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HOW CONSUMER GOAL CHARACTERISTICS DETERMINE THE INFLUENCE OF
GOAL PROGRESS ON GOAL PERSEVERANCE

A Dissertation in
Business Administration

by

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ABSTRACT

How does progress toward a goal impact the tendency to pursue that goal? Prior research has identified inconsistent effects of consumer goal progress upon goal perseverance; one stream of research suggests that progress enhances perseverance, whereas an alternative stream proposes that progress has no such effect. The present research introduces characteristics of goals to help resolve this conflict: all-or-nothing and cumulative benefits associated with goal progress. In a series of six studies, I demonstrate that all-or-nothing goals (which provide benefits only upon achieving the end state) result in greater perseverance as a function of progress than do cumulative benefit goals (which accrue benefits with progress). Underlying process evidence for the mediating role of perceived sunk costs is provided in scenario and real behavior contexts. In addition, alternative goal attractiveness is shown to alter the effects of goal progress on perseverance for cumulative benefit (but not all-or-nothing) goals. The results explicate how goal progress helps versus harms consumer goal achievement, with implications for consumer welfare and marketing (e.g., customer loyalty programs).

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Dedicated to Nanci House ...

You nearly slipped away from us all, and we are grateful to have you here with us still...

Chapter 1

INTRODUCTION

Perseverance in the accomplishment of goals is an important—but often challenging—aspect of consumer life. Occasionally individuals pursue a goal with increasing zeal as progress is made, such as when a marathoner sprints the last 100 yards of the race. At other times progress does not increase perseverance, such as when a person avidly following a diet subsequently splurges on a high-calorie meal. In both scenarios, the individual has made progress toward a goal, but in only one instance does this progress improve perseverance in the goal. How does such improved goal perseverance (or lack thereof) emerge as a result of goal progress?

1.1 Goal Characteristics Influencing Progress as a Function of Perseverance

The present research proposes important characteristics of goals to help explain the differential effects of goal progress on goal perseverance, namely the *all-or-nothing* and *cumulative benefits* associated with goal progress. For example, completion of a marathon has all-or-nothing benefits insofar as the marathon must be finished for the individual to enjoy the primary benefits (e.g., euphoria, pride) of pursuing the goal. In contrast, pursuing a diet goal offers cumulative benefits (e.g., health, social) as each pound is lost. The present research addresses the moderating role of all-or-nothing benefits (versus cumulative benefits) in determining whether consumers increasingly persevere in a goal after some goal progress has occurred. The presence of cumulative benefits will be shown to offset perceived sunk costs associated with goal pursuit, thereby attenuating goal perseverance.

1.2 Contributions to Theory and Practice

This research provides several distinct and important contributions. First, the theory and findings shed light on how consumers do, and do not, ‘stick’ to pursuing goals following goal progress. Extant literature has observed that goal progress influences goal perseverance but has largely ignored the distribution of pursuit-related benefits that influences this relationship. Second, this work identifies an underlying process to account for the observed effect of all-or-nothing (vs. cumulative) benefits upon goal perseverance, namely differential influence of sunk costs. Although sunk cost effects are established in the literature, their role in understanding the relationship between goal progress and perseverance has hitherto gone largely unexamined. Third, this research proposes and tests an intervention—training consumers to disregard sunk costs—to “undo” the effects of progress on perseverance for all-or-nothing goals. Fourth, the present research also identifies alternative goal attractiveness as a moderator of the progress-perseverance relationship for cumulative (but not all-or-nothing) benefit goals. Together, these theoretical contributions help to resolve disparate findings in the literature regarding goal progress. Moreover, the present research has implications for consumer welfare inasmuch as goal achievement is central to well-being. Finally, examining goal progress within the context of consumer loyalty programs offers managerial implications for the design and implementation of such programs.

Chapter 2

HOW PROGRESS AFFECTS PERSEVERANCE

2.1 Goal Progress Helps Goal Perseverance

A substantial body of literature dating back to the early part of last century supports the concept that progress towards a goal encourages goal completion. Hull (1932) proposed the *goal-gradient hypothesis*, which states that motivation to achieve a goal increases with proximity to that goal's end state. The theory was consistent with Hull's observation that mice moving through a maze expended more effort (moved faster) as they neared a food reward than at farther distances from the reward (see also Miller 1944; Brown 1948). Miller (1944) argued that psychological distance in humans would result in the same effect, and several later studies demonstrated the gradient effect during human goal pursuit (Losco and Epstein 1977; see Heilizer 1977 for a review). Within the field of consumer research, work by Nunes and Drèze (2006) further supports the theory that progress toward a goal may result in increased effort towards goal fulfillment. The authors demonstrated in a field study that consumers earning a reward through a customer loyalty program increased the frequency of their purchases as they neared goal completion. Findings from another reward program field study conducted by Kivetz, Urminsky, and Zheng (2006) also supported the hypothesis that progress toward a goal encourages goal pursuit.

Why does the goal-gradient occur? Atkinson (1957) argued that motivation for a given goal is in part a function of the subjective probability, or "expectancy," of achieving the goal (see also Lewin et al. 1944). As progress is made toward a goal, the expectancy of achieving the beneficial outcome is increased, thereby heightening motivation to achieve the goal (Atkinson

1957). Improved expectancy has been attributed both to goal progress and to an increase in proximity to the goal (Atkinson and Birch 1970). However, recent consumer research has demonstrated that endowing individuals with progress while maintaining a constant distance to the end state still improves perseverance (Nunes and Drèze 2006). That is, perceived progress (rather than mere proximity to the goal) increases goal perseverance—though the underlying mechanisms remain unclear.

2.2 Goal Progress does not Help Goal Perseverance

In marked contrast to the previous findings, recent research argues that goal progress does not typically increase goal perseverance, and may even hinder perseverance. This stream of research draws upon the phenomenon of “goal balancing” (Dhar and Simonson 1999), a concept similar to that of “tabling” (Ford 1992). According to goal balancing theory, individuals may choose to manage multiple goal pursuit by alternating between focal goals.

The primary explanation for why goal progress fails to improve (or even hinders) goal perseverance is that inferences of goal progress liberate individuals to pursue competing goals (Fishbach and Dhar 2005). These authors propose that inferences of goal progress will increase the tendency for goal balancing, resulting in deactivation of the focal goal in favor of resuming conflicting, neglected goals. For example, dieters who perceived greater progress toward a weight loss goal were more likely to consume a fatty (rather than healthy) snack in a subsequent choice task (Fishbach and Dhar, study 1). Similarly, students who perceived greater progress toward their academic goals due to studying were more likely to switch to the conflicting goal of socializing (Fishbach and Dhar, study 2). Strikingly, mere consideration of a goal or the

formation of intentions to pursue a goal appears to be interpreted as goal progress, temporarily satiating a goal and leading to goal abandonment (Wilcox, Vallen, Block, and Fitzsimons 2009).

2.3 Summary of Extant Research

Two conflicting streams of research suggest that goal progress will either increase goal perseverance or not. Indeed, the conflict is quite intriguing. The goal gradient literature tends to find improved perseverance due to goal progress. In contrast, the goal balancing literature finds no increase in goal perseverance because individuals infer progress and “balance” multiple goals. The goal balancing literature would seem to suggest (but has not empirically demonstrated) that only in the absence of multiple goals to be “balanced” will goal progress increase goal perseverance. However, this argument does not seem consistent with existing empirical evidence. For example, field studies conducted by Nunes and Drèze (2006) and Kivetz, Urminsky, and Zheng (2006) involved loyalty cards on which participants accumulated stamps—thus invoking inferences of goal progress. These field studies represented everyday, real world scenarios in which participants almost certainly held multiple goals counter to completing the (largely trivial) reward program, such as effort conservancy (Bettman, Luce, and Payne 1998) or obtaining other attractive items and services. Nonetheless, in both studies goal progress helped rather than hindered goal perseverance, thus demonstrating the classic goal-gradient effect. This begs the question: how and when does goal progress lead to perseverance?

2.4 All-or Nothing versus Cumulative Benefit Goals

The present research proposes that a characteristic of goals—whether benefits associated with goal progress are all-or-nothing versus cumulative—will moderate the influence of goal progress upon goal perseverance. Benefits are all-or-nothing if they are only received upon achieving the end state (e.g., completing a marathon), whereas benefits are cumulative if received prior to achieving the end state (e.g., weight loss). An all-or-nothing goal is binary regarding outcomes, and there are only two modes of achievement: success and failure (Soman and Cheema 2004). Examples of all-or-nothing goals are winning a competition or finding one's keys. No value or benefit is provided through progress towards an all-or-nothing goal until the end state is achieved. In contrast, goals with cumulative benefits do not have a binary achievement status but rather deliver a stream of benefits as a function of progress. That is, cumulative benefits refer to the intrinsic value of goal progress *independent from* the end state. Examples of cumulative benefit goals are losing weight and improving savings. The presence of cumulative benefits (versus the absence, i.e., all-or-nothing benefits) will be shown to influence the effect of goal progress upon perseverance via offsetting accrued sunk costs.

2.4.1 Goal Progress and Sunk Cost Perceptions

According to sunk cost theories, the tendency to pursue an endeavor increases with investments of resources, such as effort or time, even in the absence of a rational or objective reason (Thaler 1980; Arkes and Blumer 1985; Staw 1997). For example, Garland (1990) demonstrated that participants in an R&D allocation scenario were more likely to support continued funding as the percentage of total budget already spent increased. An extensive body of related literature supports the sunk cost effect and its role in escalating perseverance

(Brockner 1992; Staw 1997 for reviews) within the realm of both monetary and behavioral (e.g., time and effort) investments (Heath 1995; Soman 2001; Cunha and Caldieraro 2009). Although sunk costs do not necessarily scale perfectly with goal progress (Fishbach and Zhang 2009) due to progress lulls or even setbacks, goal pursuit typically involves expenditure of resources (e.g., cognitive, temporal, monetary, etc.) to progress toward the end state (Kruglanski et al. 2002; Ajzen 1991). Thus, achieving positive goal progress typically requires allocation of resources that may in turn increase perceived sunk costs, thereby increasing goal perseverance.

All-or-nothing and cumulative benefits are expected to differentially offset the influence of sunk costs accrued as a function of progress, thus influencing goal perseverance. Specifically, in the case of all-or-nothing benefits, sunk costs accrued with progress cannot be offset prior to achieving the end state, and will therefore enhance perseverance. However, the presence of cumulative benefits will offset sunk costs accrued with goal progress, thereby mitigating goal perseverance. This proposition derives from the two predominant explanations for the sunk cost effect. First, the psychological value function explanation of sunk costs (based upon prospect theory) argues that investments made toward an outcome place the individual into a loss frame until the outcome is achieved (Kahneman and Tversky 1979; Thaler 1980; Arkes and Blumer 1985; Garland and Newport 1991). Once within a loss frame, further investment “losses” result in smaller decreases in value, whereas comparable gains due to progress provide larger increases in value. As a result, resources are more likely to be expended toward the desired outcome. Second, self-justification and waste-aversion theories of sunk costs indicate that individuals progressing toward a desired end state are compelled to justify and minimize waste of expended resources (Arkes and Blumer 1985; Brockner 1992).

Based upon these explanations, progress toward all-or-nothing (versus cumulative) benefit goals accrues sunk costs without off-setting benefits, thus increasing the tendency to persevere as a function of progress. To illustrate, consider the marathoner pursuing the all-or-nothing benefit goal to complete the race. Running 80% of the marathon or otherwise failing to complete the goal leaves the consumer with nothing to show for her efforts (i.e., no benefits at all). That is, individuals pursuing all-or-nothing goals accumulate sunk costs that cannot be recouped before goal completion, and remain “stuck” in a loss frame until achieving the end state, thus increasing perseverance. Considering the self-justification theory of sunk costs, efforts previously expended by the consumer toward the goal are entirely wasted in the case of failure, thus exacerbating the effect of sunk costs. Perseverance also increases as individuals face a certain and difficult-to-justify waste of resources if the end state is not achieved. According to both explanations, progress toward an all-or-nothing goal will heighten the positive influence of accrued sunk costs upon goal perseverance.

In contrast, goals that provide cumulative (versus all-or-nothing) benefits should offset accrued sunk costs and thereby undermine goal perseverance due to progress. Consider a dieter with the goal of losing 10 pounds. The dieter cumulatively achieves each pound, striving toward the final total of 10. Assume the dieter has lost 8 of the 10 pounds. If the dieter is interrupted or otherwise unable to lose the full 10 pounds, the end result is still achievement of 8 pounds with corresponding health and social benefits (i.e., accrued cumulative benefits). As a result, failure or abandonment of the goal is less likely to be interpreted as a direct loss or waste of invested resources—sunk costs are offset by accrued benefits. Considering the value function theory of sunk costs, individuals accruing benefits due to progress are more likely to slip out of a loss frame as progress increases, thereby attenuating the influence of existing sunk costs. In addition,

cumulative benefits may provide a reasonable justification for investments thus far, further attenuating the influence of sunk costs. Due to this mitigation of sunk cost influence, progress is less likely to lead to goal perseverance for cumulative (versus all-or-nothing) benefit goals.

2.4.2 Hypotheses

The present research therefore proposes that the cumulative (versus all-or-nothing) benefit nature of the goal will moderate the impact of goal progress on goal perseverance by offsetting accrued sunk costs. Specifically:

H1: Consumers will demonstrate greater perseverance in the pursuit of all-or-nothing (versus cumulative) benefit goals as progress increases.

H2: Sunk costs accrued due to progress will mediate the influence of goal progress upon goal perseverance for all-or-nothing (but not cumulative) benefit goals.

2.4.3 Preliminary Evidence for Hypotheses

Prior research on goal progress has employed goals that may be retroactively classified as providing all-or-nothing or cumulative benefits. As seen in table 2.1, extant studies employing goals that provide all-or-nothing benefits demonstrated the classic goal-gradient pattern of improved perseverance due to progress. In contrast, studies utilizing cumulative benefit goals

showed no such goal-gradient effect. Based upon this qualitative review, it appears that all-or-nothing benefits encourage perseverance following progress, whereas cumulative benefits mitigate this effect, providing preliminary support for H1. Of course, such evidence is acknowledged as both subjective and correlational in nature; there may be other unobserved differences across the studies that can account for the pattern of goal perseverance. As such, causal evidence is needed to support the present theory.

Table 2.1: Perseverance as a Function of Progress in Consumer Research

Paper and Goals Examined	Persevere Due to Progress	Benefit Type
<i>Heath, Larrick, and Wu 1999</i> Complete a physical exercise Meet a sales quota	Persevere Persevere	All-or-Nothing All-or-Nothing
<i>Kivetz, Urminsky, and Zheng 2006</i> Finish purchase program (café) Finish ratings program (music)	Persevere Persevere	All-or-Nothing All-or-Nothing
<i>Nunes and Drèze 2006</i> Finish purchase program (car wash) Finish purchase program (restaurant) Finish purchase program (wine)	Persevere Persevere Persevere	All-or-Nothing All-or-Nothing All-or-Nothing
<i>Fishbach and Dhar 2005</i> Study often Stay fit Save money Lose weight	Abandon Abandon Abandon Abandon	Cumulative Cumulative Cumulative Cumulative
<i>Fishbach, Dhar, and Zhang 2006</i> Prevent sun damage Achieve academically Stay fit	Abandon Abandon Abandon	Cumulative Cumulative Cumulative
<i>Wilcox et al. 2009</i> Eat healthy	Abandon	Cumulative

Chapter 3

EMPIRICAL ASSESSMENT

A series of six empirical studies were conducted to evaluate a series of hypotheses relevant to the current theory. Study 1 demonstrates the effects of goal progress on goal perseverance as a function of all-or-nothing versus cumulative benefits and provides evidence for the underlying process role of sunk costs. Study 2 replicates the effects from the loyalty program context of study 1 with an actual goal-pursuit scenario, providing evidence for the proposed theory in the context of real behavior. Studies 3 and 4 further explicate the role of sunk costs—by examining hybrid goals (study 3) and consumer training to mitigate sunk cost effects (study 4). Finally, studies 5A and 5B demonstrate the moderating role of goal alternative goal attractiveness for cumulative benefit (but not all-or-nothing) goals (specific hypotheses to be discussed later).

3.1 Study 1 – All-or-Nothing Goals Improve Perseverance

The objective of the present study is to provide a preliminary test of the moderating role of all-or-nothing versus cumulative benefits on goal perseverance due to goal progress. Consistent with H1, goal progress should drive goal perseverance under all-or-nothing benefits, but less so when benefits are cumulative. As proposed by H2, sunk costs are expected to play a mediating role for all-or-nothing (but not cumulative) benefit goals.

3.1.1 Method

3.1.1.1 Participants and Design

The experiment employed a 2 (Goal Progress: Low vs. High) x 2 (Benefit Type: All-or-nothing vs. Cumulative) between subjects design. Participants were 95 members of an online panel who received financial compensation for completing the study.

3.1.1.2 Procedure

Participants read a scenario in which they were members of a loyalty card program at a local café with the goal of receiving a free coffee. The exact wording of the scenario may be found in appendix A. The scenario manipulated goal progress via the number of stamps already accumulated on a loyalty card. Low (High) progress participants had achieved 2 (8) out of 10 stamps. With all-or-nothing benefits, all ten stamps were required for consumers to receive a benefit; with cumulative benefits, each stamp provided a benefit to the consumer. Total benefits arising from completing the card were held constant, as was an alternative goal that conflicted with completing the loyalty card (a health goal of reducing caffeine intake). Following the scenario, participants responded to four measures of goal perseverance, two measures of sunk costs, a measure of coffee preference (used as a control variable), and manipulation checks for benefit type and goal progress (see appendix B for exact wording and scales for all measures).

3.1.2 Results and Discussion

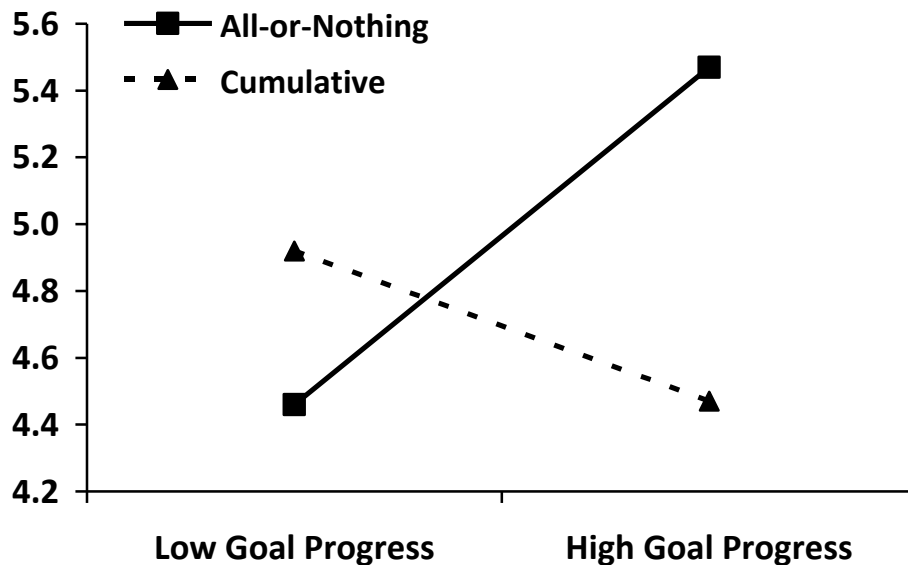
3.1.2.1 Manipulation Checks

Ninety-one out of 95 total participants (96%) successfully identified the benefit type associated with their condition and were included in all subsequent analysis. Perceptions of goal progress were significantly greater in the high progress condition than the low progress condition ($M_{low GP}=3.07$; $M_{high GP}=5.68$; $F(1,86)=150.22$; $p<.01$), whereas benefit type did not affect goal progress perceptions ($F < 1$).¹

3.1.2.2 Goal Perseverance

ANOVA of the goal perseverance measure (coefficient $\alpha = .93$) revealed the predicted two-way interaction of goal progress and benefit type ($F(1,86)=5.63$; $p<.05$); see figure 3.1. The main effects of goal progress and benefit type were non-significant (F 's < 1). Follow-up simple effects tests were also supportive: For an all-or-nothing goal, goal progress increased goal perseverance ($M_{low GP}=4.35$; $M_{high GP}=5.47$; $F(1,86)=5.43$; $p<.05$). In contrast, goal progress had no effect upon perseverance in the case of a cumulative benefit goal ($M_{low GP}=4.96$; $M_{high GP}=4.41$; $F(1,86)=1.16$; $p=.28$). These results support H1.

Figure 3.1: Goal Perseverance for All-or-Nothing Versus Cumulative Benefits (Study 1)



3.1.2.3 Mediation via Sunk Cost Perceptions

A bootstrap analysis (Zhao, Lynch, and Chen 2010; see appendix D) was conducted to evaluate the indirect effect of goal progress upon goal perseverance through sunk costs (coefficient $\alpha = .94$) for each level of benefit type. For all-or-nothing benefits, a bootstrapping analysis indicated that, as expected, the sunk cost pathway was positive and significant (AB indirect effect path=.64; 95% CI: .19 to 1.28). Also as expected, for cumulative benefits, the indirect effect of goal progress through sunk costs was not significant (AB indirect effect path=.37; 95% CI: -.31 to .95). These findings support H2.

Study 1 finds increased perseverance due to progress for a goal that is all-or-nothing with regards to its beneficial outcomes. In contrast, increased perseverance due to progress does not occur when benefits are cumulative. Furthermore, the influence of progress upon perseverance is

mediated by sunk costs in the case of all-or-nothing benefit goals, but not cumulative benefit goals. These findings are consistent with the rationale that cumulative benefits mitigate the influence of sunk costs accrued as a function of goal progress.

3.2 Study 2 – Actual Goal Pursuit and Real Outcomes

The objective of study 2 is two-fold. First, previous research has demonstrated that goal conflict resolution may vary between hypothetical and actual behavior contexts (Chartrand, Huber, Shiv, and Tanner 2008). Study 2 therefore assesses robustness by examining the effects of all-or-nothing versus cumulative benefits upon goal perseverance during actual goal pursuit with a real outcome. Second, goal conflict resolution may also vary depending upon whether the goal is freely chosen or imposed upon the individual, inasmuch as imposed goals are more likely to be (at least temporarily) abandoned in favor of competing goals (Finkelstein and Fishbach 2010). As the goals employed in study 1 were assumed for participants, study 2 tests whether the observed effects extend to goals freely adopted by participants.

3.2.1 Method

3.2.1.1 Participants and Design

The study employed a 2 (Goal Progress: Low vs. High) x 2 (Benefit Type: All-or-nothing vs. Cumulative) between subjects design. Participants were 355 students at a large Northeastern university who received extra credit in return for participation.

3.2.1.2 Procedure

At the beginning of the session, participants were offered the choice to either 1) play an entertaining computer game for the duration of the session or 2) adopt a goal to win a raffle prize through completion of a series of tasks that earned tickets. The exact wording may be found in appendix A. This initial choice ensured that a voluntary goal was adopted by willing participants and that an alternative, conflicting goal was salient. Participants who chose to adopt the goal next began a series of simple product evaluation tasks adapted from Cunha and Caldieraro (2009). Each task required the summation of four single-digit product attributes (referred to as attributes A through D) for each of four hypothetical products (referred to as products 1 through 4). On each task page, a verbal and visual summary of progress thus far was displayed in the form of numbers of tasks completed and any tickets earned. To ensure that the conflicting goal remained salient and available, on each page participants were provided the option to cease working on the tasks and play a computer game for the remainder of the session.

Participants in the low (high) progress condition completed two (eight) out of ten tasks and were then asked to self-report sunk cost perceptions (see appendix C). Participants then undertook the next raffle goal task (positioned as the third task for those in the low progress condition, and the ninth task for those in the high progress condition), a challenging open-ended word search puzzle designed to assess goal perseverance. Participants were presented with a 15x15 letter grid and informed that all words must be found in order to receive credit for the task, although the exact number of words within the puzzle was not disclosed. The number of correct words found in the puzzle was used as the primary measure of goal perseverance. As a secondary measure, the amount of time spent on the puzzle was also recorded.

Following this task and consistent with the cover story, participants completed evaluation tasks until a total of ten tasks per participant was reached (or until participants chose to switch to the alternative computer game). Upon completion participants were prompted to provide their college grade point average (see appendix C) as a control variable. The raffle was administered following completion of all sessions, and actual prizes distributed to winning participants.

3.2.2 Results and Discussion

3.2.2.1 Goal Adoption

Of the 355 participants, 277 (78.0%) chose to adopt the raffle goal. Logistic regression indicated no difference in goal adoption rate as a function of benefit type ($\chi^2=0.36$; $p=.55$). Of the 277 participants that adopted the raffle goal, 12 opted to abandon the raffle before arriving at the focal word puzzle task, again with no significant difference between benefit types ($\chi^2=0.46$; $p=.50$), resulting in a final sample of 265.

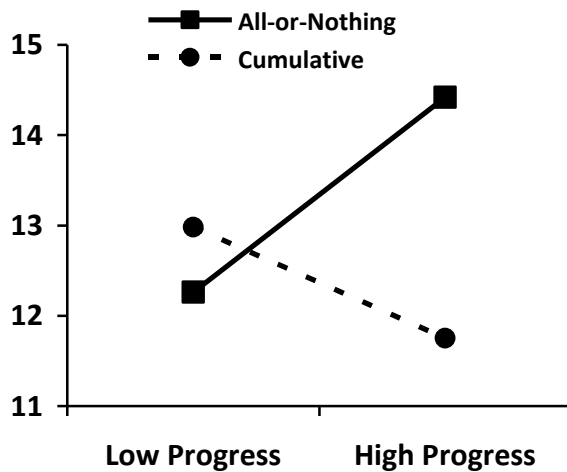
3.2.2.2 Goal Perseverance

MANOVA of goal perseverance (number of words found in the puzzle and time spent on the puzzle) revealed the predicted two-way interaction of goal progress and benefit type ($F(1,260)=6.80$; $p<.01$). Follow-up univariate simple effects tests were supportive. For the primary measure of number of words found (see figure 3.2, panel A), goal progress increased goal perseverance for an all-or-nothing goal ($M_{low\ GP}=12.39$; $M_{high\ GP}=14.42$; $F(1,260)=4.07$;

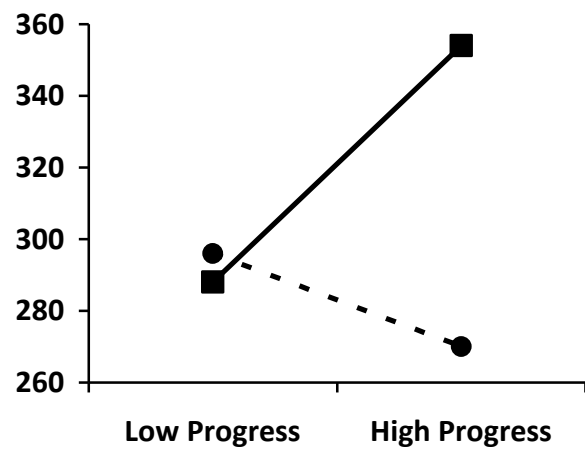
$p < .05$) but had no effect for a cumulative benefit goal ($M_{low GP} = 12.93$; $M_{high GP} = 11.66$; $F(1,260) = 1.70$; $p = .19$). Likewise, for time spent working on the puzzle, goal progress increased perseverance for an all-or-nothing goal ($M_{low GP} = 288$; $M_{high GP} = 355$; $F(1,260) = 6.68$; $p < .05$) but had no effect for a cumulative benefit goal ($M_{low GP} = 295$; $M_{high GP} = 265$; $F(1,260) = 1.10$; $p = .29$). These results support H1.

Figure 3.2 Behavioral Measures of Goal Perseverance (Study 2)

Panel A: Words Identified



Panel B: Time Spent (in seconds)



3.2.2.3 Mediation via Sunk Cost Perceptions

A bootstrap analysis (see appendix D) for the primary measure of goal perseverance (words found in the puzzle) indicated that, as predicted, the indirect effect of goal progress upon goal perseverance through sunk costs (coefficient $\alpha = .81$) was moderated by benefit type. Specifically, the indirect effect through sunk costs was positive and significant for an all-or-

nothing goal (AB indirect effect path=.55; 95% CI: .08 to 1.44). In contrast, the sunk cost pathway did not have a significant indirect effect for a cumulative benefit goal (AB indirect effect path=-.19; 95% CI: -.85 to .19). These results support H2 and a mediating role for sunk costs.

To summarize, study 2 demonstrated that progress toward an all-or-nothing goal results in greater perseverance than progress toward a cumulative benefit goal. This effect is mediated by sunk costs, which increased perseverance in the case of all-or-nothing (but not cumulative) goals. The goal was freely chosen, and both progress and benefits were real—thereby extending the findings of study 1 to a real-behavior context and providing support for H1 and H2.

3.3 Study 3 – Hybrid Goals and Sunk Costs

Study 3 was conducted to further evaluate how cumulative benefits, by offsetting sunk costs, undermine goal perseverance. Specifically, the present study investigates “hybrid” goals that provide both all-or-nothing and cumulative benefits. From a pragmatic standpoint, many marketing loyalty programs have hybrid goals that include aspects of both benefit types. For example, a frequent flyer program may provide small perks or redeemable rewards as miles are accumulated (cumulative benefits) toward an ultimate goal of elite status (an all-or-nothing benefit).

Although such cumulative benefits are presumably intended to enhance perseverance, the current theory suggests otherwise. That is, the addition of cumulative benefits to an all-or-nothing goal should serve to offset sunk costs accrued with progress. When sunk costs are offset, the positive effect of goal progress upon goal perseverance will be attenuated. Accordingly:

H3: The addition of cumulative benefits to an all-or-nothing goal will mitigate the positive effect of goal progress upon goal perseverance.

If supported, this hypothesis will not only provide a conservative test for the role of cumulative benefits (by holding all-or-nothing benefits constant) but also have implications of pragmatic importance for the design of reward programs that employ hybrid benefits.

3.3.1 Method

3.3.1.1 Participants and Design

The experiment employed a 2 (Goal Progress: Low vs. High) x 2 (Benefit Type: All-or-nothing vs. Hybrid) between subjects design. Participants were 217 students at a large Northeastern university who received extra credit in return for participation.

3.3.1.2 Procedure

The procedure was similar to study 1 with the exception of the benefit type manipulation. Participants in the pure all-or-nothing benefit condition received the same benefit type manipulation as in study 1 (a free coffee upon achieving ten stamps) whereas participants in the hybrid condition received both a cumulative benefit (a discount for each stamp) and an all-or-nothing benefit (a second free coffee upon achieving 10 stamps). See appendix A for the exact wording of each. Subsequent measures were adopted from study 1 (see appendix B).

3.3.2 Results and Discussion

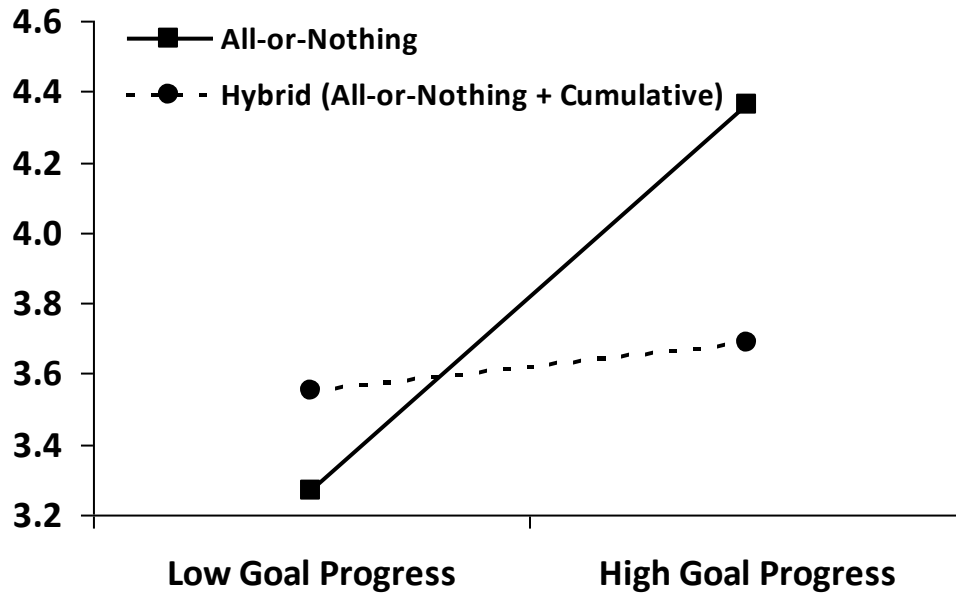
3.3.2.1 Manipulation checks

Two hundred out of 217 total participants (92%) successfully identified the benefit type associated with their condition and were included in subsequent analysis. As expected, perceptions of goal progress were significantly greater in the high progress condition than the low progress condition ($M_{low\ GP}=3.11$; $M_{high\ GP}=5.20$; $F(1,196)=148.96$; $p<.01$), and benefit type had no effect upon progress ($F<1$).

3.3.2.2 Goal Perseverance

ANOVA for goal perseverance (coefficient $\alpha = .93$) revealed a significant main effect of goal progress ($F(1,195)=6.96$; $p<.01$) and no main effect of benefit type ($F<1$), qualified by the expected two-way interaction ($F(1,195)=4.15$; $p<.05$); see figure 3.3. For a purely all-or-nothing goal, progress increased perseverance ($M_{low\ GP}=3.27$; $M_{high\ GP}=4.36$; $F(1,195)=11.54$; $p<.01$). In the hybrid condition, however, progress had no effect ($M_{low\ GP}=3.55$; $M_{high\ GP}=3.69$; $F<1$). Thus, although the all-or-nothing payoffs were identical for all respondents, adding cumulative benefits lowered perseverance due to progress. These results support H3.

Figure 3.3: Goal Perseverance for All-or-Nothing Versus Hybrid benefits (Study 3)



3.3.2.3 Mediation via Sunk Cost Perceptions

A bootstrap analysis (see appendix D) demonstrated that the indirect effect of goal progress upon goal perseverance through sunk costs (coefficient $\alpha = .91$) differed by benefit type. For all-or-nothing benefits, the sunk cost pathway was positive and significant (AB indirect effect path=1.05; 95% CI: .59 to 1.55). For hybrid benefits, the indirect effect of goal progress through sunk costs was also positive and significant (AB indirect effect path=.36; 95% CI: .02 to .76). Importantly, a bootstrap comparison of both indirect effects indicated that the sunk cost pathway was, as expected, significantly weaker for hybrid versus purely all-or-nothing benefits (95% CI: .82 to 2.03). That is, the presence of cumulative benefits significantly weakened the

sunk cost pathway, thus mitigating the positive effect of goal progress upon goal perseverance. These results support H2 and H3.

To summarize: the addition of cumulative benefits to an all-or-nothing goal undermined the effect of goal progress on goal perseverance by mitigating the influence of sunk costs. This finding, which is consistent with the results of studies 1 and 2, is arguably a conservative assessment of cumulative benefits inasmuch as the hybrid goal was comprised of all-or-nothing and cumulative benefits. Furthermore, these findings demonstrate that incentive structures employing goals with all-or-nothing benefits to improve participation may be hindered by the inclusion of incremental rewards in the form of cumulative benefits.

3.4 Study 4 – Mitigation of Sunk Costs via Intervention

Study 4 has two objectives: 1) to provide further evidence for the underlying role of sunk costs in pursuit of all-or-nothing goals and 2) to propose and test an intervention designed to mitigate sunk cost effects on all-or-nothing goal pursuit. Whereas studies 1-3 manipulated cumulative benefits to offset sunk costs accrued with progress, the present study instead utilizes consumer education about sunk cost effects to manipulate their impact on goal perseverance.

Prior research in other domains suggests that sunk cost effects are remarkably robust (Brockner 1992; Staw 1997), although surprisingly little research examines their mitigation (Biyalogorsky, Boulding, and Staelin 2006). Among the mitigation studies conducted, financial education (Fennema and Perkins 2008)—which decreases susceptibility to sunk cost effects as it increases (in the form of long-term financial academic courses and professional training) is most relevant to the present inquiry. The current study is therefore designed to assess, within all-or-nothing goal pursuit, the effectiveness of an educational intervention designed to inoculate

consumers (Lessne and Didow 1987) against sunk cost effects. Because past research suggests that sunk cost effects are highly robust, two levels of intervention are provided: initial education about sunk costs, and initial education with a situational cue or reminder (designed to heighten the strength of the educational intervention). If effective, the educational intervention will undermine the effects of all-or-nothing goal progress upon goal perseverance. That is, the intervention—by educating consumers to neglect sunk costs—is expected to reduce the positive effects of progress on perseverance for all-or-nothing goals. In its absence, sunk cost effects will drive all-or-nothing goal perseverance (consistent with prior studies and H1-H2). Accordingly:

H4: An intervention that educates consumers to neglect sunk costs will reduce the positive effect of goal progress upon goal perseverance.

If supported, H4 will not only provide further evidence for the underlying psychological mechanisms of sunk costs but also assess the effectiveness of an intervention aimed at reducing progress effects on perseverance for all-or-nothing goals. (The question of whether such an intervention is desirable is reserved for the general discussion.)

3.4.1 Method

3.4.1.1 Participants and Design

The experiment employed a 2 (Goal Progress: Low vs. High) x 3 (Intervention: No education vs. sunk costs education vs. sunk costs education with situational cue) between

subjects design. The participants were 196 members of an online panel who received financial compensation in return for their participation.

3.4.1.2 Procedure

Participants were placed into a loyalty card scenario similar to study 1. Participants in both intervention conditions began the study by reading an article explaining the sunk cost effect (see appendix A) adapted from a microeconomics textbook (Arnold 2008) and then answering questions measuring subjective knowledge and agreement (see appendix B).

All participants were then placed in the same all-or-nothing goal pursuit condition (i.e., obtain 10 stamps to receive a free coffee), and goal progress was manipulated via the number of stamps (2 vs. 8 out of 10) already accumulated on the loyalty card. Procedures and wording were as described in study 1, with one exception: After reading the scenario, participants in the “sunk costs education with situational cue” condition were told: “Remember that economists have proven that you should ignore sunk costs (e.g., the time, effort, and money you have invested in the Coffee-Card so far) when making decisions.” Finally, all participants reported goal perseverance, sunk costs, and other measures (see appendix B).

3.4.2 Results and Discussion

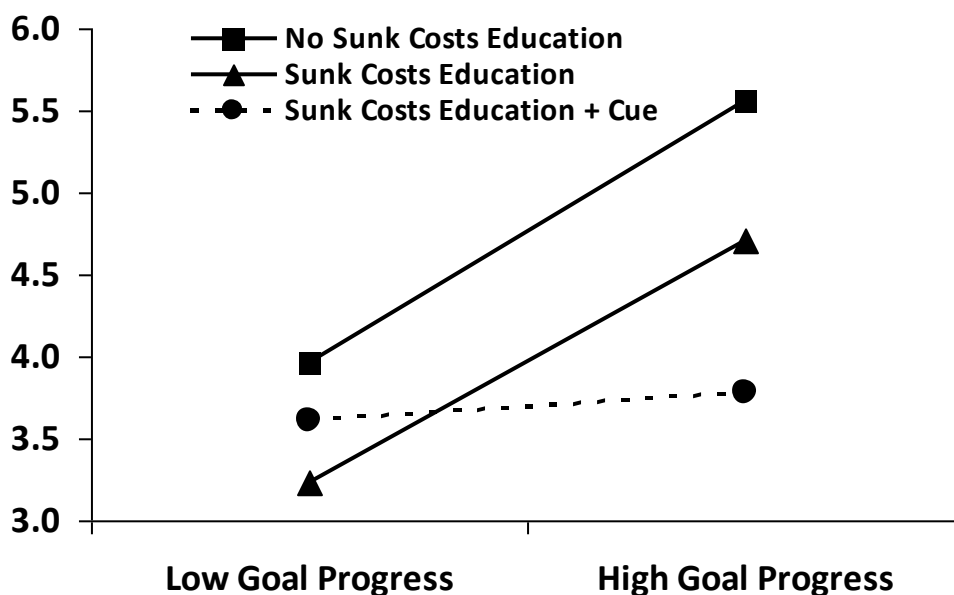
3.4.2.1 Manipulation Checks

Eleven participants were omitted for either indicating that they did not understand or agree with the article explaining that sunk costs should be ignored. Perceptions of goal progress successfully varied between progress conditions ($M_{low\ GP}=2.79$; $M_{high\ GP}=5.64$; $F(1,178)=347.33$; $p<.01$), and did not vary between sunk cost education conditions ($F<1$).

3.4.2.2 Goal Perseverance

ANOVA for goal perseverance (coefficient $\alpha = .94$) indicated main effects of goal progress ($M_{low\ GP}=3.60$; $M_{high\ GP}=4.69$; $F(1,178)=17.76$; $p<.01$) and sunk costs education ($M_{no\ education}=4.76$; $M_{education}=3.98$; $M_{education\ with\ cue}=3.70$; $F(2,178)=6.24$; $p<.01$). More importantly, both main effects were qualified by the predicted two-way interaction between goal progress and sunk costs education ($F(2,178)=3.08$; $p<.05$); see figure 3.4. In the absence of an intervention, progress increased perseverance toward the all-or-nothing goal ($M_{low\ GP}=3.95$; $M_{high\ GP}=5.57$; $F(1,178)=13.93$; $p<.01$), consistent with studies 1—3. Participants that only received initial education on sunk costs exhibited a similar effect of progress upon perseverance ($M_{low\ GP}=3.24$; $M_{high\ GP}=4.72$; $F(1,178)=10.77$; $p<.01$). However, individuals that received sunk costs education and a situational cue demonstrated no effect of progress upon perseverance ($M_{low\ GP}=3.61$; $M_{high\ GP}=3.78$; $F<1$). The latter result is consistent with neglect of sunk costs and the pattern of results observed for cumulative benefit goal pursuit in studies 1—3.

Figure 3.4: Goal Perseverance and Sunk Costs Education (Study 4)



3.4.2.3 Mediation via Sunk Costs

The pattern of sunk cost mediation is consistent with theorizing. Specifically, a bootstrap analysis (appendix D) indicated that in the “no education” and “education” conditions, the indirect effect of goal progress upon goal perseverance through sunk costs was significant (respectively; AB indirect effect path=1.03; 95% CI: .57 to 1.60; AB indirect effect path=1.19; 95% CI: .55 to 1.99). In contrast, the “education with situational cue” condition demonstrated no indirect effect of goal progress upon goal perseverance through sunk costs (AB indirect effect path=.52; 95% CI: -.03 to 1.09). These results support H4.

These findings are consistent with theorizing that progress increases sunk costs and drives perseverance in the case of all-or-nothing goals—unless these sunk costs are offset (either

by cumulative benefits in studies 1—3 or by consumer education to neglect sunk costs in study 4). Interestingly, consumer education to neglect sunk costs was ineffective unless accompanied by a situational cue, suggesting that sunk costs have powerful effects on goal pursuit.

3.5 Study 5A – Alternative Goal Attractiveness

Studies 1—4 evaluated the moderating role of all-or-nothing versus cumulative benefit goals in determining whether progress increases perseverance through the mediating role of sunk costs. The objective of studies 5A and 5B is to examine an additional moderator—alternative goal attractiveness—that is also expected to influence goal perseverance as a function of progress. In so doing, these studies will also account for conditions under which goal progress will *decrease* goal perseverance for cumulative benefit goals.

Specifically, competition between the currently pursued focal goal and alternative goals which cannot be simultaneously pursued will heighten as these alternatives increase in salience and attractiveness (Fishbach and Dhar 2006). With progress toward a cumulative benefit goal, the accrued rewards of goal pursuit may not only offset sunk costs but also provide individuals with greater justification for switching to competing alternatives. As progress increases, the accrued cumulative benefits could increase the tendency for a “resting on laurels” (Amir and Ariely 2008) effect in which motivation shifts away from the focal goal toward attractive, neglected alternatives. That is, cumulative benefit focal goal perseverance should decrease with progress when salient alternative goals are relatively attractive.² In contrast, individuals pursuing all-or-nothing goals will be “held hostage” by sunk costs that are not yet offset, and thus relatively unaffected by the attractiveness of alternative goals.

H5: As the relative attractiveness of alternatives to a focal cumulative (vs. all-or-nothing) goal increases, perseverance will decrease as a function of progress.

Studies 5A and 5B evaluate H5 by increasing alternative goal attractiveness through manipulating a goal that competes (i.e., cannot be simultaneously pursued) with the focal goal. Study 5A manipulates attractiveness of the focal goal in a loyalty scenario context, whereas study 5B manipulates attractiveness of the alternative goal in an actual goal pursuit context.

3.5.1 Method

3.5.1.1 Participants and Design

Study 5A employed a 2 (Goal Progress: Low vs. High) x 2 (Benefit Type: All-or-nothing vs. Cumulative) x 2 (Alternative Goal Attractiveness: Low vs. High) between subjects design. Participants were 183 students at a large Northeastern university who received extra credit in return for their participation.

3.5.1.2 Procedure

The sampling, measures, and procedures were similar to study 1 with a modification to manipulate relative attractiveness of the focal goal as follows. Participants were first asked to rank order a list of six common café drinks (cappuccino, café mocha, smoothie, fruit juice, iced coffee, chai tea) based upon “personal attractiveness to you” from “Most attractive” to “Least

attractive.” Participants then engaged in a lexical distracter task for several minutes before proceeding to the café loyalty program scenario. This scenario was similar to study 1 except that the magnitude of alternative goal attractiveness was manipulated by the type of drink associated with the loyalty card (e.g., cappuccino, chai tea, etc.). Specifically, cards in the low alternative goal attractiveness condition were manipulated to reflect the “most attractive” drink reported by the individual, whereas cards in the high alternative goal attractiveness condition were manipulated to reflect the “least attractive” drink. That is, participants pursued either a personally attractive or unattractive goal in the loyalty card program, with the alternative goal held constant as variety-seeking (“...imagine that you have recently set a personal goal to experience new things in life”) (rather than health as in study 2). Perseverance measures and manipulation checks for benefit type and goal progress were subsequently recorded (see appendix B for exact wording).

3.5.2 Results and Discussion

3.5.2.1 Manipulation Checks

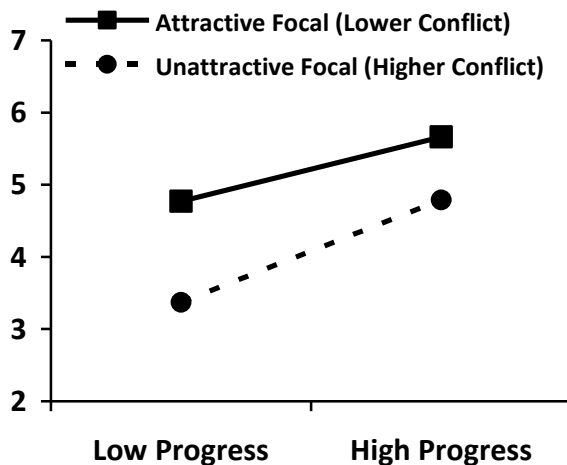
Of the 183 participants, 170 (93%) successfully identified the benefit type associated with their condition and were included in subsequent analyses. Perceptions of progress differed significantly between progress manipulations ($M_{low\ GP}=2.99$; $M_{high\ GP}=5.02$; $F(1,162)=115.36$; $p<.01$), and benefit type had no effect ($F<1$).

3.5.2.2 Goal Perseverance

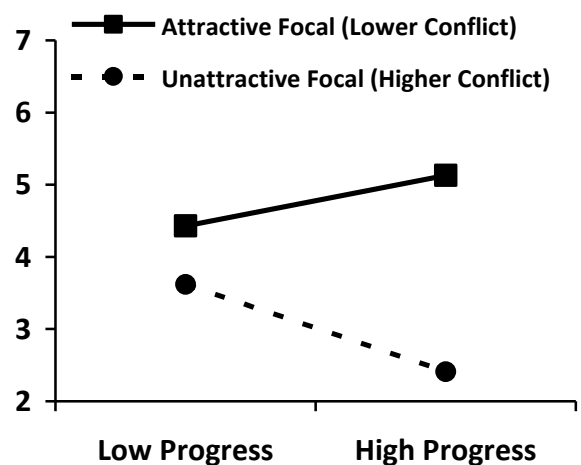
ANOVA of the goal perseverance measure (coefficient $\alpha = .94$) revealed the predicted three-way interaction between goal progress, benefit type, and alternative goal conflict ($F(1,162)=6.72$; $p<.05$); see figure 3.5. For individuals pursuing an all-or-nothing goal, the interaction between goal progress and alternative goal attractiveness was, as expected, not significant ($F<1$). That is, regardless of the relative attractiveness of the focal and alternative goals, goal progress increased goal perseverance ($M_{low GP}=4.07$; $M_{high GP}=5.23$; $F(1,162)=10.79$; $p<.01$)—consistent with prior studies and H1.

Figure 3.5: Goal Perseverance for All-or-Nothing versus Cumulative Benefits by Attractiveness of Focal Goal (Study 5A)

Panel A: All-or-Nothing Benefits



Panel B: Cumulative Benefits



In contrast and as expected, for individuals pursuing cumulative benefit goals, the interaction between goal progress and alternative goal attractiveness was significant ($F(1,162)=9.52$; $p<.01$). When the alternative goal was relatively unattractive, goal progress marginally increased goal perseverance ($M_{low GP}=4.43$; $M_{high GP}=5.13$; $F(1,162)=3.01$; $p=.09$).

When the alternative goal was relatively attractive, progress decreased perseverance ($M_{low\ GP}=3.62$; $M_{high\ GP}=2.41$; $F(1,162)=6.64$; $p<.05$). These results support H3—perseverance toward cumulative goals is a function of the degree of relative attractiveness between focal and alternative goals.

To summarize: These findings are consistent with theorizing that cumulative benefits arising from goal progress offset sunk costs and—when alternative goals compete strongly against the focal goal—lead to decreased goal perseverance. In contrast, individuals progressing toward all-or-nothing goals demonstrate heightened focal goal perseverance regardless of competing alternatives.

3.6 Study 5B – Alternative Goal Attractiveness and Real Outcomes

Study 5B has two primary objectives. First, the study tests H5 in the context of real behaviors and outcomes for generalizability purposes. Second, study 5B directly manipulates the attractiveness of the alternative goal (rather than focal goal as in Study 5A), while controlling for the attractiveness of the focal goal. Study 5B thus evaluates whether progress towards a cumulative (vs. all-or-nothing) benefit goal decreases perseverance as the relative attractiveness of the alternative goal increases. The present study focuses on levels of high progress: Consistent with H5, a relatively attractive alternative goal is expected to undermine goal perseverance for cumulative benefit (but not all-or-nothing) goals.

3.6.1 Method

3.6.1.1 Participants and Design

The study employed a 2 (Benefit Type: All-or-nothing vs. Cumulative) x 2 (Alternative Goal Attractiveness: Low vs. High) between subjects design, with goal progress held high and constant. Participants were 244 students at a large Northeastern university who received extra credit in return for their participation.

3.6.1.2 Procedure

Participants adopted a goal to win a raffle prize through completion of a series of tasks that earned tickets. Procedures were similar to study 2 with three modifications as follows. First, the raffle introduction varied the alternative option (playing a computer game) to be either moderately or very attractive (respectively, “The game is typically considered to be decent” vs. “Everyone really enjoys playing the game - it is considered a lot of fun.”). Second, following the raffle introduction but before beginning the tasks, individuals provided attractiveness ratings for participating in the raffle (for use as a control variable) and playing the computer game (as a manipulation check). See appendix C for exact wording. Finally, all participants proceeded with the raffle goal and completed eight tasks (i.e., high progress) before the target puzzle task (at which point participants also had the opportunity to switch). Goal perseverance was measured via words completed and time spent in the puzzle task as in study 2.

3.6.2 Results and Discussion

3.6.2.1 Manipulation Check

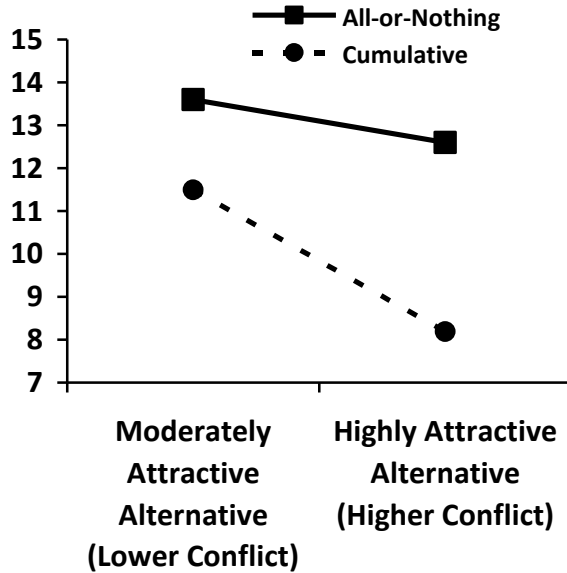
As expected, individuals rated the alternative goal (“Play a computer game”) as more attractive in the high attractiveness condition ($M_{Moderate\ Attract}=3.39$; $M_{High\ Attract}=3.83$; $F(1,238)=3.89$; $p<.05$).

3.6.2.2 Goal Perseverance

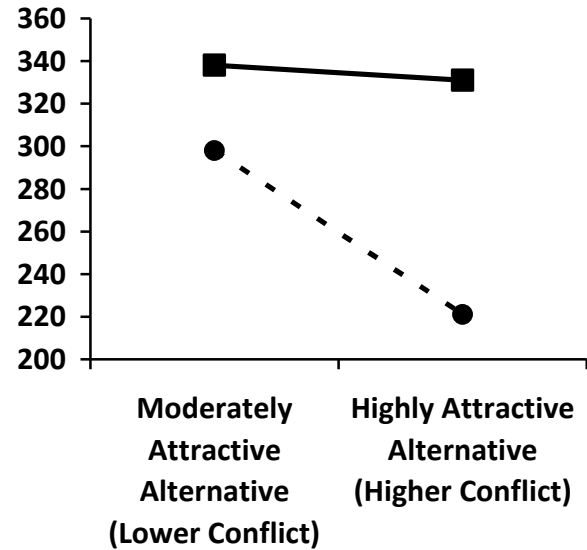
MANOVA of goal perseverance (words found and time spent) indicated main effects of alternative goal attractiveness ($F(1,238)=3.46$; $p=.064$) and benefit type ($F(1,238)=11.35$; $p<.01$) qualified by the predicted two-way interaction ($F(1,238)=3.36$; $p=.068$); see figure 3.6. For all-or-nothing goals, relative attractiveness of the alternative had no effect upon goal perseverance for both words ($M_{Moderate\ Attract}=13.60$; $M_{High\ Attract}=12.59$; $F<1$) and time ($M_{Moderate\ Attract}=338$; $M_{High\ Attract}=331$; $F<1$). For cumulative benefit goals, increasing the relative attractiveness of the alternative goal decreased perseverance for both words ($M_{Moderate\ Attract}=11.49$ vs. $M_{High\ Attract}=8.19$; $F(1,238)=9.30$; $p<.01$) and time ($M_{Moderate\ Attract}=298$ vs. $M_{High\ Attract}=221$; $F(1,238)=6.63$; $p<.05$). This pattern of results supports H5.

Figure 3.6: Goal Perseverance for All-or-Nothing versus Cumulative Benefits by Attractiveness of Alternative Goal (Study 5B)

Panel A: Words Identified



Panel B: Time Spent (in seconds)



To summarize: Studies 5A and 5B demonstrated that the relative attractiveness of the alternative goal determines the influence of progress upon perseverance for cumulative benefit goals. Specifically, the tendency to persevere in pursuing a cumulative (but not all-or-nothing) benefit goal decreased as relative attractiveness of an alternative goal increased. This effect of alternative goal attractiveness is consistent with a goal balancing account for progress toward cumulative benefits goals. In contrast, progress increases perseverance for all-or-nothing goals and is relatively unaffected by alternative goal attractiveness.

Chapter 4

GENERAL DISCUSSION

How and when does goal progress improve goal perseverance? The present research introduces the novel concept of all-or-nothing and cumulative benefits associated with goal progress. All-or-nothing benefits occur when no benefits are received until the goal end state. In contrast, cumulative benefits exist when goal progress provides benefits independent from the end state. All-or-nothing benefit goals result in greater perseverance as progress increases (studies 1-5A). In contrast, cumulative benefit goals demonstrate stable or even declining perseverance as progress increases (studies 1-3, 5A-5B). Perseverance increases with progress for all-or-nothing goals due to the influence of sunk costs, which are offset by cumulative benefits (studies 1-4). Furthermore, increased attractiveness of alternative goals is shown to alter the effects of goal progress on perseverance for cumulative (but not all-or-nothing) benefit goals (studies 5A-5B).

4.1 Complementary Process Explanations and Alternative Conceptualizations

The primary focus of the present research has been to investigate the impact of goal progress on goal perseverance, specifically examining the moderating role of all-or-nothing versus cumulative benefits due to differential perceptions of sunk costs. However, in addition to sunk costs, other psychological mechanisms may contribute to the basic effect of cumulative (versus all-or-nothing) benefits. Three such mechanisms are particularly relevant and warrant further discussion.

4.1.1 Experienced Affect

Extant research has demonstrated that affect experienced during goal pursuit (both incidental affect and affect induced by progress feedback) may impact subsequent perseverance in that goal (Louro, Pieters, and Zeelenberg 2007; Carver, Lawrence, and Scheier 1996; Carver and Scheier 1990; Carver, Sutton, and Scheier 2000). For example, work by Carver and Scheier (1990; 1996) proposed that affect may serve as the primary feedback mechanism within models of goal pursuit based upon action control theory (Miller, Galanter, and Pribram 1960; Powers 1973). Carver et al. (2000) argue that negative affect experienced as the result of inferences of low (or otherwise unsatisfactory) goal progress signals the need for increased effort to achieve the goal. In contrast, positive affect associated with greater goal progress signals that less effort is required to achieve the target goal. Further developing this view, Louro, Pieters, and Zeelenberg (2007) argued that goal progress may alter expectancies about goal achievement that, in turn, result in positive or negative emotions. These emotions may then determine whether the goal is further pursued or abandoned. The effect of these positive or negative emotions depends on whether the end state (i.e. high progress) or beginning state (i.e. low progress) is proximal. In a state of high (low) goal progress, further progress increases expectancy that the goal will be accomplished. This increase in expectancy causes positive emotion that results in less (more) effort toward the focal goal.

These insights may be particularly relevant for the present work. It is possible that cumulative benefits enhance positive affect when inferences of progress are made. In contrast, heightened sunk costs associated with all-or-nothing goal pursuit may induce negative affect at

the time of a progress inference. Furthermore, both effects (positive affect due to cumulative benefits and negative affect due to sunk costs) should increase in intensity as progress increases. As such, increasing positive affect as cumulative goal progress increases may signal lower need to pursue the focal goal. Similarly, increasing negative affect in the case of all-or-nothing goal progress may induce greater motivation to persevere in the focal goal. These possibilities provide an interesting venue for further empirical investigation.

4.1.2 Subordinate Goal Achievement

All empirical studies within the present work employed discrete progress markers (Amir and Ariely 2008) in the form of subordinate goals. However, goal progress may sometimes be continuous rather than segmented into subgoals. Attaching distinct benefits to (or withholding benefits from) subgoal accomplishment may influence perseverance through mechanisms other than sunk costs or experienced affect. First, associating benefits with subgoal accomplishment may actually serve as re-enforcement of goal pursuit, thereby driving greater perseverance in the case of cumulative benefits. Furthermore, attaching cumulative benefits to discrete subgoals (versus continuous progress) may also increase the salience of those benefits, thus exacerbating this effect. Although this potential process is largely inconsistent with the observed pattern of results for cumulative goal progress, it is worthy of future examination. In particular, early re-enforcement could lead to potential “starting point” differences (Health, Larrick, and Wu 1999) between cumulative and all-or-nothing goal pursuit.

4.1.3 Marginal Value of Goal Pursuit

Heath, Larrick, and Wu (1999) proposed that prospect theory (Kahneman and Tversky 1979) may lead to an explanation for increased perseverance as a function of progress due to changes in the marginal value of goal pursuit. Specifically, if the goal is considered a reference point, individuals remain in a loss frame prior to goal achievement. As the goal end state is approached, the marginal value of goal accomplishment should increase, thereby resulting in greater motivation to accomplish the goal. This explanation seems consistent with accelerated goal pursuit as a function of progress in the case of all-or-nothing goals; e.g. taking the last step of the marathon provides larger benefits than taking the first step of the marathon, even though the actions are remarkably similar. However, progress toward cumulative benefit goals does not necessarily result in increasing marginal value of goal accomplishment; e.g. losing the tenth pound is not necessarily more beneficial than losing the first pound. As such, progress toward cumulative benefit goals would not be expected to increase as a function of progress. However, the results of study 3 are consistent with the proposition that differential sunk costs, rather than differential marginal benefits, are the primary underlying explanation for the observed patterns of all-or-nothing and cumulative goal pursuit.

4.2 Directions for Future Research

The constructs of all-or-nothing and cumulative benefit goals have not been hitherto examined in the motivation literature, and this area of goal research seems ripe for further inquiry. Four avenues are of particular interest given the present research.

First, whereas the current research examines monotonically increasing goal progress, the impact of progress setbacks or “lulls” upon perseverance will likely vary based upon the presence of cumulative benefits. For example, minor setbacks in the case of cumulative benefit goals may result in short-term losses that are quite tangible and salient (e.g., the dieter loses 8 out of 10 pounds, but then regains 2 pounds). However, comparable minor setbacks in an all-or-nothing pursuit may be more difficult to assess or differently encoded, potentially resulting in a less discouraging response and different outcomes for goal pursuit. Prior research has examined preference for progressing or improving experiences in the order of events (Loewenstein and Prelec 1993; Ariely and Zauberman 2003)—and examining how progress and setback sequences affect goal pursuit merits investigation. Furthermore, successful (versus failed) sequences of achieving consecutive, similar goals may result in consumer goal learning that influences subsequent goal pursuit (Drèze and Nunes 2011), the effects of which may vary based upon the cumulative (versus all-or-nothing) nature of explicitly held goals.

Second, although the present research has demonstrated when perseverance in a goal increases or decreases as a function of progress, previous literature employing cumulative benefit goals has documented temporary goal abandonment as a function of progress (see table 1). The present research does not explicitly demonstrate switching of goal pursuit toward alternatives. Future research can examine not just shifts in perseverance toward a focal goal as a result of progress toward that goal, but in addition tendencies to adopt alternative goals. Furthermore, propensities and determinants of re-engagement of the abandoned focal goal provide an interesting topic for inquiry.

Third, framing effects based upon all-or-nothing versus cumulative benefits almost certainly exist. Re-framing a cumulative benefit goal as an all-or-nothing goal may occur if

emphasis on the end state provides psychological value that overshadows the cumulative benefits received. In such a case, sunk costs may increase perseverance similar to an all-or-nothing goal due to such psychological re-framing. This may be particularly relevant in the case of “mere” goals (Locke and Latham 1990; Heath, Larrick, and Wu 1999) that offer few external rewards. Interestingly, Pope and Simonsohn (2011) demonstrated that certain benchmarks such as scoring 1000 on the SAT or achieving a .300 baseball batting average tend to demonstrate increasing perseverance as progress increases—consistent with re-framing improved performance as an all-or-nothing rather than cumulative benefit goal. The reverse may also hold such that all-or-nothing goals may be re-framed as cumulative benefit goals, possibly through focus upon sub-goal achievement. Focus upon the psychological value of achieving sub-goals (that provide no other outcome benefits) may reduce overarching perseverance similar to how cumulative benefits undermine all-or-nothing goal pursuit for hybrid goals.

A fourth area of potential research focuses upon consumer goal planning. Consumers develop plans to accomplish cumulative and all-or-nothing goals on a daily basis. What are the implications for long versus short term planning? Gollwitzer and Brandstätter (1996) demonstrated that detailed implementation plans may aid in goal perseverance. However, Baumeister, Heatherton, and Tice (1994) observed that students with less detailed, monthly plans to improve study skills demonstrated greater perseverance than students with daily plans. The present research suggests that such an effect might arise if higher-order, planned goals with less distinct sub-goal rewards demonstrate all-or-nothing effects such that perseverance improves with progress. In contrast, implementation plans may produce cumulative benefit effects such that perseverance is strong at the beginning of pursuit but declines with progress. As such, the issues of starting point differences and which benefit type provides higher overall progress

remain open. In addition to understanding the impact of planning on perseverance, a natural question then arises: Are consumers intuitively aware of differences in goal pursuit as a function of the type of goal, and if so, are appropriate adjustments made to maximize goal perseverance?

4.3 Implications for Management and Public Policy

Managers and policy makers alike often have the opportunity to influence the distribution of progress-related benefits for consumers, ranging from loyalty programs to fitness regimes and investment portfolios. The results of the present research provide a valuable framework for determining i) whether to design programs with cumulative (versus all-or-nothing) benefits and ii) when to prompt inferences of goal progress and sunk costs to best facilitate goal completion. Appropriate use of findings can be used to optimize ongoing consumption patterns for profitability (e.g., reward programs), and to improve consumer welfare through improving accomplishment of beneficial goals (e.g., health or savings).

To illustrate, the findings from the current studies have interesting implications for understanding consumer participation in marketing loyalty programs. Consumers pursuing all-or-nothing goals are more likely to see the program through to completion. Perhaps counter-intuitively, providing awards “along the way” in the form of cumulative benefits may decrease consumer motivation to achieve the end state. Furthermore, study 3 may be useful for managers of marketing loyalty programs that provide hybrid (both all-or-nothing and cumulative) benefits, such as frequent flyer or credit card reward programs. The results suggest that increasing overall consumer compensation (by adding cumulative benefits to all-or-nothing benefits) can actually backfire and reduce the likelihood of goal completion. The notion that consumer engagement in

loyalty programs may be improved through changing the distribution pattern of benefits while reducing overall costs is pragmatically important for marketing practitioners.

The current research findings also demonstrate to managers and policy makers that consumers pursuing loyalty goals may in effect be “held hostage” by their own perceived sunk costs. Moreover, the impact of these sunk costs can be deliberately influenced based upon a program’s compensation structure. As a result, consumers invested in pursuing all-or-nothing programs may inordinately persevere with the focal goal even when more attractive competitive offerings or beneficial alternatives become available (recall the doctor’s warning to reduce caffeine intake in study 1), effectively foregoing opportunities to improve their own welfare. The present work suggests that situation-specific educational interventions to neglect sunk costs (study 4) or the inclusion of cumulative benefits may serve to “free” consumers to pursue alternative goals.

4.4 Conclusion

Despite the large amount of research conducted on consumer goal pursuit, relatively little is known about the circumstances and processes by which consumers (fail to) increasingly persevere in goals due to progress. The current research demonstrates that all-or-nothing benefits associated only with a goal’s end state improve perseverance, whereas benefits accumulated through progress weaken perseverance. These findings shed light on why consumers ‘stick’ to some—but not all—goal pursuits, thus supplying insights to improve goal-oriented marketing programs, and intriguing avenues for future research examining achievement motivation and goal conflict resolution.

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Footnotes

1. A varimax rotated factor analysis conducted with the measures for goal perseverance, sunk costs, and goal progress resulted in the expected three-factor solution. Item loadings strongly demonstrated the predicted simple structure (Kaiser 1958), as loadings within factors ranged from .82 to .91, but cross-loadings ranged from .02 to .34. These results demonstrate discriminant validity for the constructs of interest. Similar analyses were supportive in all subsequent scenario studies (details omitted for brevity's sake).
2. Existing studies from the goal progress literature classified as employing cumulative benefits (see table 1) have generally demonstrated goal abandonment as a function of goal progress. These studies have also ubiquitously employed situations in which the non-focal goals are substantially more attractive than the current focal goal. In the present research, studies 1—3 have generally demonstrated null effects of progress on perseverance for cumulative benefit goals, perhaps due to the absence of substantially attractive alternative goals. Studies 5A and 5B will investigate directly the influence of alternative goal attractiveness on subsequent goal perseverance.

Appendix A

Study Stimuli

STUDY 1 – CAFÉ SCENARIO

Note: Brackets indicate high / low progress and all-or-nothing / cumulative manipulations:

Imagine that you are someone who greatly enjoys a nice, hot cup of good coffee. You sometimes purchase coffee at a local café and enjoy its coffee. The café has Coffee-Card, a loyalty card program that you are participating in. The ultimate goal of using the Coffee-Card is to receive a free coffee. With the Coffee-Card, you accumulate one stamp for every \$2.50 cup of coffee that you buy from the café. The card can have up to 10 stamps.

[Once you have accumulated a total of 10 stamps, you will be able to redeem the Coffee-Card for a free \$2.50 coffee. You cannot redeem the card for any reward until the full 10 stamps have been accumulated. / Each stamp provides a \$0.25 discount toward a \$2.50 cup of coffee. You can redeem the Coffee-Card at any time for your discount, even before accumulating the full 10 stamps.] You have accumulated [2 / 8] stamps so far.

Also imagine that you have recently set a personal goal to improve your overall health. According to professional advice you have received, this requires that you lower your caffeine intake and consume more protein. The café has recently introduced a line of fruit and yogurt protein smoothies that could support this new goal, but the Coffee-Card can only be redeemed toward coffee, and not smoothies. Also, smoothies do not accumulate stamps on your Coffee-Card.

STUDY 2 – RAFFLE INTRODUCTION

Note: Brackets indicate high / low progress and all-or-nothing / cumulative manipulations:

You now have a choice between two options on how you will spend your session (approximately 30 minutes). The two options are described below.

Option 1: Adopt a goal to win a real raffle prize. The prize will be one of multiple \$50 Amazon.com gift cards that will be awarded to you through an actual, real-life raffle ticket drawing. You will be given 10 tasks, [and upon completing all 10 tasks successfully, you will receive 10 raffle tickets / and for each task you successfully complete, you will receive a raffle ticket, up to a total of 10 raffle tickets]. Each raffle ticket increases your chance to win a raffle prize. Anytime while on the tasks you can switch to playing a computer game, however you will never be able to return to the tasks [and will not receive any raffle tickets for the session / to earn more raffle tickets, although you will keep those tickets you have already earned].

Option 2: Play a computer game for the duration of the session (approximately 30 minutes). The game is typically considered fun by both men and women. However, you will not have an opportunity for raffle tickets if you choose this option.

STUDY 3 – HYBRID CAFÉ SCENARIO

Note: Same as study 1 with the following modification:

Pure all-or-nothing goal: “Once you have accumulated a total of 10 stamps, you will be able to redeem the Coffee-Card for a free \$2.50 coffee. You cannot redeem the card for any reward until the full 10 stamps have been accumulated.”

Hybrid goal: “With each stamp you have accumulated a \$0.25 discount toward the purchase of a \$2.50 cup of coffee. Additionally, if you accumulate a total of 10 stamps, you will be able to redeem the Coffee-Card for a second free \$2.50 coffee. You can redeem the Coffee-Card at any time for your discount, even before accumulating the full 10 stamps.”

STUDY 4 - SUNK COST EDUCATION ARTICLE (drawn from Arnold 2008)

A sunk cost is a cost of time, effort, or money incurred in the past that cannot be changed by current decisions. Economists have proven that sunk costs should be ignored when making decisions. Let’s consider an example of a sunk cost.

Suppose Jeremy drives to a movie theater, buys a movie ticket, walks into the theater, and settles down to watch the movie. Thirty minutes into the movie, he realizes that he hates it. The time he spent getting to the theater and the money he paid for the ticket are sunk costs. The costs were incurred in the past, they cannot be changed, and they cannot be recovered. Now suppose Jeremy says the following to himself as he is watching the movie:

“I paid to watch this movie, but I really hate it. Should I get up and walk out, or should I stay and watch the movie? I think I’ll stay and watch the movie because if I leave, I will lose the money I paid for the ticket and the time spent getting to the theater.”

The error that Jeremy is making is believing that if he walks out of the theater, he will lose the money he paid for the ticket and the time he spent getting to the theater. However, he has already lost both. Whether he stays and watches the movie or leaves, the time and money are gone forever. They are sunk costs.

Jeremy should ignore what has happened in the past and what can’t be undone. If he stays, his time and money for the ticket are still gone and he will be miserable. If he leaves, his time and money for the ticket are still gone, but he can do something else more enjoyable than sitting through the terrible movie.

Appendix B

Summary of Measurement Items from Studies 1, 3, 4, and 5A

Construct	Measurement Item Wording*	Study:	1	3	4	5A
Goal Perseverance	Imagine that you are at the café right now. How likely are you to accumulate a new stamp on your Coffee-Card? (Not at all likely to Extremely likely)**		X	X	X	X
	How motivated are you to complete the Coffee-Card? (Not at all motivated to Extremely motivated)		X	X	X	X
	How strongly do you agree with the following statement: I am committed to completing the Coffee-Card (Strongly disagree to Strongly agree)		X	X	X	X
	How strongly do you agree with the following statement: I plan to complete the Coffee-Card (Strongly disagree to Strongly agree)		X	X	X	X
Sunk Costs	I have invested a lot of time into the Coffee-Card (Strongly disagree to Strongly agree)		X	X	X	
	I have invested a lot of effort into the Coffee-Card (Strongly disagree to Strongly agree)		X	X	X	
Miscellaneous	<i>Coffee Preference:</i> In your normal life, how much do you enjoy drinking coffee? (Do not enjoy at all to Enjoy greatly)		X	X	X	
	<i>Goal Progress:</i> How much progress have you made toward the goal of receiving a free coffee? (None at all to Extremely high progress)		X	X	X	X
	<i>Benefit Type:</i> From what you remember of the scenario, which of the following is true of the Coffee-Card? (“You cannot redeem the card for any reward until the full 10 stamps have been accumulated”, “You can redeem the Coffee-Card at any time, even before accumulating the full 10 stamps”, “Not sure”)		X	X	X	X
	<i>Sunk Costs Understanding:</i> How well do you understand the article’s argument about sunk costs? (Did not understand at all to Understood extremely well)					X
	<i>Sunk Costs Agreement:</i> How strongly do you agree with the article’s argument that sunk costs should be ignored when making decisions? (Strongly disagree to Strongly agree)					X

*Seven-point likert-type scale unless otherwise noted.

**Study 5A: [Coffee] replaced by manipulated drink (Cappuccino, Chai tea, etc.,)

Appendix C

Summary of Measurement Items Studies 2 and 5B

Construct	Measurement Item Wording*	Study:	2	5B
Goal Perseverance	<i>Primary Measure:</i> Total number of words found in puzzle	X	X	
	<i>Secondary Measure:</i> Amount of time (in seconds) spent on puzzle	X	X	
Sunk Costs	I have invested effort into this raffle (Strongly disagree to Strongly agree)	X		
	I have something to lose at this point (Strongly disagree to Strongly agree)	X		
	I have invested time into this raffle (Strongly disagree to Strongly agree)	X		
Miscellaneous	<i>Undergraduate GPA:</i> What is your overall college GPA? (“4.0” to “less than 2.0” at .2 intervals)	X	X	
	<i>Raffle Attractiveness:</i> How attractive is each activity? Win a raffle prize (Not at all attractive to Extremely attractive)			X
	<i>Alternative Attractiveness:</i> How attractive is each activity? Play a computer game (Not at all attractive to Extremely attractive)			X

*Seven-point likert-type scale unless otherwise noted.

Appendix D

Boot-strap Mediation Analysis for Sunk Costs

Study 1 – Scenario-based Goal Pursuit					
<i>Condition</i>	<i>A Path</i> <i>(Goal Progress to Sunk Costs)</i>	<i>B Path</i> <i>(Sunk Costs to Goal Perseverance)</i>	<i>AB Path</i>	<i>95% CI (AB)</i>	
All-or-Nothing	1.26*	.51*	.64*	.19	1.28
Cumulative	.62	.59*	.37	-.31	.95

Study 2 – Real Behavior Goal Pursuit					
<i>Condition</i>	<i>A Path</i>	<i>B Path</i>	<i>AB Path</i>	<i>95% CI (AB)</i>	
All-or-Nothing	.72*	.77*	.55*	.08	1.44
Cumulative	.62*	-.31	-.19	-.85	.19

Study 3 – Hybrid Goal Pursuit					
<i>Condition</i>	<i>A Path</i>	<i>B Path</i>	<i>AB Path</i>	<i>95% CI (AB)</i>	
All-or-Nothing	1.44*	.73*	1.05*	.59	1.55
Hybrid	.58†	.62*	.36*	.02	.76

Study 4 – Sunk Costs Intervention					
<i>Condition</i>	<i>A Path</i>	<i>B Path</i>	<i>AB Path</i>	<i>95% CI (AB)</i>	
No Education	2.08*	.49*	1.03*	.57	1.60
Education	1.82*	.65*	1.19*	.55	1.99
Education + Reminder	.93†	.56*	.52†	-.03	1.09

* p<.05

† p<.10

Note: Bootstrap N=5000 for all analyses; Per Zhao, Lynch, and Chen (2010), the A path refers to the effect of the independent variable (goal progress) upon the mediator variable (sunk costs), whereas the B path refers to the effect of the mediator variable (sunk costs) upon the dependent variable (goal perseverance).

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Garvey, Aaron M., Margaret G. Meloy, and Baba Shiv, "When Hopes Are Dashed: Sour Grapes or Pining Away for Greener Pastures?"

Garvey, Aaron M. and Lisa E. Bolton, "Hedonic-Utilitarian Goal Balancing as the Result of Functional Food Consumption." *Winner of the Best Working Paper Award at the 2010 Society for Consumer Psychology conference in Tampa, FL.*

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