.60, p = .20$.

Effects of Individual Differences on Food Choice.

To examine if individual differences influenced the effect of condition on food choice, moderated logistic regression analyses were conducted using the PROCESS macro for SPSS (Hayes, 2013²). Restrained eating and impulsivity were entered into separate models as predictors of food choice, and dummy coded condition variables were entered as moderators (Justification vs Control, PA vs Control, with Control as the reference variable). Variables were mean-centered prior to analyses.

Restrained eating did not predict food choice, $B = -.02, SE = .03, p = .44$. In addition, there were no differences between the justification and control condition in terms of the effect of restrained eating on food choice, $B = -.01, SE = .05, p = .79$. There were also no differences between the positive affect and control condition in terms of the effect of restrained eating on food choice, $B = .05, SE = .05, p = .32$.

In the impulsivity analysis, impulsivity did not predict food choice, $B = .37, SE = .27, p = .17$. There were no differences between the justification and control condition in terms of the effect of impulsivity on food choice, $B = -.11, SE = .68, p = .87$. There were also no differences

² Study 2 analyses required the use of PROCESS 2.0 due to a categorical outcome variable; PROCESS 3.0 (Hayes, 2018) does not allow for logistic models.

between the positive affect and control condition in terms of the effect of impulsivity on food choice, $B = .51$, $SE = .66$, $p = .44$.

Discussion

Study 2 sought to examine whether justification increases the likelihood that one will engage in temptation following an increase in positive emotion. While justification did increase positive emotion in Study 1, these results were not replicated in Study 2. In this study, positive affect increased over time only for those in positive affect, but not the justification or control conditions. Findings related to negative affect were also inconsistent across the two studies. We found an overall increase of negative affect across time in both studies, but an interaction between time and condition only in Study 1.

Justification (via a self-licensing manipulation) does not appear to consistently result in increased positive affect. Several explanations for this finding seem plausible. The justification manipulation may not be specific enough to truly elicit the justification process. Participants were asked to recall recent healthy choices (in general), but were asked to make an imagined, domain-specific (i.e., food) choice. It is unclear whether justification works differently when previous behavior and the self-control dilemma are across- or within-domains. In other words, justification may only work if one recalls past behavior that is closely related to a potential temptation. Second, there could be differences in sample composition across studies. Although sample differences did not influence the results in Study 1, there may be important demographic differences between participants in Studies 1 and 2. People may have differed across a number of relevant domains, including gender, affective tendencies, and tendency to engage in socially desirable responding. While all of these explanations are plausible, there may also be a much simpler

explanation for our findings: justification and self-licensing are not the same. These possibilities, in addition to more alternative explanations, will be discussed in greater detail below.

A second aim of Study 2 was to determine if engaging in justification (via a self-licensing manipulation), would result in an increased likelihood of selecting a tempting (i.e., unhealthy) food item. While food choice did differ by condition, the results were not in the expected direction. Participants in the justification were more likely to select a healthy, rather than an unhealthy, food item compared to individuals in the positive affect and control conditions. This result contradicts previous findings, which suggest justification facilitates self-control failure (Hill & Veilleux, in preparation). Thinking about past healthy choices seemed to prime participants to make healthy choices, instead of propelling them toward temptation. Replication will be needed to determine whether recall of past healthy behavior (i.e., licensing) serves a priming, rather than justification, function.

Importantly, the designation of healthy versus unhealthy food items was determined by the food-pics database, and may not accurately reflect participant's perceptions of healthy versus unhealthy foods. For example, participants may have considered strawberries as an unhealthy (i.e., tempting) food item despite our decision to code them as healthy. If a participant chose strawberries, they may have actually given in to temptation; however, our coding would have incorrectly classified them as having successfully resisted a temptation. It may be important to actually test the classification of these foods as healthy versus unhealthy rather than assuming based on database information.

We predicted justification would license participants to give in to temptation because of an increase in positive affect. Thinking about past healthy choices did not result in an increase in positive affect, nor did it increase the likelihood of giving in to temptation. In light of these

findings, we did not investigate the hypothesis that positive affect was the reason for justification-based self-control failure.

Additionally, we predicted that attention to emotion would facilitate self-control, such that individuals in the justification condition who attended to their emotions would be less likely to select an unhealthy food item (i.e., to resist temptation). Thinking about past healthy choices *did* influence participants' food choices, but not in the way we expected, as thinking about past healthy choices helped participants make current healthier choices. Instead of pushing them closer to their temptations, our manipulation appeared to prime participants to "think healthy." Because participants who thought about past healthy choices were already more likely to choose a healthy food, attending to their emotions did not seem to play much of a role in their self-control decision. Attention emotions appeared to attenuate participants' "gut instincts," (i.e., to choose a tempting food), as opposed to exerting a measurable influence over their food choices. What remains unclear is whether thinking about past healthy choices truly helped participants to resist their temptations, or if the act of recalling previous healthy behavior (i.e., priming) played a primary role in facilitating participants' subsequent healthy choices.

We also hypothesized that restrained eating and/or impulsivity might moderate the relationship between condition and food choice; however, results revealed neither restrained eating, nor impulsivity, influenced this relationship. This may be because the imaginal self-control challenge was not strong enough to evoke a true self-control dilemma, or because these individual differences (impulsivity, restrained eating), may influence the justification, but not priming, process.

Overall, there were no differences in desirability, perceived deservingness, and appeal chosen vs. non-chosen food items. However, differences between chosen and non-chosen foods

on measures of desirability and deservingness were marginally significant for participants in the justification condition. This suggests participants in the justification condition (who thought about past healthy behavior) may have considered their chosen food item as more desirable than the foods they did not select. Similarly, participants in the justification condition indicated they deserved their chosen food item more than the food items they did not select. Interestingly, these food ratings occurred *after* the participant food choice, suggesting participants in the justification condition may have experienced cognitive dissonance regarding their temptations. Specifically, participants may have chosen a healthier, less tempting food item in an attempt to stay consistent with their previous behavior. As a result, their food enjoyment ratings may have fallen in line with their behavior, rather than their desires. Alternatively, the priming effect may have inspired participants to make healthier choices instead of “giving in” to temptation. Participant ratings of the chosen food item may have been bolstered by the fact that they genuinely felt good about their decisions (i.e., their ability to engage in effective self-control) and the resulting food choice.

Earlier, I discussed two potential explanation for the role of positive affect in justification-based self-control failure: justification influences behavior *before* the decision (i.e., due to a preceding increase in positive affect) or *during* the decision (i.e., due to changes in positive affect during temptation). These results suggest justification may influence positive affect, but at a different point in the justification process. Specifically, justification may result in an increase in positive affect at the time of indulgence, instead of before. In other words, justification may increase the likelihood of “giving in” by increasing the positive emotion associated with a temptation. Justification may also lead to a more pleasurable and satisfying “temptation” experience, and thereby increase the likelihood one will engage in justification in the future. Giving oneself a reason to indulge likely increases the pleasure one experiences when

engaging in temptation, and may remove negative emotions (e.g., guilt) often associated with “giving in.” Thus, the primary goals of Study 3 will be to investigate whether justification results in increased enjoyment (i.e., “Does justification increase how good a food tastes?”) and pleasure *during* food consumption (i.e., “Does justification increase how good one feels while engaging in a temptation?”).

Study 3

The goal of Study 3 was to determine the effect of justification on food enjoyment. I predicted that individuals in the justification condition would experience increased imagined enjoyment of a temptation compared to individuals in both positive affect and control conditions. In addition, I predicted that individuals in the justification condition would experience greater imagined positive affect while consuming an unhealthy (i.e., tempting) food item.

Participants

Participants were 346 adults recruited through Amazon Mechanical Turk with a mean age of 34.28 ($SD = 11.17$). The majority of the sample identified as female (50.6%) and participants were primarily Caucasian (74.0%). Participants were excluded if they responded “Yes” to a question asking if we should not keep their data ($n = 7$), or if they reported they chose a food item (which served as the primary outcome variable) at random ($n = 21$). We also excluded 39 participants for suspicion that their responses were not provided by a human (e.g., if they were identified as potentially being a robot), using the same method described earlier. This left a total of 278 participants included in the final analyses.

Measures

Baseline state emotion (SPANE; Diener et al., 2010), trait emotionality (TMMS; Salovey et al., 1995), restrained eating (RRS; Herman & Polivy, 1980) and impulsivity (SUPPS-P;

Cyders et al., 2014) were assessed the same as in the prior studies. In the current study, the SPANE demonstrated good reliability across both positive (Time 1: $\alpha = .93$, Time 2: $\alpha = .88$) and negative subscales (Time 1: $\alpha = .95$, Time 2: $\alpha = .96$). Relatedly, the TMMS and UPPS-P demonstrated good and excellent reliability ($\alpha = .91$; $\alpha = .86$), respectively. The RRS demonstrated good reliability ($\alpha = .81$).

Procedure

Participants first completed the Scale of Positive and Negative Experiences (SPANE; Diener et al., 2010) which served as a baseline measure of positive and negative affect. Next, participants completed measures of emotionality and impulsivity (TMMS; Salovey et al., 1995; SUPPS-P; Cyders et al., 2014), both to assess individual differences and to serve as a filler between the initial emotion measure and the thought-listing task.

Participants were then randomized to a justification, positive affect, or control condition via the same thought listing task used in Studies 1 and 2, with a slight amendment in the instructions to encourage more detailed responses. For example, participants in the justification condition were provided with the following instructions: “In the space below, please list three healthy choices you made in the past week (the past 7 days). The choices can be anything health-related, including exercise, and healthy eating. These should be specific choices that you made in one moment in time. The idea is to be detailed and specific; write a short paragraph. For example, Ted might say, “Yesterday, I went to the gym for an hour and did both cardio and weight-lifting. I ran on the treadmill for 30 minutes and watched Judge Judy, and I pushed myself to run faster than usual so I was really tired at the end. I also lifted and made a personal best.” Of note, the control condition prompt to describe three items of clothing worn in the last week did not appear to the participants due to a programming error. Since participants in the

control condition did not engage in *any* recall task, we felt it was acceptable to retain this as a control condition, albeit a slightly different control condition than in the prior studies.

Participants were then given the same instructions as Study 2, “Imagine that you are hungry right now. On the next page, please select the food item that appears most appetizing, and that you would most like to eat.” The food choices were the same as those presented in Study 2, with three healthy (strawberries, snack mix, roasted potatoes) and three unhealthy (chocolate cake, French fries, lasagna) food items. Following the selection, participants completed a series of food ratings assessing the imagined taste, smell, and appearance of the selected food item (“If this food was in front of you right now, how much would you enjoy the taste/smell/appearance of the food”), on a scale from 0 (*not at all*) to 100 (*very much*). Next, they completed an amended version of the SPANE, designed to assess their imagined emotional state while consuming the food they selected (“Please imagine you are eating the food you selected. Rate the degree to which you would imagine experiencing the following emotions while eating the food”). This version of the SPANE also included two items “hungry” and “full” to assess their level of hunger. Participants then selected reasons for their food choice (“It was the food I desire the most,” “It was my favorite food”). This was done both in an effort to determine if participants should be excluded based on a random food choice, and to gain an understanding of factors driving their food selection decision.

Next, participants completed the Revised Restraint Scale (Herman & Polivy, 1980) and a series of dieting questions in an effort to assess restrained eating behavior. To ensure we categorized the food items appropriately, participants also rated each of the six food items as either healthy or unhealthy. Participants also indicated if they were allergic to a number of common foods (e.g., milk/dairy, gluten, peanuts), and if they abstain from consuming any food

item for personal or religious reasons. Finally, participants completed a series of demographic and response integrity questions. Participants were asked if they paid attention while taking the survey and if they completed the survey more than once. In addition, participants were asked if there were any additional reasons why we should not keep their data, and were given the opportunity to elaborate on the reason without fear of penalty. Participants were paid \$1.20 for completing the 8-minute study.

Results

Replicating Study 2. Overall, 57.2% of participants chose an unhealthy option. To replicate the findings from Study 2, a chi-square analysis was conducted with condition as the independent variable and food choice (coded dichotomously as *healthy* or *unhealthy*) as the dependent variable. Results indicated food choice differed by condition, $\chi^2(2, N = 278) = 9.06, p = .01$; more participants in the control condition selected an unhealthy food item (50.5%) compared to participants in the positive affect (46.3%) and justification (29.3%) conditions.

Main Predictions.

Imagined Food Enjoyment and Deservingness. Because all three food enjoyment variables (taste, smell, appearance) were highly correlated ($r > .50$) we averaged the three variables to create an average food enjoyment score ($\alpha = .82$). See Table 3 for correlations among food enjoyment variables. We then evaluated effects of condition and food choice category (*healthy* or *unhealthy*) on imagined food enjoyment using a two-way between subjects ANOVA. There was a main effect of condition on imagined food enjoyment, $F(2, 272) = 5.55, p = .004$. Post-hoc comparisons using the Bonferroni correction revealed individuals in the positive affect ($M = 84.12, SD = 16.68$) and control conditions ($M = 82.60, SD = 17.61$) reported greater imagined food enjoyment when compared to those in the justification condition ($M = 77.80, SD$

= 16.33). There was also a main effect of food choice category on imagined food enjoyment, $F(1, 272) = 10.44, p = .001$. Participants who selected a healthy food item reported greater levels of food enjoyment ($M = 83.94, SD = 14.96$) when compared to participants who selected an unhealthy food item ($M = 78.71, SD = 19.19$). There was no interaction between condition and food choice category, $F(2, 272) = 0.87, p = .42$.

To examine whether food choice influenced the effect of condition on imagined deservingness, we conducted a second two-way ANOVA with condition and food choice category as the between subjects factors and imagined deservingness as the dependent variable. There was no main effect of condition on imagined food deservingness, $F(2, 272) = 1.32, p = .27$; however, there was a main effect of food choice on imagined deservingness, $F(1, 272) = 10.02, p = .002$. Participants who selected a healthy food item reported greater deservingness ($M = 75.29, SD = 25.05$) when compared to those who selected an unhealthy food item ($M = 65.5, SD = 30.82$). There was no interaction between condition and food choice category, $F(2, 272) = 0.30, p = .74$.

Imagined Positive Affect. To examine whether condition influenced imagined positive affect after hypothetically selecting a chosen food item, a two-way ANCOVA was conducted with condition and food choice as the between subjects factors and Time 2 (imagined) positive affect as the dependent variable while controlling for Time 1 (initial) positive affect. There was no significant effect of condition, $F(2, 271) = 1.49, p = .23$, or food choice, $F(1, 271) = 1.58, p = .21$, nor an interaction between them $F(2, 271) = 1.16, p = .31$ on imagined positive affect after controlling for positive affect at Time 1. However, Time 1 positive affect significantly predicted imagined positive affect at Time 2, $F(1, 271) = 91.94, p < .001$.

Secondary Analyses. To verify we correctly assigned each food item to the correct category (healthy or unhealthy), we conducted secondary examining participant ratings of food items. See Table 4 for descriptive food information. The majority of participants rated strawberries (96.5%) and potatoes (59.8%) as healthy foods, and fries (87.3%), lasagna (73.4%), and chocolate cake (84.1%) as unhealthy. The only controversial food item was the snack mix, which we classified as a healthy food item. Only 51.2% of participants designated it as a healthy, rather than unhealthy, food item. Overall, the food choices appeared to match their designated category with respect to healthy versus unhealthy items.

Effects of Individual Differences on Food Choice.

To examine if individual differences influenced the effect of condition on food choice, moderated logistic regression analyses were conducted using the PROCESS macro for SPSS (Hayes, 2013). Restrained eating and impulsivity were entered into separate models as predictors of food choice, and dummy coded condition variables were entered as moderators (Justification vs Control, PA vs Control, with Control as the reference variable). Variables were mean-centered prior to analyses.

Restrained eating did not predict food choice, $B = -.01$, $SE = .04$, $p = .81$. There were no differences between the positive affect and control condition in terms of the effect of restrained eating on food choice, $B = -.19$, $SE = .29$, $p = .51$. Relatedly, there were no differences between the justification and control condition in terms of the effect of restrained eating on food choice, $B = -.03$, $SE = .05$, $p = .50$.

In the impulsivity analysis, impulsivity did not predict food choice, $B = .33$, $SE = .27$, $p = .21$. There were no differences between the positive affect and control condition in terms of the effect of impulsivity on food choice, $B = -.95$, $SE = .60$, $p = .50$. However, there were differences

between the justification and control condition in terms of the effect of impulsivity on food choice, $B = 1.38$, $SE = .69$, $p = .04$. The effect of impulsivity on food choice was marginally significant for those in the justification condition, $B = .96$, $SE = .56$, $p = .08$.

Discussion

A primary goal of Study 3 was to determine if justification increased pleasure during imaginal food consumption (i.e., pleasure associated with “giving in” to a temptation). In addition, we wanted to investigate whether justification (via a self-licensing manipulation) would result in greater imagined positive affect while hypothetically consuming an unhealthy food item.

Although we found a main effect of condition on food choice, the pattern was consistent with findings from Study 2 rather than with initial predictions. Participants were more likely to choose a *healthy*, rather than *unhealthy*, food item. This finding supports our suspicion that we have activated a priming, rather than justification, process. In addition, those in the justification condition (via a self-licensing manipulation) did not report increased enjoyment of food, and this was true regardless of whether a participant “failed” at self-control (i.e., chose an unhealthy food) or successfully resisted temptation (i.e., chose a healthy food).

It is important to note participants made all food-related ratings (e.g., enjoyment, deservingness) *after* the hypothetical food choice task. Participants were asked to evaluate their chosen food item (as well as the non-selected food items) after they had already made a decision. As a result, participants may have felt the need to rationalize their decision (i.e., to rate their chosen food as more enjoyable and desirable) in attempt to reduce dissonance associated with their selection. This explanation may be most plausible for those who chose a healthy food item but strongly desired the tempting foods. The dissonance between their desire (i.e., to choose an

indulgent, more tempting item), and their goal (i.e., to make healthy decisions), may have influenced their food enjoyment ratings. Additionally, the finding that justification does not increase enjoyment of food may also be explained by the high reward value often associated with food. Justification may have added little value because participants already found the foods enjoyable overall. These explanations are discussed in greater detail below.

General Discussion

The current set of studies had four primary aims. First, we were interested in finding out whether justification change emotion. We believed that justification, via a self-licensing manipulation, would increase positive affect, and decrease negative affect. Second, we believed justification would result in an increased likelihood of self-control failure. We predicted participants who engaged in justification would be more likely to select a tempting (unhealthy) food item. Relatedly, we hypothesized that justification would increase self-control failure *by way of* positive affect. Stated differently, justification should propel people to choose an unhealthy temptation *because* they experience an increase in positive affect. Studies 1 and 2 were designed to investigate whether justification results in self-control failure *before* the decision. Study 3 examined an alternative explanation: the idea that justification occurs *during* the temptation or self-control decision (i.e., people relish the feeling of engaging in the temptation and feel they deserve it). In Study 3, we attempted to find out whether engaging in justification increases the pleasure and enjoyment *during* temptation.

The Link Between Justification and Positive Affect

In Study 1, positive affect increased for participants in both the justification and positive affect conditions; however, these results were not replicated in Study 2. Both conditions were essentially asked to recall “good things,” whether those were healthy choices made on their own

(i.e., the justification condition; self-licensing), or positive experiences they had with others (i.e., the positive affect condition). Thus, while the results of Study 1 might suggest that justification *does* make people feel good, it is unclear whether this was a result of a “pure” justification process, or simply because people felt better when recalling positive memories of any sort. The fact that we did not find a consistent increase in positive affect across studies is inconsistent with prior work, which suggest people feel better when recalling positive memories (Joorman & Siemer, 2004), and when they engage in self- or moral-licensing (Merritt & Monin, 2010). A few explanations for these inconsistencies seem plausible. First, the justification manipulation may simply be inconsistent. Thinking about past healthy behaviors may be more important for some than others, and thereby influences positive affect differentially depending on the individual. While we controlled for sample type in Study 1, there may be individual characteristics that influenced the results across studies. For example, participants in Study 1 were higher in trait impulsivity compared to participants in Study 2. Study 1 participants were also higher in positive urgency, a specific facet of impulsivity which measures the tendency to act rashly in response to positive affective states. Thus, relevant individual differences (e.g., impulsivity, emotional reactivity), may explain the inconsistent emotion results across our studies. In addition, the key to justification’s “success” may not be explicitly tied to emotion. Prior work suggests that self-control failure increases negative affect, but that justification does not ameliorate this heightened distress (Hill & Veilleux, in preparation); the act of justification may facilitate self-control failure via another route (e.g. moral credentials; Monin & Miller, 2001).

Justification vs. Self-Licensing: Are They Distinct Processes?

Moral self-licensing (Monin & Miller, 2009) occurs when people provide themselves with a reason for engaging in immoral or “bad” behavior. Specifically, people may recall past

altruistic or “good” behavior, and feel they have earned the right to engage in negative, prejudicial, or immoral behavior (Jordan, Mullen, & Murnighan, 2009; Merritt, Effron, & Monin, 2010). The general idea is that people think about good things they have done in an effort to license subsequent bad behavior. Notably, research on self-licensing does not place an emphasis on temporality; in fact, people can “license” their way into temptation hours, or even days, after their good behavior (Merritt, Fein, & Savitsky, 2009). Justification, on the other hand, occurs when people make excuses for discrepant behavior *before* they engage in a temptation. Researchers note that an actual self-control dilemma (i.e., to eat the cake or resist temptation) *must* be present in order to activate the justification process (De Witt Huberts et al., 2014). While two of our studies presented participants with a self-control dilemma (i.e., choose between a healthy or unhealthy food), they were unaware they would be faced with a self-control situation *before they engaged in justification*. In retrospect, we realized these study paradigms may have been more analogous to self-licensing than justification. In our previous vignette study (Hill & Veilleux, in preparation), we found that justification increased the likelihood of self-control failure; however, participants in this study read a story in which a character “Taylor” justified their behavior at the time of the self-control decision. Because participants were unaware a behavioral choice was on the horizon, an argument could be made that the current studies did not actually model justification (i.e., a specific type of self-licensing). The function of justification is more specific, to permit discordant behavior in specific, temporally pressing, and tempting situations, rather than the broad functions of self-licensing, which may permit one to act badly in general across a variety of non-specific situations.

Temptations are often defined as activities, behaviors, or entities that people want to engage in or obtain (e.g., sleeping, unhealthy foods; Veilleux et al., 2018), that occur in the

context of a conflicting or contradictory long-term goal (e.g., to lose weight, to be more active). These temptations are often viewed as luring people away from their long-term goals with the promise of immediate pleasure or indulgence. By this definition, temptations can also be thought of as short-term, hedonic-focused goals. Goals to avoid (e.g., abstain from alcohol) often conflict with approach-motivated temptations (e.g., to consume alcohol). This is different than the type of conflict presented in the current studies where participants were asked to choose between two approach behaviors (i.e., choose healthy foods or choose unhealthy foods); in both cases, participants “got” a reward. Self-control dilemmas can also challenge people to resist the temptation to avoid (e.g., to procrastinate) in the pursuit of an approach-oriented goal (e.g., complete a challenging homework assignment). Justification may operate differently depending on the type of self-control conflict experienced (i.e., approach/approach versus approach/avoid). These distinctions have important implications for the current studies. First, it may be that justification works better (or differently) when people are faced with a choice to engage in a temptation versus when they are presented with the choice to do nothing. This type of self-control challenge is inherently different from a self-control dilemma involving a choice between two things (i.e., the choice between cake or an apple). Second, justification may function differently depending on the type of temptation. For some, a temptation to avoid (i.e., to procrastinate or avoid working on an assignment), may be harder to resist than an approach-oriented temptation (i.e., to resist eating chocolate cake). Justification may operate differently depending on the type of self-control conflict experienced (i.e., approach/approach versus approach/avoid) and the nature of the temptations (i.e., the temptation to approach or the temptation to avoid).

Self-control conflicts require a person holds at least *some* desire to reach a long-term goal (Fujita, 2011; Hofmann, Friese, & Strack, 2009). To illustrate, let us assume Ted has a goal to eat healthy and lose weight. Ted may be diligently watching his caloric intake, and trying his best to abstain from unhealthy foods like chocolate and cake. Let us also imagine that Ted is attending a party for a colleague, and is presented with the option to have a slice of chocolate cake. Ted can choose to indulge, or he can attempt to resist the cake in an effort to preserve toward his long-term goal. Inherent in this self-control dilemma is the idea that Ted possessing a goal to better his healthy, and is thereby *motivated* to resist temptations that may get in the way of his goal. Without Ted's goal to eat healthy and lose weight, the cake no longer becomes a temptation. In the current studies, it is unclear whether people actually had a goal to eat healthy, and this makes it difficult to determine whether the food choice task represented an actual self-control dilemma. Prior work highlights the importance of individual goals and the role they play in self-control situations (Fujita, 2011). Although most people report having health related goals (Veilleux et al., 2018), we cannot be certain that our food choice task presented a salient dilemma to necessitate justification.

We attempted to elicit the justification process, instead of allowing the process to occur organically. Although certainly possible, is not yet clear how one might capture the process of justification spontaneously (i.e., without using some kind of experimental manipulation). Asking participants to recall recent healthy behaviors (i.e., a licensing manipulation) in studies 2 and 3 appeared to prime healthy choices, instead of steering participants toward temptation. Asking people to reflect upon healthy behavior before choosing between a healthy or unhealthy food has been shown to inadvertently prime healthy behavior (Wilcox, et al., 2009). While the use of prompting is consistent with other studies on self-licensing (Effron, Monin, & Miller, 2013;

Mukhopadhyay & Johar, 2009), future studies should attempt to activate the justification process in less suggestive ways in an effort to: 1) avoid potential priming effects, and 2) activate the justification process in ways that are ecologically valid. Relatedly, we asked participants in the justification condition to recall recent healthy behaviors *in general*. We did not, however, ask them to specifically recall healthy food choices. Previous research suggests licensing may be most relevant when the recalled behavior matches the temptation (i.e., both related to food); however, others suggest licensing can also occur across domains (Effron et al., 2009; Mazar & Zhong, 2010).

Justification and Enjoyment

In Study 3, we predicted justification would allow for a more pleasurable temptation experience; however, results suggest justification does not result in increased pleasure or enjoyment in temptation. In fact, participants in the positive affect condition reported the highest levels of enjoyment overall. In addition, participants who selected a healthy food item reported greater levels of imagined enjoyment when compared to those who selected an unhealthy food. This appears counterintuitive, as one would expect temptations or indulgences to elicit greater pleasure or enjoyment when compared to healthier, less indulgent foods. Relatedly, participants who chose a healthy food item also reported feeling as though they deserved their food more than those who choose an unhealthy food item. Because participants completed their food ratings *after* they selected a food item, they may have felt compelled to rate the chosen item as more pleasurable than they actually believed. This hypothesis is consistent with theories of cognitive dissonance, which is based on the idea that people desire to maintain internal consistency (Festinger, 1957). When a person engages in a behavior that is seemingly inconsistent with their beliefs (i.e., choosing an unhealthy food when they hold the goal to eat healthy or choosing a

healthy item despite a strong desire to choose a temptation), they often alter their beliefs to alleviate discomfort. People often change their beliefs to fit their actions, and participants' ratings of enjoyment and deservingness were likely influenced by their food choice. Thus, while the participants who chose a healthy item reported more imagined enjoyment, they may have actually "fit" their ratings to fall in line with their actions after the fact.

Strengths and Limitations

Recent work suggests that while hypothetical study paradigms are helpful experimental tools, participants often "act" differently in real versus imagined scenarios (Bostyn, Sevenhant, & Roets, 2018). A limitation of the current set of studies is the use of a hypothetical behavioral outcome. Participants may have selected a different food item had they known they may actually have been able to consume it. Further, imagined or hypothetical scenarios often lack the sensorial qualities (e.g., taste, smell) which often evoke emotion in real life situations. The use of a hypothetical self-control dilemma may have failed to bring forth a number of emotional elements inherent in real self-control challenges, and this may have impacted a number of aspects of the study. Relatedly, we may not have actually enacted a justification-based process since participants were not first faced with a self-control dilemma. Because we asked people to justify *before* encountering a temptation, we may not have captured the justification process as it occurs in real life. Future work should investigate whether timing matters for justification, and if so, if the timing is what distinguishes justification from similar processes (e.g., moral licensing). Finally, we exercised a great deal of control over the temptations in the studies. People often report experiencing a wide range of temptations (Veilleux et al., 2018). The food items were predetermined by the researchers, thereby removing the ability for the participant to hypothetically consume or resist a food they personally find tempting.

The current set of studies has several strengths, including large sample sizes, and the use of both student and general populations. To our knowledge, few studies to date have examined justification via an experimental manipulation, and the current studies represent one of the first attempts to examine justification and self-licensing through an empirical lens (Prinsen, Evers, Winjngaards, van Vliet, and de Ridder, 2018). While concerns regarding constrained temptation selection and the use of a hypothetical behavior choice are valid, they could also be considered strengths, as they allow researchers to exert control over goal motivation and an immediate self-control decision. While asking participants to make hypothetical decisions may seem artificial or contrived, it may also allow researchers to prime goal motivation and control the time between the justification process and decision. The use of a non-personal vignette (i.e., a vignette in which a fictional character experiences a self-control dilemma), may be critiqued for failing to be personally relevant for any or all participants. On the other hand, the use of hypothetical participant-involved vignette (i.e., a vignette that requires participants to respond to a self-control challenge as themselves), brings forth a number of substantial issues (e.g., goal salience, temptation strength). In our prior vignette study (Hill & Veilleux, in preparation), we were able to state Taylor's desire to maintain a healthy lifestyle up front, which emphasized the salience of the self-control dilemma (i.e., to engage or not to engage in a healthy behavior). Additionally, the justification process and self-control decision happened simultaneously, which more closely aligned with how the justification process likely plays out in real life.

Summary of Results

Overall, results suggest justification can increase positive affect, albeit inconsistently. Our results also suggest that recall of past healthy behavior does influence self-control, although not in the way one might expect (i.e., participants who justified were more likely to resist, rather

than engage in, temptation). Recall of past healthy behavior appeared to facilitate, rather than hinder, self-control; however, our results suggest justification *does* influence self-control decisions. Finally, we did not find evidence that recall of past healthy behavior increases enjoyment of temptation. Taken together, our results suggest recall of past healthy behavior does not consistently increase positive affect, nor does it propel people toward their temptations; in these studies, recall of healthy behavior did not license misdeed or provide a justifiable excuse for engaging in temptation. Although our studies represent one of the first attempts to investigate justification and emotion, additional work is needed in order to better understand both the differences and similarities between self-licensing and justification, as well as the relationship between justification, emotion, and self-control.

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Appendix

Tables and Figures

Table 1
Demographics by Sample for Study 1.

	Total	mTurk ($n = 130$)	Subject Pool ($n = 135$)	Statistical Differences
Age	26.58 (10.56)	33.96 (10.66)	19.49 (2.64)	$t = 15.31^{***}$
Gender	54.3% female	36.9% female	71.1% female	$\chi^2 = 31.20^{***}$
Ethnicity	77.4% White	73.8% White	80.7% White	$\chi^2 = 1.80$

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

Table 2
Differences Between Chosen and Non-Chosen Food Desirability and Deservingness Ratings by Condition in Study 2.

Variable	Condition	Chosen Food	Non-Chosen Foods	<i>p</i> - Value
Desirability	Control	57.78 (32.88)	57.84 (20.57)	<i>p</i> = .99
	Positive Affect	57.75 (29.84)	63.73 (19.59)	<i>p</i> = .09
	Justification	61.84 (29.19)	55.52 (19.07)	<i>p</i> = .07
Deservingness	Control	54.32 (34.70)	55.78 (25.10)	<i>p</i> = .65
	Positive Affect	55.46 (32.29)	60.56 (26.12)	<i>p</i> = .10
	Justification	55.91 (34.06)	50.04 (26.72)	<i>p</i> = .07

Table 3
Correlations Among Food Enjoyment Variables in Study 3

	1.	2.	3.
1. Smell	--	.72**	.60**
2. Appearance		--	.52**
3. Taste			--

Note. ** Correlation is significant at the 0.01 level (2-tailed).

Table 4

Participant Categorization of Food Items Based on Healthy Versus Unhealthy

Food Item	% Healthy	% Unhealthy
Strawberries	96.5	2.9
Fries	10.4	87.2
Lasagna	24.9	73.3
Snack Mix	51.3	47.0
Chocolate Cake	13.3	84.1
Potatoes	60.0	38.6

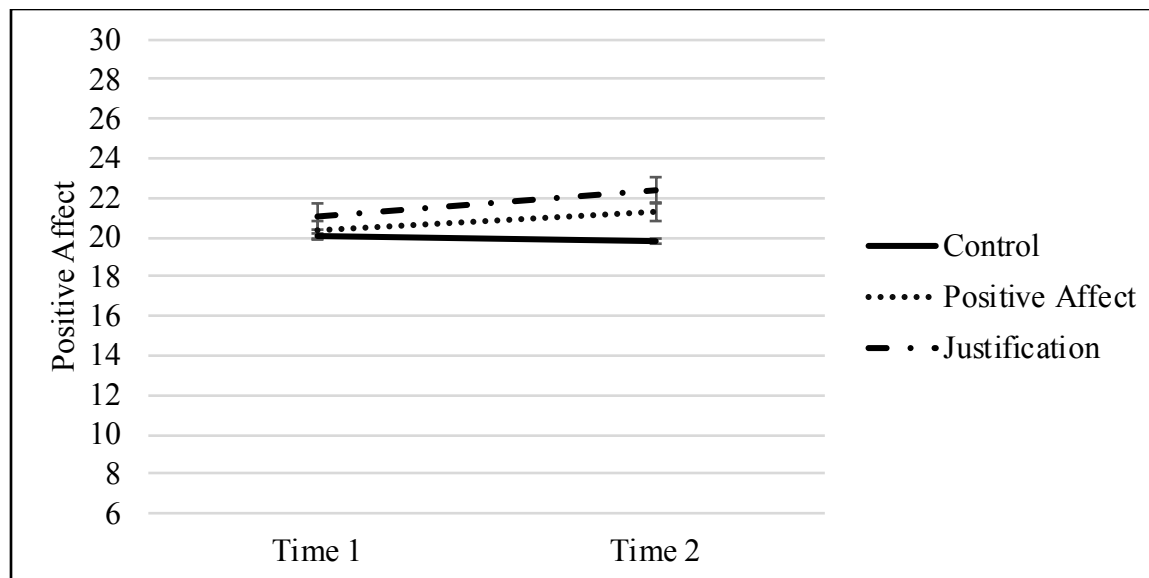


Figure 1. Change in positive affect by condition in Study 1

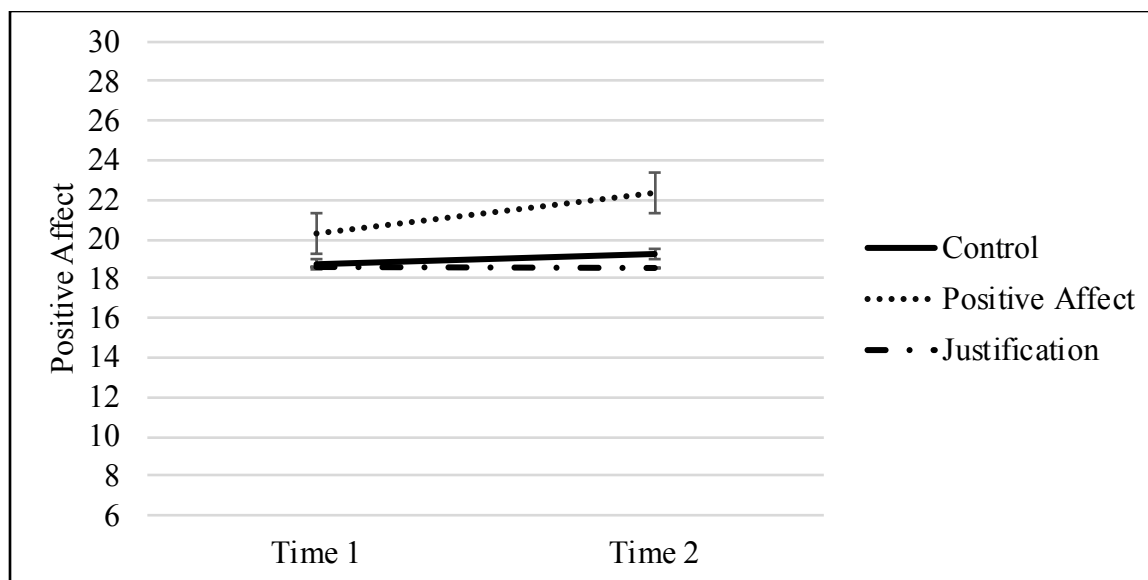


Figure 2. Change in positive affect by condition in Study 2

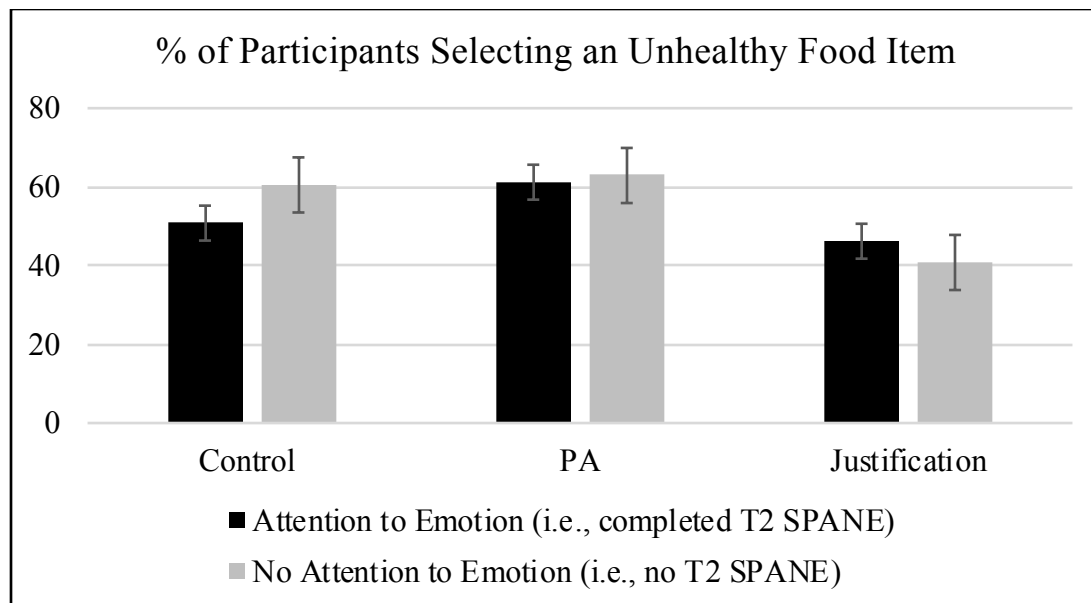


Figure 3. Food selection percentages by justification and attention to emotion conditions

Table 1
Sample Participant Responses to Justification Condition Manipulation Prompts

Condition	Example 1	Example 2	Example 3
Control	On Sunday I wore a pair of slip-on shoes. They are made of a soft and thin Black wool than is comfortable and keeps my feet cool and insulated.	On Sunday I wore a band t-shirt. The band is Weekend Nachos and the front is a black and white picture of a rose on the ground with blood around it. The t-shirt itself is black, and the lettering is green.	On Sunday, I wore golf shoes, shorts, and a polo. They were classy and useful.
Positive Affect	My mom left me a nice note. It was thoughtful.	On Sunday, my husband helped me to set up my new fax machine.	On Sunday, a shopper let me get in line in front of them because I only had a few items. They didn't make me wait while they checked out a cart full of items.
Justification	On Monday, I made a healthy smoothie even though I was pressed for time.	On Wednesday, I went to bed early instead of staying up all night.	On Saturday, I ate a salad for lunch instead of eating a hamburger.

Note. Responses were taken from different participants across all three studies.

Table 1
Food Demographic Information

Food	Category	Profile	Image	Fat Total*	kCal*	% Chosen Overall
Potatoes	Healthy	Savory		3.3	184.5	20.1
Lasagna	Unhealthy	Savory		17.85	430.50	10.8
Strawberries	Healthy	Sweet		0.43	5.86	17.1
Chocolate Cake	Unhealthy	Sweet		18.48	450.00	9.7
French Fries	Unhealthy	Salty		22.10	435.00	29.7
Snack Mix	Healthy	Salty		0.10	69.40	12.6

Note. Profile categories were designated by researchers. Fat total and kCal values came from the food.pics database (Blechert et al., 2014).