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Los Angeles

The Benefits of Emergency Reserves
in Goal Preference and Persistence

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Management

by

Marissa Sharif

2017

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ABSTRACT OF THE DISSERTATION

The Benefits of Emergency Reserves in Goal Preference and Persistence

by

Marissa Sharif

Doctor of Philosophy in Management

University of California, Los Angeles, 2017

Professor Suzanne Bliven Shu, Chair

Marketers of programs that are designed to help consumers reach long-term goals (e.g., lose weight) face twin challenges of making the program attractive enough to encourage consumer signup while still motivating them to reach their desirable long-term goals. I examine how incorporating emergency reserves, pre-defined slack with a small cost, within goals influences consumers' preferences and performance. Overall, I find that consumers not only prefer goals with emergency reserves (e.g., a goal of going to the gym 7 days of the week with 2 "emergency skip" days) to goals without emergency reserves but also perform better with them. In Chapter One, I demonstrate when and why people prefer goals with emergency reserves. Further, in Chapter One, I also reveal that consumers perform better with goals with emergency reserves than with goals without emergency reserves and other flexible goals because they try to resist using their emergency reserve in order to avoid incurring the cost (psychological,

opportunity, or future) for using it, leading them to try harder to reach a more difficult reference point/goal. In Chapter Two, I demonstrate that consumers persist more after a subgoal failure with goals with emergency reserves than goals without emergency reserves; I find that the emergency reserve alleviate the negative consequences of goal violation by transforming a sense of subgoal failure into subgoal progress, leading consumers to feel more committed to their goal, and thus increasing their likelihood of persisting at their goals. By offering emergency reserves, marketers can not only attract consumers to sign-up initially but also help them reach these desirable long-term goals they have been struggling to achieve.

The dissertation of Marissa Sharif is approved.

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DEDICATION PAGE

This dissertation is dedicated to my family and friends. Without having all of you in my life, this accomplishment would not have been possible.

First, I want to thank my parents, Mansour Sharif and Martha Sharif. They have dedicated their lives to ensuring that my sisters and I have every possible opportunity to succeed. More importantly, they have provided endless, unconditional love and support. I would be nowhere close to where I am today without all of their support, guidance, and advice. After every major milestone, I think about how fortunate I am to have them as parents.

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Shu, Suzanne B. and Marissa A. Sharif, “Occasion Matching of Indulgences,” revision invited by *Journal of Marketing Behavior*.

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Sharif, Marissa A. and Suzanne B. Shu, “Turning Failure into Progress: The Impact of Emergency Reserves after Sub-Goal Failure.”

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CHAPTER ONE

The Benefits of Emergency Reserves: Greater Preference and Persistence for Goals that Have Slack with a Cost

Marketers of programs that are designed to help consumers reach goals face twin challenges of making the program attractive enough to encourage consumer signup while still motivating consumers to reach desirable goals and thus stay satisfied with the program. We offer a possible solution to this challenge: the emergency reserve, or slack with a cost. We demonstrate how an explicitly defined emergency reserve is not only preferred over other options for goal-related programs, but can also lead to increased persistence. Study 1 demonstrates that consumers prefer programs with emergency reserves to programs that do not have them, and study 2 further clarifies that consumers' preference for an emergency reserve depends on the presence of a superordinate goal. Study 3 reveals that consumers prefer goals with emergency reserves due to increased perceptions of attainability and value. Study 4 demonstrates that reserves can lead to increased goal persistence in a realistic task that involves persistence over time, and, lastly, studies 5 and 6 reveal that consumers persist more with Reserve goals due to a resistance to use the "emergency" reserve.

Students cheer when they learn that they have extra credit available; dieters love having a possible “cheat day” in their diet; consumers greatly appreciate having a buffer in case they go over their minutes in their mobile plans. Consumers seem to love flexibility, specifically a “just-in-case” type of flexibility. From the marketer’s perspective, offering this “just-in-case” type of flexibility may encourage consumers to sign up initially for various programs, such as dieting programs, personal training programs, or phone plans. However, companies not only want to attract consumers to sign up; they also want to ensure that consumers perform well and meet desirable goals (e.g., lose more weight, exercise more, use fewer minutes) so that they will stay satisfied with the program and continue to use it.

How can marketers offer consumers some kind of “just-in-case” flexibility while still encouraging them to reach their original difficult goal? In this paper, we offer a solution to this challenge based on offering flexibility with a cost: the emergency reserve. We define an emergency reserve as pre-defined slack around a goal that can be used if needed but at a small cost. For example, a reserve can be 500 extra emergency calories available in a diet for the week, an emergency skip day for the gym, or an emergency buffer range in a phone program. Small costs associated with these reserves might be purely psychological costs (trying to not use the emergency reserve unless absolutely necessary), opportunity costs (if you use it today, you can’t use it tomorrow), or future costs (if you use the reserve today, you might have to do something tomorrow to make up for it).

In this paper, to test how emergency reserves affect both preference and persistence, we will be examining three different types of goals: Reserve goals, Hard Reference Point goals (Hard goals), and Easy Reference Point Goals (Easy goals). Reserve goals have a difficult reference point plus an additional emergency reserve (e.g., a goal of going to the gym 7 days of

the week + 2 “emergency skip” days). Hard goals have the same difficult reference point but without the additional emergency reserve (e.g., going to the gym 7 days of the week). Easy goals have an easier reference point with the additional emergency reserve already incorporated into their goal with no additional cost (e.g., going to the gym 5 days of the week). We propose that including an explicitly defined emergency reserve within a goal will 1) be preferred to both Hard and Easy goals when the consumer has a superordinate goal (e.g., lose weight) due to both the higher expectancy and value of the Reserve goal and 2) result in greater goal persistence than those with Hard and Easy goals due to a resistance to break into the emergency reserve.

We will be investigating the influence of emergency reserves on preference and persistence in six studies throughout this paper. The first three studies will explore when and why people prefer emergency reserves, and the last three studies will investigate how and why emergency reserves impact goal persistence. We first discuss the theoretical basis for why consumers prefer Reserve goals, followed by why they persist more with them.

PREFERENCE FOR RESERVES

According to expectancy-value theories, a consumer’s motivation to reach a goal depends on both the expectancy of reaching the goal and the value of the goal (Atkinson, 1957; Tolman, 1955). However, as there are distinct phases within goal pursuit, consumers are motivated differently depending on how much progress they have made towards their goal (Gollwitzer, 1990; Heckhausen, 1977; Heckhausen & Gollwitzer, 1987). In the initial stages of goal pursuit, consumers primarily focus on the attainability of the goal rather than the value of the goal (Zhang & Huang, 2010). Both the socio-cognitive model (Bandura, 1997) and goal-setting theory (Locke & Latham, 1990) suggests that consumers’ willingness to adopt a goal is largely

influenced by how attainable the goal seems. Consistent with this notion, consumers are more motivated with high perceived velocity (versus low perceived velocity) towards reaching a goal in initial goal pursuit (Huang & Zhang, 2011). Additionally, because goals that have multiple means to achieve them are perceived as more attainable (Kruglanski, Pierro, & Sheveland, 2011), consumers are more motivated when there are multiple means to achieve a goal (Huang & Zhang, 2013) or when there is more variety among these means (Etkin & Ratner, 2012). Therefore, this stream of research suggests that making a goal more attainable (or making it seem more attainable) motivates consumers in the initial stages of goal pursuit.

Based on this theorizing, before adopting a goal (or signing up for a program), consumers' preferences for Reserve goals compared to Hard goals and Easy goals may depend on the attainability of these goals. Consumers may initially prefer Reserve goals to Hard goals because they are more attainable than Hard goals. Reserve goals have the same difficult reference point (e.g., going to the gym 7 days of the week) as Hard goals but provide additional flexibility (e.g., 2 emergency skip days), making them more attainable than Hard goals. However, consumers may not initially prefer Reserve goals to Easy goals because they are equally attainable as Easy goals (e.g., consumers with both goals have technically not violated their goal if they go to the gym only 5 days of the week). In some cases, Reserve goals may even be *perceived* as less attainable than Easy goals because they focus on a more difficult reference point than Easy goals (e.g., going to the gym 7 days of the week vs. going to the gym 5 days of the week). In general, these perceptions of attainability may determine preferences between Hard, Easy, and Reserve goals, with Hard goals seen as the least attainable.

However, we expect preferences for these goals to be affected by more than just attainability if there is a salient superordinate goal. We hypothesize that the value of a goal (in

addition to the attainability of the goal) becomes relevant in goal preference if there is a salient superordinate goal. Prior research has demonstrated that people can perform better in tasks with more difficult reference points/goal (Heath, Larrick, & Wu., 1999; Locke & Latham, 1990). When there is a superordinate goal, more difficult goals may be perceived as more attractive (valuable) as they increase the chance of obtaining the superordinate goal. For example, if a person achieves a more difficult goal of going to the gym 7 days of the week instead of an easier goal of going to the gym 5 days of the week, they will also be more likely to achieve their superordinate goal of becoming more fit or losing weight.

Based on this theorizing, how does the existence of a superordinate goal affect preference for Reserve goals over other goals? A Reserve goal focuses consumers on a more difficult reference point than an Easy goal, increasing the chance of performing better at the superordinate goal and thus also increasing the attractiveness (value) of the goal. However, the attainability of both goals will remain the same; individuals with a Reserve goal (e.g., going to the gym 7 days of the week + 2 “emergency skip” days) and an Easy goal (e.g., 5 days of the week) can both meet their goal by going to the gym 5 days of the week. Because attainability of the goals are equal but the Reserve goal has a higher value, we expect consumers will prefer Reserve goals to Easy goals if there is a superordinate goal.

We hypothesize that consumers will still prefer Reserve goals to Hard goals when they are part of a superordinate goal. Both goals have more difficult reference points (e.g., going to the gym 7 days of the week) and thus are equally valuable. However, the Reserve goal has added flexibility (e.g., 2 emergency skip days) that makes it more attainable. Because the value of the goals are equal but the Reserve goal is more attainable, we expect consumers will prefer Reserve goals to Hard goals.

H1: Consumers will prefer Reserve goals to both Easy goals and Hard goals if there is a superordinate goal. Consumers will prefer Reserve goals to Hard goals, but not to Easy goals, if there is not a superordinate goal.

PERSISTENCE WITH RESERVES

We propose that consumers will not only predictably prefer Reserve goals to Easy and Hard goals when there is a superordinate goal, but that they will persist more with Reserve goals than Easy goals, Hard goals, and other goals with flexibility. Although we expect the simultaneously higher expectancy and value of the reserve drives preference for the reserve, we expect that when actually pursuing a Reserve goal, consumers will persist more due to an additional element of the reserve: the cost for using it.

Unlike other types of slack¹, the emergency reserve is unique because there is 1) a small cost to use the available flexibility and 2) a pre-defined finite amount available. It is designed to be used in “just-in-case” scenarios. We predict due to this small cost of using the emergency reserve, consumers will try to resist using it, leading to more persistence than those with other goals.

Costs of the Reserve

Costs of using the reserve may be psychological, opportunity, and/or future costs. We will be examining cases when the reserve has only a psychological cost, an opportunity cost, or both. Although we suggest the emergency reserve could be effective with other costs, such as future costs, by examining only psychological and opportunity costs, we do not affect the external incentives for achieving the goal.

¹ Emergency reserves, due to their cost, differ from Zauberan & Lynch’s (2005) definition of slack (the perceived future surplus of a given resource).

In order to impose a psychological cost for the reserves in our studies, we simply label the reserve an “emergency” reserve, inducing people to try to not use the reserve unless absolutely necessary. Prior research has suggested that people are sensitive to similar labels and the psychological costs for violating them. More specifically, research in mental accounting/budgeting suggests people use their resources differently depending on how they are labeled (Henderson & Peterson, 1992; Heath & Soll, 1996; Kahneman & Tversky, 1984; Thaler, 1980; Thaler, 1985). Most relevant to the “emergency reserve,” people have “rainy day” funds, where they set aside money just in case of an emergency. They restrict themselves to only use that money if they absolutely need to (Shefrin & Thaler, 1988; Thaler, 1990). In this case, the cost of using the funds is purely psychological due to the “rainy day” labeling. Additionally, as a more tangible example of salient psychological costs, poor residents in India who were given part of their salary in a separate specially designated sealed envelope were highly resistant to breaking it open and spending it relative to those who received the salary all at once (Soman & Cheema, 2011). Thus based on this literature, by labeling the reserve as “emergency only use,” we induce a psychological cost of breaking into the emergency reserve. We hypothesize consumers will try to resist using their reserve unless they absolutely need it, avoiding the psychological cost associated with using the emergency reserve.

In addition, to mimic real-life goal environments, we examine goal pursuit “over time” or in situations in which there are multiple instances to apply the emergency reserve. In these scenarios, the framing of the emergency reserve goal (e.g., goal of going to the gym 7 days of the week with 2 “emergency” skip days) makes it very salient to consumers the limited amount of flexibility they have available (e.g., only 2 “emergency” skip days). Consumers are more sensitive to their opportunity costs when their resources are constrained (Spiller, 2011) and also

more resistant to use resources with smaller budgets (Heath & Soll, 1996; Krishnamurthy and Prokopec 2010; Morewedge, Holtzman, and Epley, 2007; Shefrin and Thaler 1988; Stille, Inman, and Wakefield 2010). Thus, because the reserve goal is framed with a limited number of emergency reserves available (e.g., 2 emergency skip days), it is very salient to consumers that if they use their emergency reserves earlier, they will not be able to use them later. As a result, due to the salient opportunity cost of using their emergency reserves earlier, consumers may resist using their emergency reserves, waiting for a time when they might need to use them more.

We thus hypothesize that consumers will be resistant to use their emergency reserve due to the 1) psychological cost (induced by the “emergency” labeling) and sometimes 2) the opportunity cost of using their emergency reserve too early, leading to more persistence than those with other goals. We predict that the underlying process for why consumers persist more with Reserve goals compared to other goal types is the same, resistance to use the reserve due to the cost. We will now formally describe our hypotheses and lay out why consumers with Reserve goals will be more likely to persist than those with Easy goals, Hard goals, and other goals with flexibility.

Reserve vs. Easy Goals

In addition to the cost of using the reserve, Reserve goals focus on a more difficult reference point (e.g., goal of going to the gym 7 days of the week + 2 “emergency skip” days) than Easy goals (e.g., goal of going to the gym 5 days of the week). Prior research has suggested that people perform better with more difficult goals and more specific goals (Locke, Shaw, Saari, & Latham, 1981). Using Prospect Theory as a framework (Kahneman & Tversky, 1979), Heath, Larrick, and Wu (1999) demonstrate that people expect to work much harder if they have not yet

reached their goal (in the losses domain) than if they have already succeeded at their goal (in the gains domain).

Thus, after succeeding (or being able to succeed later) at reaching this easier reference point (e.g., going to the gym 5 days of the week), we expect those with Easy goals to be less likely to persist. However, we expect consumers with Reserve goals to try to resist using their reserve and thus strive for a more difficult reference point. Therefore, we expect consumers with Reserve goals to be more likely to persist than those with Easy goals because of a dual influence (1) Easy goal consumers will be less likely to persist due to an easier reference point and (2) Reserve goal consumers will be more likely to persist due to a resistance to use the emergency reserve.

H2: Consumers with Reserve goals will be more likely to persist than those with Easy Goals.

Reserve vs. Flexible Goals

In order to ensure that the beneficial effects of the Reserve are not due to simply being a flexible goal, we also compare how Reserve goals compare to other flexible goals. Prior research in both the mental accounting and goal literature has found that flexible goals and flexible mental accounts generally do not result in better performance and can even result in worse performance (compared to less flexible goals and accounts). Consumers exploit malleability and ambiguity in their mental accounting rules in order to justify indulging in temptations, reducing self-control performance (Ainslie, 2001; Cheema & Soman, 2006). They perform worse with goals that have multiple means of achieving them, once they are past the initial stages of goal pursuit (Huang & Zhang, 2013), and consumers with high-low goals (e.g., score 2-4 points) are more likely to

pursue their goal again, but they are not more likely to perform better than those with single goals (e.g., score 2 points or score 4 points) (Scott & Nowlis, 2013). Further, consumers with goals with back-up plans for the superordinate goal perform worse on their primary goal than those without back-up plans (Shin & Milkman, 2016). Lastly, the specificity of goals has different effects on consumers depending on the construal level. Non-specific goals under high construal leads to a lower perception of importance leading to lower success compared to specific goals, but under low construal leads to a reduced sense of difficulty and thus higher success (Ulkumen & Cheema, 2011).

To verify that emergency reserves act differently from flexible goals, we will be comparing the effects of Reserve goals to the effects of other goals with flexibility (what we will term “range goals”). We will be examining 2 different types of Range goals: Range-Easy goals that focus on the easier reference point (e.g., your goal is to go to the gym 5 days of the week; however, you should aim to go to the gym 7 days of the week) and Range-Hard goals that focus on the more difficult reference point (e.g., your goal is to go to the gym 7 days of the week; however, it’s okay if you go to the gym 5 days of the week). We hypothesize consumers with Range goals will be less likely than those with Reserve goals to reach the more difficult reference point of this flexibility region because there is no cost (psychological or otherwise) associated with using the flexibility inherent in those goals.

H3: Consumers with Reserve goals will be more likely to persist than those with Range goals.

Reserve vs. Hard goals

Reserve goals and Hard goals both focus on the same difficult reference point (e.g., go to the gym 7 days of the week). However, Reserve goals have some flexibility, with a cost, available (e.g., 2 emergency skip days). We hypothesize consumers with Hard goals will try hard to reach their goal, but those with Reserve goals will try even harder than those with Hard goals in order to resist using their reserve due to the cost associated with using it. As mentioned earlier, the psychological cost of the reserve is amplified by terming it an “emergency” reserve and people are sensitive to such labeling (Henderson & Peterson, 1992; Heath & Soll, 1996; Kahneman & Tversky, 1984; Thaler, 1980; Thaler, 1985; Shefrin & Thaler, 1988; Thaler, 1990). Therefore, in mere goals (i.e., there is no external incentive for reaching the goal), the cost of using the Reserve may be perceived as greater than the cost of violating the Hard goal, leading to more persistence with Reserve goals than Hard goals. While participants with Hard goals will try their best to reach their goal, those with Reserve goals will try to not to use their “emergency” reserve unless they absolutely need it.

H4: Consumers with Reserve goals will be more likely to persist than those with Hard goals.

This paper demonstrates that consumers prefer Reserve goals to Hard and Easy goals and also persist more with Reserve goals than with other goals. Studies 1 through 3 test initial preferences for emergency reserves. Studies 1a and 1b demonstrate that consumers prefer Reserve goals to Hard and Easy goals in a weight loss program, and study 2 further clarifies this preference by showing that Reserve goals are preferred to both Easy and Hard goals when they are part of a superordinate goal. Study 3 reveals consumers prefer Reserve goals to Easy and Hard goals because they have a higher perceived value and attainability than many other types of

goals. The final three studies examine consumers' persistence with Reserves goals compared to those with Easy, Hard, and Range goals in tasks with superordinate goals. Study 4 demonstrates the beneficial effects of an emergency reserve in a realistic work situation that requires persistence in a task over multiple days. Lastly, studies 5 and 6 reveal that consumers with Reserve goals persist more because they try to resist using their emergency reserve.

STUDY 1A AND 1B: PREFERENCE-WEIGHT LOSS STUDY

In Study 1a and Study 1b, we explored consumers' preference for an option with an emergency reserve in a domain with a superordinate goal: a hypothetical point-based weight loss program. We expected that participants would prefer the Reserve option to the Easy option and the Hard option as there is a salient superordinate goal within this domain (i.e., to lose weight).

Method

100 different Amazon Mechanical Turk participants completed each study (Study 1a: $M_{\text{age}} = 34.33$; Age Range 19-65; 56 Males; Study 1b: $M_{\text{age}} = 32.91$; Age Range: 18-62; 12 Males). They were told to imagine they wanted to lose weight and that they were considering three different point-based weight loss programs. Participants were asked to indicate, "Which program would you be most likely to sign up for?" The Easy option offered 32 points per day. The Hard option offered 30 points per day. In Study 1a, the Reserve option offered 30 points per day with 2 optional emergency points per day. The cost of using the reserve in this scenario was purely psychological by labeling the points as "emergency" [See Web Appendix A for details.] In Study 1b, the Reserve option offered 30 points per day plus 14 optional emergency points per week. This increases the flexibility of the reserve relative to Study 1a but it also generates an opportunity cost, in addition to a psychological cost, for early use of the optional points.

Results

For both studies, a multinomial logistic regression was conducted with the Reserve option as the reference group. In Study 1a, participants were marginally significantly more likely to choose the Reserve option over the Easy option (46%_{Reserve} vs. 29%_{Easy}, $p = .052$) and significantly more likely to choose the Reserve option over the Hard option (46%_{Reserve} vs. 25%_{Hard}, $p = .014$). In Study 1b, participants were significantly more likely to choose the Reserve option over the over the Easy option (55%_{Reserve} vs. 22%_{Easy}, $p < .001$) and over the Hard option (55%_{Reserve} vs. 23%_{Hard}, $p < .001$).

Discussion

Supporting H1, we found in Studies 1a and 1b that participants preferred Reserve goals to Hard goals and Easy goals when there was a superordinate goal (e.g. lose weight). In Study 1a, the only cost of using the reserve was psychological; in other words, simply labeling some of the points for emergency use was enough to affect preferences. In Study 1b, participants also preferred the reserve if it had an additional cost, an opportunity cost: use of the emergency points today reduces the opportunity to use them tomorrow.

In Study 2, we aimed to explore the boundaries of preference for the Reserve by testing how it is affected by the salience of a superordinate goal. We used a scenario about taking a class and manipulated the presence of a superordinate goal (a career exam). We predicted that participants would only prefer the Reserve option to the Easy option if the class was needed for a larger career exam (superordinate goal) but not if the material would not be needed again in the future (no superordinate goal).

STUDY 2: PREFERENCE-CLASS STUDY

In this study, we explored consumers' preference for a Reserve option compared to an Easy option and a Hard option within an education scenario when a superordinate goal was present and when it was not. Participants indicated their preference on a Likert scale between only two of the options (either Reserve vs. Hard or Reserve vs. Easy).² We also begin exploring why consumers may prefer the Reserve option to Easy and Hard options.

Method

200 paid Amazon Mechanical Turk participants ($M_{\text{age}}=31.07$; Age Range: 18-59; 126 males) took part in this study. Participants were asked to imagine that they were required to take a class. Participants were randomly assigned to the Career Exam Condition and the No Career Exam Condition. In the Career Exam Condition, participants were told that the required class was a preparatory class for a separate larger exam that they had to take for their future career (a salient superordinate goal). In the No Career Exam Condition, participants were told that the class material would not be used in their career and they would not be required to take a future related class (no superordinate goal). Therefore, in the Career Exam Condition, studying hard for the class would increase students' likelihood of passing the class and also help them be better prepared for their career (e.g., have a better chance of obtaining their superordinate goal). In the No Career Exam Condition, studying hard for the class would only increase their chances of passing the class.

Participants were told two teachers taught the same exact class in a similar fashion and that they used the exact same final exam at the end of the class. One of the teachers offered an

² One could argue from Study 1a/1b that participants were simply choosing at random between the Reserve and non-Reserve goals (Easy and Hard). By using a 7-point Likert scale, we test this alternate explanation.

emergency reserve for the test (i.e., the Reserve option): students would have to receive a 20/25 on the exam in order to pass the class but they also could earn 5 “emergency” extra credit points if they received below a 20/25. The Easy option teacher required students to receive a 15/25 on the exam and the Hard option teacher required a 20/25 in order to the pass class without any extra credit available.

Participants were randomly assigned to read about and make a comparison between the Reserve option and the Easy option *or* between the Reserve option and the Hard option. They were asked, “Which teacher would you be more likely to choose?” on a Likert scale with 1= *Definitely more likely to choose Teacher A*, 4= *Equally likely to choose Teacher A or Teacher B*, and 7 = *Definitely more likely to choose Teacher B*. Teacher A was either the Hard option or the Easy option and Teacher B was the Reserve option (See Web Appendix B for more details).

After indicating their preference, participants were asked with which teacher they would study harder, have learned more after the final, and be more likely to pass the class on a similar 7-point Likert Scale. Participants then completed the Brief Self-Control Measure (Tangney, Baumeister, & Boone, 2004).

Results

As half of the participants indicated a preference between the Reserve and Easy options and the other half of participants indicated a preference between the Reserve and Hard options, we analyze this data separately (since combining them would not be meaningful). Independent sample t-tests and one-sample t-tests vs. the midpoint of 4 (being indifferent between the teachers) were used to analyze the data.

Preference for Reserve goals to Easy goals. Our superordinate goal salience manipulation (Career Exam vs. No Career Exam) had a significant effect on participant’s preferences for the

Reserve option to the Easy option. Supporting H1, participants were significantly more likely to prefer the Reserve option to the Easy option in the Career Exam Condition than in the No Career Exam Condition; $M_{CE} = 5.20$ vs $M_{NCE} = 3.89$, $t(100) = -3.04$, $p = .003$. Within the Career Exam Condition, participants were significantly more likely to prefer the Reserve option compared to preferring both options equally; $M_{CE} = 5.20$ vs. 4.0 , $t(48) = 4.24$, $p < .001$. However, within the No Career Exam Condition, participants were not significantly more likely to prefer the Reserve option compared to preferring both options equally; $M_{NCE} = 3.88$ vs. 4.0 , $t(52) = -.35$, $p = .73$.

Preference for Reserve goals over Hard goals. There was no significant effect of our superordinate goal salience manipulation on participant's preference between the Hard option and the Reserve option; $M_{CE} = 6.29$ vs. $M_{NCE} = 6.14$, $t(96) = -.58$, $p = .57$. Within both the Career Exam Condition and the No Career Exam Condition, participants were significantly more likely to prefer the Reserve option compared to preferring both options equally; $M_{CE} = 6.29$ vs. 4.0 , $t(48) = 16.34$, $p < .001$; $M_{NCE} = 6.14$ vs. 4.0 , $t(48) = 10.50$, $p < .001$.

-----See Figure 1-----

Motivation (Easy vs. Reserve). There was no significant effect of our superordinate goal salience manipulation on participant's intuition about their likelihood of passing the class and their motivation to study between the Easy option and the Reserve option. Participants thought they would study harder with the Reserve option, $M_{CE} = 5.25$ vs. 4.0 , $t(48) = 5.20$, $p < .001$; $M_{NCE} = 4.91$ vs. 4.0 , $t(52) = 3.36$, $p = .001$, and learn more with the Reserve option, $M_{CE} = 5.23$ vs. 4.0 , $t(48) = 6.14$, $p < .001$; $M_{NCE} = 4.79$ vs. 4.0 , $t(52) = 3.79$, $p < .001$ both in the Career Exam Condition and the No Career Exam Condition. Participants thought they would have similar chances of passing with the Reserve option and the Easy option in both conditions.

Motivation (Hard vs. Reserve). There was no significant effect of our superordinate goal

salience manipulation on participant's intuition about their likelihood of passing/learning from the class and their motivation to study between the Hard option and the Reserve option.

Participants thought they would study similarly as hard and learn a similar amount with the Reserve option and the Hard option in both the No Career Exam Condition and the Career Exam Condition but be significantly more likely to pass the class with the Reserve option than the Hard option in both the Career Exam Condition and the No Career Exam Condition, $M_{CE} = 5.57$ vs. 4.0, $t(48) = 6.63, p < .001$; $M_{NCE} = 5.94$ vs. 4.0, $t(48) = 10.73, p < .001$.

Self-control. We used OLS regression in order to examine the effect of individual levels of self-control on choice. We found that participants with high self-control were overall more likely to choose the Reserve option over the Easy option ($\beta = .77, p = .014$). Self-control did not significantly affect participants' likelihood of choosing the Reserve option over the Hard option ($\beta = .10, p = .66$). We also did not find a significant 2-way interaction between individual level self-control and the superordinate goal manipulation; (Easy vs. Reserve: career exam vs. no career exam x self-control: $\beta = .43, p = .49$; Hard vs. Reserve: career exam vs. no career exam x self-control: $\beta = .10, p = .76$).

Discussion

Study 2 demonstrated that consumers prefer the Reserve option to the Easy option only if they have a superordinate goal and prefer the Reserve option to the Hard option independent of having a superordinate goal (H1). This study thus reveals the importance of a contextual factor, the salience of superordinate goal, on preferences for emergency reserves.

Study 2 also allowed us to test the importance of individual factors, such as self-control, in predicting preference for reserves. We found that participants with higher self-control were more likely to prefer the Reserve option to the Easy option overall. Participants may consider

the emergency reserve a safe self-control pre-commitment strategy (Milkman, Minson, & Volpp, 2013; Wertenbroch, 1998); those with high self-control are more likely to want to pre-commit themselves to studying and thus learning more from the course. Thus, both situational and individual factors are important for predicting preference for reserves.

Lastly, this study revealed why Reserve options might be preferred to Easy and Hard options. Participants thought they would be more motivated to study harder and would learn more with the Reserve option than the Easy option, suggesting Reserve goals are perceived to have greater value than Easy goals. They also thought they would be equally likely to pass the class with both teachers, suggesting the attainability of the goals are perceived to be equal.

Participants seemed to prefer the Reserve option to the Hard option for a different reason. Participants thought they would be more likely to pass the class with the Reserve option than with the Hard option, suggesting that the Reserve option is perceived as more attainable. Additionally, they thought they would study equally as hard with both options, suggesting both goals are equally as valuable. In the next study, we will aim to replicate these effects and also examine consumers' preference for other flexible goals within a superordinate domain.

STUDY 3: PREFERENCE-WORD SEARCH STUDY

In this study, we further examine consumers' preference for the Reserve goal and intuitions about the attainability (likelihood of succeeding at their goal) and value (likelihood of performing better on the superordinate goal) of Reserve goals, Hard goals, and Easy goals when there is a superordinate goal. Additionally, we introduce two range goals. One range goal focuses on the more difficult, aspirational reference point; we will refer to this range goal as Range-Hard. The other range goal focuses on the easier, more attainable reference point; we will refer to this

range goal as Range-Easy. However, both goals are equally attainable as Easy goals, similar to Reserve goals.

Method

200 paid Amazon Mechanical Turk participants ($M_{\text{age}} = 35.43$; Age Range: 18-70; 79 males) completed this survey. Participants were asked to imagine they were completing training for a hard word search test and that they would receive a bonus if they performed very well on this test. In order to train for this word search test, they would be asked to complete a series of training word searches. The more word searches they practiced, the more likely it was they would do better on the hard word search test at the end. Therefore, the superordinate goal in this scenario is performing well on the word search test. Only participants who successfully completed their training goal could try the hard word search test. Participants were then able to choose which training goal they would prefer.

For each training word search they completed, they were told they would score 1 point in this hypothetical game. Participants were randomly assigned to make a choice between the **Reserve** goal [*Goal to score 3 points. However, you also have one emergency point that you can apply if you fail one word search test*] and **one** of the other goals: **Easy** [*Goal to score 2 points*], **Hard** [*Goal to score 3 points*], **Range-Easy** [*Goal to score 2 points. However, you should aim to score 3 points. You will be able to try the word search test if you score 2 points*], or **Range-Hard** [*Goal to score 3 points, but it's okay if you score 2 points. You will be able to try the word search test if you score 2 points*].

Afterwards, they were asked to choose with which goal they thought they would be more likely to qualify for the word search test (i.e. expectancy) and with which goal they think they would be more likely to perform better on the word search test (i.e. value). Participants saw

graphical representations and descriptions of each goal when making their choices. Range-Hard, Reserve, and Hard goals all focus on the more difficult goal of completing all three training word searches, re-enforced by both text and a graphical representation. However, there is flexibility for the Range-Hard and Reserve goals, making them more attainable than the Hard goal. Range-Easy and Easy goals have goals of completing two word-searches, also re-enforced by text and graphical representation. (See Web Appendix C for visual representations of all goals).

Results

Easy vs. Reserve. Participants were significantly more likely to choose a Reserve goal over an Easy goal; 66.67%_{Reserve} vs. 33.34%_{Easy}; $\chi^2(1, N = 48) = 5.33^3, p = .021$. Participants thought they would be equally likely to qualify to try the word search test with both goals; 52.1%_{Reserve} vs. 47.9%_{Easy}. Lastly, participants thought they would perform significantly better with the Reserve goal than the Easy goal on the word search test; 64.6%_{Reserve} vs. 35.4%_{Easy}; $\chi^2(1, N = 48) = 4.08, p = .043$.

Hard vs. Reserve. Participants were significantly more likely to choose a Reserve goal over a Hard goal; 72.5%_{Reserve} vs. 26.5%_{Hard}; $\chi^2(1, N = 49) = 10.80, p = .001$. Participants thought they would be significantly more likely to qualify to try the word search test with the Reserve goal than the Hard goal; 68.1%_{Reserve} vs. 31.9%_{Hard}; $\chi^2(1, N = 47) = 6.15, p = .013$. Participants thought they would perform equally well on the word search test with the Reserve goal and the Hard goal; 56.3%_{Reserve} vs. 43.8%_{Hard}.

Range-Easy vs. Reserve. Participants were equally likely to choose, 51%_{Reserve} vs. 49%_{Range-Easy}, thought they would be equally likely to qualify for the word search test, 51%_{Reserve}

³ All chi-square tests compare the number of participants who chose the Reserve option vs. the other option (Easy, Hard, Range-Hard, or Range-Easy depending on condition) to what would be expected by chance (50% vs. 50% of observations).

vs. 49%_{Range-Easy}, and thought they would perform equally well, 56%_{Reserve} vs. 44%_{Range-Easy}, with the Reserve goal and the Range-Easy goal.

Range-Hard vs. Reserve. Participants were significantly more likely to choose a Range-Hard goal over a Reserve goal; 34%_{Reserve} vs. 66%_{Range-Hard}; $\chi^2(1, N = 47) = 4.79, p = .029$.

Participants thought they would be equally likely to qualify for the word search test, 45.1%_{Reserve} vs. 54.9%_{Range-Hard}, and would perform equally well, 48.1%_{Reserve} vs. 51.9%_{Range-Hard}, with the Reserve goal and the Range-Hard goal.

-----See Figure 2 -----

Discussion

This study replicates the effects of Study 1 and 2, such that participants were more likely to choose a Reserve goal over both an Easy goal and a Hard goal when there was a superordinate goal. Additionally, replicating Study 2, participants seem to choose Reserve goals over Easy goals because they are perceived as having a higher value (greater likelihood of performing well on the superordinate goal) while having the same attainability (equally likely to qualify for the final word search). On the other hand, participants seem to choose Reserve goals over Hard goals because they are perceived as being more attainable, with the same value.

Further, the results of this study suggest that consumers overall prefer flexible goals. Participants had no preference between Reserve and Range-Easy goals, perceiving them to have similar value and attainability. Interestingly, participants preferred Range-Hard goals to Reserve goals but thought they had similar value and attainability. Consumers may prefer Range-Hard goals in order to avoid the psychological cost associated with the reserve. However, we will demonstrate that this cost they may be trying to avoid will end up being a key motivating factor in goal persistence.

In the next section of this paper, we will examine how consumers persist with these goals. In particular, in Study 6, participants from the same population (Amazon Mechanical Turk) will perform a similar task with the same goals that the participants from this study choose among. We begin with a straightforward test of persistence under different goal types.

STUDY 4: DAILY CHALLENGE STUDY

In Study 4, we use an incentive compatible task with real behavior and real consequences to examine goal persistence. This task requires persistence over multiple days as it requires that participants set aside time each day to complete an annoying task to reach their goals, much like daily gym attendance or other long-term goals. In addition to comparing the persistence of participants with Hard and Easy goals to those with Reserve goals, we begin by exploring how the persistence of participants' with one type of flexible goal, Range-Easy, compares to those with Reserve goals. While our prediction is that it is the cost associated with the emergency reserve that encourages persistence, it may simply be that introducing flexibility is enough to encourage more persistence; the Range-Easy goal thus provides an early test of this alternate explanation. The persistence of participants with other types of flexible goals will be examined in Studies 5 and 6. Based on hypotheses H2-H4, we predicted that participants with Reserve goals would persist more than those with other goal types, such as Hard, Easy, and Range-Easy goals.

Method

226 paid participants ($M_{\text{age}} = 22.12$; Age Range: 18-53; 60 males) from a large public university in the southwest United States participated in this study. Every morning for seven

days a different set of 35 CAPTCHAs was posted online for participants to complete.

Participants were randomly assigned to one of four conditions, in which the goal for how many days they should complete the CAPTCHAs was manipulated (Easy, Range-Easy, Reserve, and Hard).

Procedure

Participants in this study were on their university's winter break. A different set of 35 CAPTCHAs was posted every morning then removed at midnight. Participants received one dollar for every day that they completed each set of 35 CAPTCHAs. Participants were informed that there would be no penalty for not completing the task daily.

Participants were randomly assigned to one of four conditions, in which the goal of the task was manipulated. In addition to receiving one dollar per day for completing the task, participants received an additional five-dollar bonus if they completed their goal. In the Easy condition, participants' goal was to complete the task five days out of the week. In the Range-Easy condition, participants' goal was to complete the task five days out of the week but they were also told they "should aim to complete the task every day of the week." In the Reserve condition, participants' goal was to complete the task every day (seven days) of the week. They were also told, "in case you need it, up to two days will be excused" and that they would still receive their bonus if they missed up to two days (but they would not receive the one dollar per day payment for the days they missed). In the Hard condition, participants' goal was to complete the task every day of the week (seven days of the week).

In this study, there is both a psychological and opportunity cost associated with using the reserve. If a participant decides to skip typing the task on Monday and Tuesday, they can't skip the task on Wednesday and still make the goal (thus there is an opportunity cost for early use of

the emergency reserve). Additionally, there is a psychological cost in the framing of the emergency reserve as participants are told to use it “in case they need it.” We predicted that participants with Reserve goals would be more likely to complete their goal than participants with Easy, Hard, and Range-Easy goals.

Results

Goal Attainment. Reserve, Range-Easy, and Easy goal participants all received their bonus if they completed the task five days of the week. Hard goal participants received their bonus if they completed the task seven days of the week. We used logistic regression predicting successful goal attainment (1 = successfully attained their goal; 0 = otherwise) from three dummy variables representing the conditions (Easy, Range-Easy, and Hard), with the Reserve condition as the reference group⁴.

A test of the full model against a constant only model was statistically significant, indicating that our predictors as a set (indicators of different goal types) had a significant effect on goal attainment, $\chi^2(4, N = 226) = 14.76, p < .001$. Reserve participants were significantly more likely to receive their bonus than Easy participants, 52.5%_{Reserve} vs. 25.9%_{Easy}, ($\beta = -1.15, \chi^2(1) = 8.07, p = .005$), Range-Easy participants, 52.5%_{Reserve} vs. 33.9%_{Range-Easy} ($\beta = -.77, \chi^2(1) = 4.00, p = .046$), and Hard participants, 52.5%_{Reserve} vs. 21.1%_{Hard} ($\beta = -1.42, \chi^2(1) = 11.68, p = .001$). Because Hard goal participants did not receive their bonus unless they complete the task seven days a week (more than all of the other conditions), we ran another logistic regression predicting achievement on the easier reference point goal of five days a week from the same three dummy variables representing each condition. Reserve participants were still significantly more likely to complete this lower threshold than Hard participants, 52.5%_{Reserve} vs. 31.6%_{Hard} (β

⁴ The effects reported below are the Betas and p -values for each of these dummy variables from one regression model (not individual pair-wise comparisons).

= -.88, $\chi^2(1) = 5.13, p = .023$).

-----See Figure 3 -----

Preference. On the last day of the task, all of the conditions were described and participants (84 total) were asked to indicate which condition they would prefer if they had to complete the task again. Using a multinomial logistic regression, we found participants chose the reserve option significantly more than each of the other options (62% Reserve, 14% Easy, 14% Hard, and 10% Range-Easy), $ps < .001$

Discussion

This study provides evidence that consumers with emergency reserves persist more than those with other goals (Easy, Hard, and Range-Easy). Reserve participants were more likely to receive their bonus and reach the easier goal compared to all other conditions.

We also found that participants prefer being in the Reserve condition compared to all of the other conditions after actually experiencing the task. There is a superordinate goal in this study to make as much money as possible since participants can make one dollar per day in all conditions. Therefore, this result is consistent with the preferences expressed in studies 1-3 and with the predictions in H1.⁵

Although this study provides evidence for the basic effect (i.e. consumers with Reserve goals persist more than those with other goals), it does not demonstrate why consumers with Reserve goals persist more. According to expectancy-value theories, Reserve goals may be more motivating by focusing consumers on the value (i.e., the more difficult goal; e.g., complete the task seven days) while maintaining the expectancy (by providing a reserve); under this explanation, the cost of the reserve is an unnecessary part of the process. In order to explore

⁵ Only those participants who completed the 7th day completed the preference measure. Thus, our preference results from this study may be not representative of the full sample of participants.

whether the cost of the Reserve is a critical component of the process, we next examine participants' persistence with a Range-Hard goal, which similarly focuses on a more difficult, aspirational goal, while keeping attainability the same as an Easy goal. We expect that if the cost of the reserve is an unnecessary part of the motivational process, participants with Range-Hard goals will persist equally as much as those with Reserve goals. However, if instead participants with Reserve goals persist more, we can conclude that there is an additional motivational benefit of the cost of the reserve beyond what expectancy-value theories would predict.

Additionally, we examine participants' persistence with a psychological cost-free reserve, by terming it a "bonus" reserve rather than an "emergency" reserve. Although "bonus" reserves may still have an opportunity cost associated with using them, the psychological cost of the reserve is reduced. Therefore, if cost is an important motivational component of the reserve, participants with "emergency reserves" should persist more than those with "bonus reserves" due to the increased cost (*emergency reserve*: psychological cost + opportunity cost vs. *bonus reserve*: opportunity cost).

STUDY 5: SPOT-THE-DIFFERENCE STUDY

In Study 5, participants were asked to complete three spot-the-difference "training" games in order to help them prepare for a more difficult spot-the-difference test at the end of the survey. Participants were randomly assigned to one of six training goals to beat a particular number of the three spot-the-difference training games: Easy, Range-Easy, Range-Hard, Emergency Reserve, Bonus Reserve, or Hard.

The first game was very easy (leading all participants to score one point), but the second game in the training set was very difficult. The number of differences participants found before

giving up was our dependent variable of interest and measure of persistence. We expected participants with an emergency reserve would find more differences before giving up than those with other types of goals due to the cost of reserve. As in Study 4, in this study, there were two costs of using their emergency reserve: a psychological cost (e.g., labeling it emergency) and an opportunity cost (e.g., if participants use their emergency reserve on the second game, they can't use it on the third game).

Procedure

601 paid Amazon Mechanical Turk participants ($M_{\text{age}} = 35.71$; Age Range: 18-78; 211 males) completed this study. The experiment began by explaining to participants that they would be completing training for a hard spot-the-difference test at the end of the study. In order to train for this spot-the-difference test, they would be asked to complete a series of training spot-the-difference games. The more spot-the-difference games they practiced, the more likely it is they would do better on the hard spot-the-difference test. Thus, performing well on this hard spot-the-difference test was the superordinate goal. Only participants who successfully completed the training could try to take the hard spot-the-difference test and thus be eligible for a potential survey in the future. Before participants were assigned their goal, participants received instructions and completed a practice spot-the-difference task.

Participants were then randomly assigned to one of the training goal conditions (Easy, Range-Easy, Range-Hard, Hard, Emergency Reserve, or Bonus Reserve), in which the goal for how many spot-the-difference games they should complete (out of three) was manipulated. They were told they would receive one point for every spot-the-difference game that they beat. In the Easy condition, participants' goal was to score two points. In the Range-Easy condition, participants were told, "Your goal is to score 2 points. However, you should aim to score 3 points. You will be able to try the spot-the-difference test if you score 2 points." In the Range-

Hard condition, participants were told, “Your goal is to score 3 points. However, it's okay if you score 2 points instead. You will be able to try the spot-the-difference test if you score 2 points. ”

In the Hard condition, participants’ goal was to score 3 points. In the Emergency Reserve and Bonus Reserve conditions, participants’ goal was also to score 3 points. However, participants in the Emergency Reserve condition were also told: “Throughout these games, you will have one optional "emergency" point available just in case you need it. If you fail one spot the difference game, you can apply this emergency point and receive a point for that failed game.” Afterwards, they saw a graphical representation of the emergency reserve with a red “Apply Emergency Point” button. They were informed that if they failed a game, they would click on this button to apply their emergency point if they failed. This description was exactly the same for the Bonus Reserve condition except the word “emergency” was replaced with the word “bonus.”

Additionally, the graphical representation of the reserve button was green rather than red and said “Apply Bonus Point” rather than “Apply Emergency Point.”

After every spot-the-difference game, participants were shown a graphical depiction of their progress and their goal. In order to focus attention on the easier goal in the Range-Easy and Easy condition and the harder goal in the Range-Hard, Emergency Reserve, Bonus Reserve, and Hard conditions, the graphical representation for these goals showed a goal of scoring 2 points and 3 points, respectively.

----See Figure 4 ---

All participants then completed the very easy first spot-the-difference game. Participants were asked to find two differences with as much time as they wanted; all participants were informed that they beat it.

For the second spot-the-difference game, participants were told there are between 10-12

differences (there were actually only 10 differences) between the two pictures. They had as much time as they needed, but they were informed they could give up at any time. The number of differences that participants found before giving up was our dependent variable of interest. After participants gave up (or thought they found all the differences), participants were informed that they either beat the game or failed the game and thus did/ did not receive a point. If they failed this game, participants in the reserve conditions were asked if they wanted to apply their “emergency point” or “bonus point.”

-----See Figure 5 -----

After the second game, participants completed the third spot-the-difference game. All participants then took the hard spot-the-difference test.⁶ They were given two minutes to find as many differences as they could. After taking this test, participants were asked to imagine they had to complete a similar set of training tasks again. They were presented with all of the different training goals with matching graphical depictions and asked to make a choice between them.

Results

Number of Differences Found. OLS regression was used to predict number of differences found from five dummy variables representing each condition (Easy, Range-Easy, Range-Hard, Hard, and Bonus Reserve), with the Emergency Reserve condition as the reference group⁷.

A test of the full model against a constant only model was marginally statistically significant, $F(5, 595) = 2.209, p = .052$. Participants in the Emergency Reserve condition found significantly more differences than those in the Easy condition ($M_{EReserve} = 6.98$ vs. $M_{Easy} = 5.93$;

⁶ Even participants who failed their training goal were asked to take the spot-the-difference test. However, participants who failed their training goal were told they would not qualify for future surveys regardless of their performance.

⁷ The effects reported below are the Betas and p-values for each of these dummy variables from one regression model (not individual pair-wise comparisons).

$\beta = -1.05, p = .004$), the Range-Easy condition ($M_{EReserve} = 6.98$ vs. $M_{Range-Easy} = 6.13; \beta = -.85, p = .020$), the Range-Hard condition ($M_{EReserve} = 6.98$ vs. $M_{Range-Hard} = 6.21; \beta = -.77, p = .034$), in the Hard condition ($M_{EReserve} = 6.98$ vs. $M_{Hard} = 5.98; \beta = -1.00, p = .006$), and marginally significantly more than those in the Bonus Reserve condition ($M_{EReserve} = 6.98$ vs. $M_{BReserve} = 6.34; \beta = -.64, p = .076$).

-----See Figure 6 ---

Preference. We conducted a multinomial logistic regression with the Emergency-Reserve option as the reference group and found that participants preferred the Emergency Reserve goal significantly more than the Hard and Easy goal ($14.3\%_{EReserve}$ vs. $8.2\%_{Hard}, p = .002$; $14.3\%_{EReserve}$ vs. $7.8\%_{Easy}, p = .001$), significantly less than the Range-Easy goal ($14.3\%_{EReserve}$ vs. $21.1\%_{RangeEasy}, p = .005$), and had no significant preference between it and the Range-Hard goal ($14.3\%_{EReserve}$ vs. $17.3\%_{RangeHard}, p = .19$). Additionally we conducted a multinomial logistic regression with the Bonus Reserve goal as the reference group, and found that participants preferred the Bonus Reserve goal significantly more than all of the other goals ($31.3\%_{BReserve}$ vs. $8.2\%_{Hard}, p < .001$; $31.3\%_{BReserve}$ vs. $7.8\%_{Easy}, p < .001$; $31.3\%_{BReserve}$ vs. $21.1\%_{RangeEasy}, p = .001$; $31.3\%_{BReserve}$ vs. $17.3\%_{RangeHard}, p < .001$; $31.3\%_{BReserve}$ vs. $14.3\%_{EReserve}, p < .001$).

Discussion

Participants with an Emergency Reserve goal found more differences (tried harder) on the second spot-the-difference game than those with all other goal types. Participants in all conditions (except the Hard condition) could try the final spot-the-difference test if they scored 2 points. Because all participants scored one point on the first game, if individuals with these goals gave up on the second difficult game, they could still qualify to try the spot-the-difference test by completing the third game. Despite this similarity among the goals, participants with an

Emergency Reserve goal tried the hardest on this second game, resisting using their emergency reserve. Additionally, participants with emergency reserves persisted more on the second game than even those with a Hard goal.

In this study, we also examined the persistence of participants with a Range-Hard goal, a range goal that focused on the aspirational goal, to investigate how crucial the cost of the reserve is for increased persistence. We found that participants with an Emergency Reserve goal persisted more than those with a Range-Hard goal. Relatedly, we introduced a psychological cost-free Bonus Reserve. We also found participants persisted more with an Emergency Reserve goal, a reserve with more cost (psychological + opportunity costs), than with a psychological-cost free Bonus reserve, a reserve with only an opportunity cost. Both of these comparisons suggest that the cost of the reserve is a crucial component of the mechanism of the emergency reserve.

After experiencing the task, participants preferred the Emergency Reserve goal to the Hard goal and the Easy goal and preferred the Bonus Reserve goal the most out of all goals. Since participants had to choose between a Bonus Reserve goal and an Emergency Reserve goal, we expect that they may have shied away from the greater psychological cost of the Emergency Reserve goal. Nonetheless, this study provides overall evidence that there is strong preference for having a reserve of some kind as part of a difficult goal.

In this study, we demonstrated that participants try to resist using their reserve on game 2 when they have an opportunity to use it later (e.g., on game 3). In Study 6, we will examine if participants try to resist using their reserve even if there is no opportunity to use it later. Thus, this final study examines how effective the reserve is when it only has a psychological cost (by labeling it emergency) rather than when it has both a psychological cost and an opportunity cost

as in Studies 4 and 5. Specifically, we will examine how likely participants with a reserve are to persist on a third game even after succeeding at the easier goal (e.g., scoring 2 points out of 3).

Additionally, in Study 5, participants had to successfully complete a training goal in order to try a test at the end of the survey. In the real world, there is not always a strict qualification for achieving a superordinate goal. We often set goals (e.g., going to the gym 7 days a week) in order to help us be more likely to reach our superordinate goal (e.g., becoming more fit). However, we can often still reach the superordinate goal even if we fail our short-term goal (e.g., we can still lose some weight if we go to the gym only 6 days instead of 7). Therefore, in Study 6, we relaxed the linkage between the goals to be more aligned with these types of real-world scenarios.

STUDY 6: WORD SEARCH PERSISTENCE STUDY

In Study 5, participants were asked to complete three word search “training” games in order to help them prepare for a more difficult word search test at the end of the survey. Participants were randomly assigned to one of five training goals to beat a particular number of the three word search training games: Easy, Range-Easy, Range-Hard, Emergency Reserve, or Hard.

Participants completed two word search practice games that they were likely to succeed at and then were asked if they would like to try the third word search practice game or move on to the word search test; this is our dependent variable and measure of persistence. We expected that participants with Reserve goals would be more likely to try the third word search practice game than those with other goals.

Procedure

510 participants ($M_{\text{age}} = 35.85$; Age Range: 18-77; 212 males) completed this survey from Amazon Mechanical Turk. The experiment began by explaining to participants that they would be completing training for a hard word search test at the end of the study. If they performed well on this word search test, they could be eligible for a potential survey in the future (the superordinate goal). In order to train for this word search test, they would be asked to complete a series of training word searches. The more word searches they practiced, the more likely it is they would do better on the hard word search test. Participants did not have to successfully complete their training goal in order to try the word search test. However, they were told it was a good indication that they were prepared for the test if they completed their goal. Participants received instructions and completed a practice word search.

Participants were then randomly assigned to one of the training goal conditions (Easy, Range-Easy, Range-Hard, Hard, or Reserve), in which the goal for how many word searches they should complete (out of three) was manipulated. They were told they would receive one point for every word search that they beat. In the Easy condition, participants' goal was to score two points. In the Range-Easy condition, participants were told, "Your goal is to score 2 points. However, you should aim to score 3 points." In the Range-Hard condition, participants' were told, "Your goal is to score 3 points. However, it's okay if you score 2 points instead." As in Study 5, after every word search, participants were shown a graphical depiction of their progress and their goal. In the Hard and Reserve condition, participants' goal was to score three points. However, participants in the Reserve condition were also told: "Throughout these games, you will have one 'emergency' point available. If you fail to complete one word search, you can apply this 'emergency point. This emergency point does not need to be used. It should only be

used if you need it.”

All participants then completed the very easy first word search. Participants were asked to find four words in three minutes; all participants were informed that they beat it. Participants next completed a slightly more difficult but still easy word search, where they had to find five words in three and a half minutes. Most participants succeeded at both of these timed word search practice games and thus had scored two points by this point in the study.

After succeeding at the second word search, participants were then given a description of the third word search. The third word search did not have a time limit and required participants to find ten words. Without seeing the exact word search, they were asked, “Do you want to try the 3rd word search game described or would you like to move on to the word search test?” If participants chose to move on to the word search test, participants were asked to confirm that they wanted to move on to the word search test and in the Reserve condition that they wanted to use their emergency point.

All participants then took the hard word search test. They were given three minutes to find as many of the ten words listed as possible. Right before and after taking this test, participants were asked to imagine they had to complete a similar training session again and were asked to make a choice between the different training goals.

Results

29 participants failed one of the first two word searches and were excluded from further analyses. We conducted a logistic regression predicting choice to try the third word search or not (1=Tried the third word search; 0= Did not try the third word search) from four dummy variables representing each of the conditions (Easy, Range-Easy, Range-Hard, and Hard), with the Reserve condition serving as the reference group. We also conducted an additional logistic regression

predicting successful completion of the third word search (1=Successfully completed the third word search; 0= Did not successfully complete the third word search) from the same four dummy variables.⁸

Try 3rd word Search. A test of the full model against a constant only model was statistically significant; $\chi^2(4, N = 481) = 29.61, p < .001$. We found that participants with Reserves were more likely to try the third word search compared to those in the Easy condition (86.3%_{Reserve} vs. 51.5%_{Easy}; $\beta = -1.78, \chi^2(1) = 24.30, p < .001$), the Range-Easy Condition (86.3%_{Reserve} vs. 73.4%_{RangeEasy}; $\beta = -.83, \chi^2(1) = 4.76, p = .029$), the Range-Hard condition (86.3%_{Reserve} vs. 68%_{RangeHard}; $\beta = -1.09, \chi^2(1) = 8.76, p = .003$), and the Hard condition (86.3%_{Reserve} vs. 73.7%_{Hard}; $\beta = -.81, \chi^2(1) = 4.60, p = .032$).

----See Figure 7 ----

Score 3 points. A test of the full model against a constant only model was statistically significant; $\chi^2(4, N = 481) = 25.74, p < .001$. We found that participants with Reserves were more likely to score three points (complete the third word search game) than those in the Easy condition (81.1%_{Reserve} vs. 46.4%_{Easy}; $\beta = -1.60, \chi^2(1) = 23.21, p < .001$), the Range-Easy Condition (81.1%_{Reserve} vs. 77.1%_{Range-Easy}; $\beta = -.89, \chi^2(1) = 6.84, p = .009$), the Range-Hard condition (81.1%_{Reserve} vs. 63%_{Range-Hard}; $\beta = -.92, \chi^2(1) = 7.62, p = .006$), and the Hard condition (81.1%_{Reserve} vs. 64.2%_{Hard}; $\beta = -.87, \chi^2(1) = 6.61, p = .010$).

Preference. A multinomial regression was used to analyze the preference data with the Reserve option as the reference group. Participants preferred the Reserve goal significantly more than the Easy goal before the word search test (22.2%_{Reserve} vs. 10.1%_{Easy}, $\beta = -.76, \chi^2(1) = 19.72$,

⁸ The effects reported below are the Betas and *p*-values for each of these dummy variables from one regression model (not individual pair-wise comparisons).

$p < .001$) and marginally significantly more than the Easy goal after the word search test (19.3%_{Reserve} vs. 14.8%_{Easy}, $\beta = -.27$, $\chi^2(1) = 2.93$, $p = .087$). However, they preferred the Reserve goal less than the Hard goal (22.2%_{Reserve} vs. 29.5%_{Hard}, $\beta = .28$, $\chi^2(1) = 4.89$, $p = .027$) and there were no differences in preference for the Reserve goal and the other Range goals.

Discussion

We found that participants with Reserve goals were more likely to persist to try the third word search compared to participants with other goals when there was a psychological cost associated with using the Reserve. Participants tried to resist using the emergency reserve, even when there was no future benefit to still having it, leading to persistence after reaching the easier goal (scoring 2 points). Replicating Study 5, participants with Reserve goals again persisted more than those with Range-Hard goals, suggesting the psychological cost of the reserve goal is a crucial component of what makes the Reserve goal motivating. They also persisted more than those with Hard goals.

After experiencing the task, we found that participants preferred the Reserve goal to Easy goal but not to Hard goal. In Study 5, we found that participants preferred Reserve goals to both Easy and Hard goals. This difference may be due to the fact that the training goals overall were much easier in this study than in Study 5. In this study, most participants succeeded at the second word search and didn't apply their emergency reserve, while in Study 5, most participants failed to complete the second spot-the-difference game, making the emergency reserve more necessary and valuable. Thus, preferences for the Reserve goal to other goals may depend on how difficult the task is, with reserves becoming more preferred when the task involves some level of perceived difficulty.

GENERAL DISCUSSION

This paper demonstrates that the emergency reserve is both preferred in goal pursuit and highly motivating, leading to more persistence than other goals. The results of this paper suggest that offering emergency reserves can not only encourage consumers to sign up for a program initially but also help them reach desirable goals and keep them satisfied with their outcomes.

We support these claims through six studies. Study 1 demonstrated that consumers prefer weight loss programs (a program with a superordinate goal) with emergency reserves, and study 2 revealed that the emergency reserve is preferred to Hard and Easy options when there is a superordinate goal and is preferred to Hard options (but not Easy options) when there is no superordinate goal. Study 3 further showed that consumers prefer Reserve goals to Easy and Hard goals when there is a superordinate goal because both the attainability and value are perceived to be greater. Study 4 demonstrated that consumers persist more than those with Easy and Hard goals in an incentive-compatible real-life task. Lastly, studies 5 and 6 demonstrated that consumers persist more with Reserve goals compared to other goal types due to an attempt to resist using the reserve. This paper contributes to the literature on goals by suggesting an innovative strategy to not only initiate goal pursuit but also improve goal persistence. Our findings suggest that pre-defined flexibility *with a cost* can actually be beneficial, rather than maladaptive, in goals and mental budgets.

It is worth noting that programs outside of the lab environment that attempt to help individuals reach superordinate goals use concepts similar to the emergency reserve. For example, Weight Watchers, a very successful point-based weight loss program⁹, gives their

⁹ According to U.S. News and World Report, in 2015 Weight Watchers was ranked number 1 for the fifth consecutive year for “Best Weight Loss Diet” and ranked number 1 as “Easiest Diet to Follow” for the fourth consecutive year.

participants weekly “optional” points and “activity points” that they can earn by doing physical activity that they can use any day throughout the week. Although the points are available if needed, there is an opportunity cost associated with using the optional points and a future/past cost associated with the activity points. In a separate domain, giving children a “bedtime pass,” that allows them to leave their bedroom only one time per night, has been shown to be an effective way to get children to go to sleep at bedtime. (Friman et al., 1999; Moore, Friman, Fruzzetti, & MacAleese, 2007). The success of these programs suggests that including emergency reserves can be both a preferred and successful strategy to help consumers reach their goals. Our research additionally suggests that labeling the optional points and bedtime pass as for “emergency use” only may further increase their effectiveness.

Implications for Marketers

This set of studies suggests that marketers can be more successful in recruiting consumers to sign up for their programs by offering an emergency reserve. Programs focusing on helping consumers reach superordinate goals (such as weight loss programs) can more easily encourage consumers to sign up for their programs by offering a reserve. However, even companies that may not necessarily focus on superordinate goals can encourage consumers to choose programs with a reserve if they make a superordinate goal more salient. For example, a phone company could emphasize the costs of going over a consumers’ allocated data per month (a superordinate goal). Making the overage costs salient should highlight the importance of having a plan with a lower amount of data plus an emergency buffer amount of data compared to simply having more data (with the buffer already included).

Our results also reveal that people persist more if they have Reserve goals compared to other goal types. This increased persistence will lead to better long-term results and thus more

satisfied consumers. Further, Study 4 and 5 revealed that participants prefer Reserve goals to Easy goals and after Hard goals after experiencing a difficult task, suggesting that consumers are likely to be more satisfied with programs with emergency reserves. Therefore, emergency reserves have direct implications for marketers by being a method to both encourage consumers to sign up for a program, help them reach their long-term goals, and lead to their higher satisfaction and return.

Future Research

It is worth noting that we explored a specific type of persistence in this research. We focused on situations in which participants succeeded at their goal or could still succeed at their goal in the future (i.e., persistence before failure). Thus, this article did not explore how goal pursuit is affected if consumers fail at a subgoal and actually need to use their emergency reserves. Prior research has shown that violating a goal or subgoal can have negative consequences (Cochran & Tesser, 1996; Heath et al., 1999; Polivy, 1976; Soman & Cheema, 2004; Wilcox, Block, & Eisenstein, 2011), such as a deterioration of subsequent performance or complete abandonment of the goal. In addition to helping consumers persist to reach a more difficult goal/reference point, emergency reserves may have another distinct benefit not explored in this article: greater persistence after a subgoal or goal violation. By applying emergency reserves after a subgoal or goal violation, some negative consequences of goal and/or subgoal violation may be reduced, leading consumers with goals with emergency reserves to continue to persist even after small failures.

In this paper, we focused only on persistence in tasks with imposed extrinsic superordinate goals (e.g., perform well on the final word search test). Success vs. failure at a subgoal has been shown to have different effects depending on whether the individual focuses on a

superordinate goal or not (Fishbach, Dhar, & Zhang, 2006). Success of a sub-goal highlights commitment rather than progress when the superordinate goal is primed leading them to continue to pursue the goal (rather than shifting their attention to other goals) (Fishbach & Dhar, 2005; Fishbach et al., 2006). Further, consumers may have more motivation to resist using their emergency reserves when resisting using them helps them reach their superordinate goal (e.g., not using your 2 “emergency skip” days from the gym helps you become more fit.) Relatedly, superordinate goals that are intrinsically motivated rather than extrinsically motivated have been shown to affect people’s behavior in pursuing goals (Wang & Mukhopadhyay, 2011). Future research should explore if Reserve goals are as effective with an intrinsic superordinate goal or in the absence of a superordinate goal.

Emergency Reserves may differ in size and type, which may affect how people use them. As the reserve gets too small, it may not provide as much of a needed buffer. However, as it gets too big, people may no longer mentally encode it as a reserve and instead start incorporating it into their goal, encoding it as an Easy goal instead. Additionally, rather than being consumed all at once or not at all (as in our studies), emergency reserves can also be continuous. For example, in a dieting context, people could have a supply of 1,000 emergency calories. Unlike the all-or-nothing reserves, individuals may choose to use some of the reserve, but not all of it, at a given time. Exploring and understanding more about these intricacies of emergency reserves will help us design the most optimal emergency reserves.

Conclusion

This paper provides an innovative strategy of structuring goals in order to provide a sense of flexibility while still maintaining stringency through the addition of an emergency reserve. The emergency reserve can be applied to a variety of different goals, such as saving money in the

financial domain, studying for a test in the education domain, or trying to lose weight in the food/exercise domain. These are long-term goals that people are consistently having trouble achieving. By exploring more about the mechanisms and applications of emergency reserves, we can understand more generally about how to help consumers initially pursue their goals as well as help them be more successful at many of the long-term goals that they have been struggling to achieve.

CHAPTER TWO

Turning Failure into Progress: The Impact of Emergency Reserves After Subgoal Failure

Along the path of struggling to reach their long-term goals, the experience of an initial subgoal failure can lead consumers to feel less committed to their overall goal and even to give up entirely on reaching it. In one field study and three lab studies, we demonstrate that including a particular type of slack, termed an emergency reserve, in consumers' goals can motivate them to persist after subgoal failures, leading to better performance on long-term goals. After failing to reach a subgoal, we found that participants with emergency reserves felt a greater sense of perceived progress, causing them to feel more committed to their goal, and thus increasing their likelihood of persisting at their goals. Further, we demonstrate that increasing perceived progress on goals through emergency reserves only reduces the negative effects of a goal violation when they are applied after a subgoal failure.

Imagine on New Year's Day you made a resolution to walk at least 10,000 steps every day of the week. As unfortunately happens to many of us, one day you are swamped at work and you can't leave your desk long enough to meet your daily step goal. The next day, feeling like you have already failed your resolution, you skip another day. Eventually, the resolution is abandoned, and you return to your sedentary ways. Now imagine the same New Year's resolution but with the slight modification that you allow yourself the option to skip making your step goal one day a week if needed. Will this help you persist at your overall goal of becoming more active? In this paper, we examine how the inclusion of these explicit skipping days - what we define as an emergency reserve - influences persistence after failing a subgoal.

It is well known that most individuals set goals for themselves, such as New Year's resolutions, that they then fail to later persist at. One reason that people fail to reach their long-term goals is that they give up on pursuing their goal after an initial failure (e.g., Heath, Larrick, & Wu, 1999; Polivy, 1976; Soman & Cheema, 2004; Cochran & Tesser, 1996). After failing to complete a subgoal (e.g., making their steps goal one day), consumers may feel less committed to their higher-order end goal (e.g., walking every day) and give up on trying to pursue it (e.g., Fishbach, Dhar, Zhang, 2006; Soman & Cheema, 2004). We suggest that emergency reserves may help consumers persist after a subgoal failure by providing an illusion of goal progress in the face of a failure, thus allowing maintained commitment to the higher-order end goal. In four studies, we demonstrate that people with goals that incorporate emergency reserves are more likely to persist after a failure than those with goals without emergency reserves.

CONCEPTUAL DEVELOPMENT

Emergency Reserves

We define an emergency reserve as slack around a goal that can be used if needed but at a small cost. For example, a reserve can be 20 extra emergency dollars in a budget for entertainment, 200 extra emergency calories available in a diet for the week, or an emergency skipping day for exercise as described in the opening example. Small costs associated with these reserves might be purely psychological (mentally trying to not dip into the emergency reserve unless absolutely necessary), opportunity costs (if you use these emergency points today, you can't use them tomorrow), or future costs (if you skip your daily walk today, you might have to do an extra workout tomorrow to make up for it).

Prior research has found that consumers try to resist using their emergency reserves, leading consumers whose goals include emergency reserves to try harder to reach a difficult reference point than those with goals without emergency reserves (Sharif & Shu, 2017). For example, imagine two individuals, one with a goal of walking all seven days of the week with two emergency skip days and another with a goal of walking five days of the week. After walking five days of the week, the individual with a goal of walking all seven days of the week who also has two emergency skip days will make the effort to continue walking the next two days, trying to reach the difficult reference point of walking all seven days. However, the individual with a goal of walking five days of the week will not make as much of an effort to continue walking the next two days (as they have already reached their goal). Because the emergency skip days are held as a reserve, the first individual tries to resist using them,

ultimately leading to greater persistence in trying to reach the difficult reference point (e.g., walk all seven days).

Sharif & Shu (2017) primarily focused on investigating how motivated consumers were to reach the difficult reference point before a subgoal failure (and thus resist using their emergency reserves), such as measuring the likelihood of walking a sixth or seventh day after having already walked five days. As a result, they did not explore how subgoal failure affects overall goal pursuit, nor the consequences of consumers actually applying their emergency reserve after a failure.

The question of how individuals recover from failure is an important one since many people will encounter at least one subgoal failure during a long-term goal pursuit and will need to rely on their emergency reserves if they have them available. This paper will thus explore a distinct benefit of the emergency reserve: persistence after a subgoal failure. This benefit is of particular importance with goals that are more difficult for consumers to complete and which require repeated persistence over time.

Subgoal and Goal Violation

Prior research has demonstrated that if consumers violate their goal, they may completely give up on pursuing it (Soman & Cheema, 2004; Cochran & Tesser, 1996, etc.). For example, Soman & Cheema (2004) demonstrate that violating a goal results in a deterioration of subsequent performance. Participants who missed a deadline (and thus violated their goal) took longer to eventually submit an assignment than individuals who set no goal to begin with. Similarly, research on the “what-the-hell” effect finds that when an individual fails to inhibit an unwanted behavior, they may completely abandon their goal. For example, if dieters believe that they have violated their diet, they become disinhibited in their subsequent eating behavior

(Polivy, 1976; Spencer & Fremouw, 1979; Woody, Costanzo, Liefer, & Conger, 1981). Dieters ate more ice cream after a preload they were told was high in calories than after a preload they were told was low in calories although the preloads actually had the same amount of calories (Polivy, 1976).

Many goals that we set naturally fall into a goal hierarchy, with higher-order end goals and lower-order subgoals. For example, a goal of walking seven days of the week is an example of a higher-order end goal and the daily task of walking is an example of subgoal. Previous research has demonstrated the cognitive association between subgoals and endgoals (e.g., Fishbach, Shah, and Kruglanski 2004; Kruglanski et al. 2002; Shah and Kruglanski 2002). Importantly, people have been shown to react similarly to a subgoal violation as they do to an endgoal violation. Similar to failing an endgoal, if consumers fail to complete a subgoal (e.g., exercise), they are less likely to try to complete a related subgoal (e.g., eating healthy) when they are primed of their superordinate goal (e.g., to become more fit) (Fishbach, Dhar, and Zhang, 2006). Other research has found that task-related failure (repeated trials of the same task) leads to worse performance in subsequent tasks (e.g., Ilies and Judge 2005; Shah & Kruglanski 2002). Further, Devezzer, Sprott, Spangenberg, and Czellar (2014) demonstrated that consumers are less committed to their end-goal if they fail to reach a subgoal. When it comes to goal persistence, it is clear that small failures can quickly derail overall progress.

To counteract the effects of small failures on goal persistence, prior literature has suggested that altering people's cognitive representation of the failure (rather than the failure itself) may allow people to avoid complete abandonment of a goal. For example, individuals with high self-control spent more when they had outstanding credit card debt, perceiving the debt as a representation of failure and thus experiencing the what-the-hell effect. However, when the

available credit on the credit card was increased, then this effect was eliminated (Wilcox, Block, & Eisenstein, 2011). The increase in available credit was shown to reduce the perceived sense of failure and inhibit the “what-the-hell” effect. Building off of this literature, we propose that the emergency reserve may be able to reduce consumers’ perceptions of a subgoal failure by providing an illusion of goal progress, motivating them to persist towards the larger endgoal.

Goal Progress

If consumers perceive that they have made progress towards their goal through a subgoal completion, they may feel more committed to their overall goal, and accelerate their goal pursuit (Fishbach & Dhar, 2005; Fishbach, Dhar, and Zhang 2006). Supporting this notion, both animals and humans have been found to increase goal persistence when they feel that they have made more progress on their goal (e.g., Kivertz, Urminsky, and Zheng, 2006). Gal & McShane (2012) found that completing more discrete subgoals leads people to be more likely to complete their overall goal. The sense of progress from achieving subtasks toward a goal produces feelings of well-being and high-morale (Brunstein 1993, Cantor and Kihlstrom, 1987). As a result, Soman & Shi (2003) found that people prefer goal paths in which they are making continuous progress towards their goal rather than paths in which there is an interruption in their progress.

Since consumers are likely to fail a subgoal at least once during the pursuit of a goal over an extended time, encouraging a sense of progress at those points of failure can be important for motivating persistence. Emergency reserves may be able to allow consumers to persist after failing these subgoals by allowing them to feel continuous progress towards their goal rather than failures. This continuous progress may then allow them to feel more committed to their higher-order end goal, leading them to persist more in their long-term goals.

In Study 1, we present a field study to test the impact of emergency reserves in a real-life exercise setting, demonstrating that participants with goals that include emergency reserves persist more after a subgoal failure. In Study 2, we use a lab study to demonstrate that participants who have goals with emergency reserves are more likely to persist after a forced failure than those with goals without emergency reserves. Lastly, in Study 3 and 4, participants set their own goals with emergency reserves and without emergency reserves. We show mediation evidence that participants feel like they have made more progress to their goal when they have an emergency reserve available during a failure, leading them to feel more committed to their goal, and thus more likely to persist.

STUDY 1: TRACKING STEPS FIELD STUDY

Study 1 aimed to test the effectiveness of emergency reserves in a real-world setting, in which participants were assigned a weekly goal (the higher order end goal) of reaching a certain number of daily step goals (the subgoal) during each week. In this field study, we specifically wanted to examine not only whether participants with emergency reserves perform better, but also whether they are more likely to persist after a subgoal failure (i.e., fail to reach their step goal on any given day).

Procedure

315 students and staff ($M_{\text{age}} = 22.34$; Age Range: 18-50; 73 males) from a large university in the Southwest initially signed up to participate in this five-week long study. Participants were asked to track their steps for five weeks on a pedometer application on their smart phones. Every night they recorded their steps on a Google spreadsheet shared with us;

steps were confirmed via app screenshots. In the first week of the study, participants were asked to walk and exercise as they normally would. This baseline week allowed us to form an individual daily step goal for each participant, formulated to be 120% of his or her average steps from the baseline week.

The 273 participants who completed the baseline week were then randomly assigned to receive one of four weekly goal conditions (Hard, Easy, Reserve-Monthly, or Reserve-Weekly¹⁰). Participants' goals were to complete their step goal five days per week in the Easy condition and seven days per week in the Hard, Reserve-Weekly, and Reserve-Monthly conditions. However, participants in the Reserve-Weekly condition had two optional emergency skips each week that they could apply if they failed to reach their step goal. If they did not use them in a given week, these two weekly emergency skips did not roll over to the next week. In contrast, participants in the Reserve-Monthly condition had eight optional emergency skips available across the entire four weeks that they could apply if they failed to reach their step goal. Thus, participants in the Reserve-Monthly condition had the same number of skips as the Reserve-Weekly participants, but the participants in the Reserve-Monthly condition had more flexibility in when they could apply their emergency reserves; they could apply more than 2 emergency skips in a given week whereas those in the Reserve-Weekly condition could not.

After completing the baseline week, participants' Google spreadsheets were updated with their daily Step Goal, the number of days that constituted their Weekly goal (determined by the Hard, Easy, Reserve-Weekly, or Reserve-Monthly conditions), a Reserve tracker (for those in the Reserve conditions), and a graphical representation of their progress. If participants successfully reached their step goal on a given day, a blue bar would show on the graph representing their

¹⁰ There were no significant differences in step goals between conditions.

progress. If they did not reach their goal, nothing (no bar) would show on that day. If participants chose to apply the emergency skip on a given day, they would click on a red “Apply Emergency Skip” button and a blue bar would show for that day. Thus, using the emergency reserves made participants feel a sense of goal progress when they failed to reach their step goal, similar to the goal progress they observed when they met the daily goal.

-----See Figure 8-----

After being assigned their weekly goal, participants continued to track their steps every night for four weeks. After four weeks, participants completed a final questionnaire, which included various individual difference measures, such as measures of propensity to plan (Lynch, Netemeyer, Spiller, & Zammit, 2010), self-control (Tangeny & Baumeister, 2004), personality (Gosling, Rentfrow, & Swann, 2003), and maximizing/satisficing behavior (Turner, Rim, Betz, & Nygren, 2012). Twenty-eight participants resigned or were eliminated from the study for failing to track their steps daily on the Google spreadsheet (for more details about the method please see the Web Appendix).

Results

We performed two linear regressions predicting our dependent variables of interest for each set of analyses below; one regression included three dummy variables representing the Hard, Easy, and Reserve-Monthly condition with the Reserve-Weekly condition as the reference group and another regression included three dummy variables representing the Hard, Easy, and Reserve-Weekly condition with the Reserve-Month condition as the reference group. The Betas below represent the coefficients from these regressions.

Across the four weeks of the study, participants in the Reserve-Weekly and Reserve-Monthly condition reached their step goals up to forty percent more days on average per week

than those in the Hard and Easy conditions, 3.11_{Easy} vs. $4.00_{\text{Reserve-Weekly}}$, $\beta = -.90$, $p = .005$; 2.83_{Hard} vs. $4.00_{\text{Reserve-Weekly}}$, $\beta = -1.18$, $p < .001$; 3.11_{Easy} vs. $3.82_{\text{Reserve-Monthly}}$, $\beta = -.72$, $p = .023$; 2.83_{Hard} vs. $3.82_{\text{Reserve-Monthly}}$, $\beta = -.977$, $p = .001$ (See Figure 2). Additionally, controlling for their step goal, participants in both Reserve conditions were more likely to take more steps on average per day than those in the Easy and Hard conditions, 6661.81_{Easy} vs. $7753.87_{\text{Reserve-Weekly}}$, $\beta = -861.04$, $p = .019$; 6678.31_{Hard} vs. $7753.87_{\text{Reserve-Weekly}}$, $\beta = -1041.64$, $p = .004$; 6661.81_{Easy} vs. $7981.27_{\text{Reserve-Monthly}}$, $\beta = -625.11$, $p = .088$; 6678.31_{Hard} vs. $7981.27_{\text{Reserve-Monthly}}$, $\beta = -805.71$, $p = .025$. Therefore, participants with emergency reserves, regardless of whether they can use their reserves weekly or monthly, perform better than those without emergency reserves.

Next, we looked in the data to see if there was evidence that participants with Reserve goals try to reach a more difficult reference point (and resist using their emergency reserve) more than those with goals without emergency reserves, replicating Sharif & Shu (2017) in a personally consequential domain. In this study, the difficult reference point was for participants to reach their step goal every day, seven days of the week. We thus examined the number of weeks (out of four) that participants were able to reach their step goal seven days of the week across conditions. Participants in the Reserve-Weekly and Reserve-Monthly conditions reached this difficult reference point of achieving their step goal seven days of the week significantly more weeks than those with an Easy goal; $.10$ weeks $_{\text{Easy}}$ vs. $.40$ weeks $_{\text{Reserve-Weekly}}$, $\beta = -.30$, $p = .036$; $.10$ weeks $_{\text{Easy}}$ vs. $.49$ weeks $_{\text{Reserve-Monthly}}$, $\beta = -.39$, $p = .006$. Participants in the Reserve-Monthly condition were marginally significantly more likely to reach this difficult reference point more weeks than those in the Hard condition, but those in the Reserve-Weekly condition were not significantly more likely to reach this difficult reference point more weeks than those in the Hard conditions; $.23$ weeks $_{\text{Hard}}$ vs. $.40$ weeks $_{\text{Reserve-Weekly}}$, $\beta = -.17$, $p = .23$; $.23$ weeks $_{\text{Hard}}$ vs.

.49 weeks Reserve-Monthly , $\beta = -.26$, $p = .061$. These results replicate the finding from Sharif & Shu (2017) in a real-world domain that participants with Reserve goals try harder to reach the difficult reference point (and resist using their emergency reserves) than those with Easy goals and sometimes more than those with Hard goals¹¹. As indicated by the very low average number of weeks that participants completed their step goal all seven days of the week, this difficult reference point was very difficult for participants to reach. Due to this, this study also allowed us to easily test the benefit of interest, persistence after a subgoal failure (as most individuals failed to reach their step goal/subgoal at least one day).

We next looked in the data to see if there was some evidence to support our primary hypothesis that participants with Reserve goals were more likely to persist after failing to reach their step goal (i.e. the subgoal). We expected that participants with reserves would be more likely to persist after failing their step goal on any given day than those with Hard goals and Easy goals, as the emergency reserve would reduce the perception of subgoal failure. We predicted that participants with goals with emergency reserves would be especially more likely to persist than those with a Hard goal, as they would not experience the same negative effects of overall weekly goal violation in addition to daily subgoal violation. If participants fail to reach their step goal just one day in the Hard goal condition, they have not only failed to reach a subgoal, but they have violated their higher-order end goal (i.e., reach their step goal seven days of the week). However, participants in the Reserve conditions, so long as they have emergency skips available, have not failed to reach their higher-order end goal. Participants in the Easy condition who fail at a daily subgoal have also not failed at their end goal unless they have already missed two days earlier in that week.

¹¹ We expect an even greater impact of the emergency reserve in situations when the difficult reference point is slightly more attainable (due to a potential floor effect in our data).

We examined the likelihood that an individual succeeded at reaching their step goal after failing to reach their step goal the previous day. We first examined instances in which participants in the Reserve conditions failed to reach their step goal the previous day and applied their emergency skip. After failing on a given day and applying their emergency skip, participants with reserves were significantly more likely to reach their step goal the next day than participants with Hard goals and Easy goals; $.37_{\text{Hard}}$ vs. $.55_{\text{Reserve-Weekly}}$, $\beta = -.17$, $p = .001$; $.37_{\text{Hard}}$ vs. $.54_{\text{Reserve-Monthly}}$, $\beta = -.16$, $p = .002$; $.44_{\text{Easy}}$ vs. $.55_{\text{Reserve-Weekly}}$, $\beta = -.11$, $p = .041$; $.44_{\text{Easy}}$ vs. $.54_{\text{Reserve-Monthly}}$, $\beta = -.095$, $p = .072$.

-----See Figure 9-----

Next, we examined instances in which participants in the Reserve conditions failed to reach their step goal and did not apply their emergency skip. For example, we examined instances in which participants in the Reserve-Weekly condition had already used two emergency skips and then failed to reach their step goal on a third day¹². After failing to reach their step goal on this third day, are these participants more or less likely to persist than those with goals without emergency reserves? After failing to reach their step goal and not applying their emergency skip, participants with reserves persisted about the same amount as those in the other conditions; $.37_{\text{Hard}}$ vs. $.45_{\text{Reserve-Weekly}}$, $\beta = -.07$, $p = \text{n.s.}$; $.37_{\text{Hard}}$ vs. $.39_{\text{Reserve-Monthly}}$, $\beta = -.02$, $p = \text{n.s.}$; $.44_{\text{Easy}}$ vs. $.45_{\text{Reserve-Weekly}}$, $\beta = -.01$, $p = \text{n.s.}$; $.44_{\text{Easy}}$ vs. $.39_{\text{Reserve-Monthly}}$, $\beta = .04$, $p = \text{n.s.}$ These results suggest that there is no backlash if participants with Reserve-Weekly and Reserve-Monthly goals fail even after using all of their emergency skips.

Lastly, we examined how likely participants in the Reserve conditions were to persist after a failure overall, independent of whether or not they applied their emergency reserve.

¹² This analysis also includes participants who could apply their emergency reserve but chose not to on that given day.

Participants with Reserve-Week goals were significantly more likely reach their step goal the next day after failing to reach their step goal the previous day (independent of applying their emergency reserve or not) than those with a Hard and Easy goal; participants with Reserve-Month goals were significantly more likely to persist after a failure, overall, than those with Hard goals but not Easy goals; $.37_{\text{Hard}} \text{ vs. } .55_{\text{Reserve-Weekly}}, \beta = -.18, p < .001$; $.37_{\text{Hard}} \text{ vs. } .48_{\text{Reserve-Monthly}}, \beta = -.10, p = .03$; $.44_{\text{Easy}} \text{ vs. } .55_{\text{Reserve-Weekly}}, \beta = -.11, p = .02$; $.44_{\text{Easy}} \text{ vs. } .39_{\text{Reserve-Monthly}}, \beta = -.04, p = \text{n.s}$

-----See Figure 10-----

In sum, these results suggest that emergency reserves help participants persist in the face of a failure. When participants fail and apply their emergency reserve, they are more likely to persist the next day than those individuals with either Easy goals or Hard goals; if they fail and do not apply their emergency reserve, they perform about the same as those with Hard and Easy goals. This leads to an overall positive persistence benefit at accomplishing the larger end goal, as evidenced in the number of steps completed by each group.

Discussion

Study 1 demonstrated that consumers with goals with emergency reserves perform better than those with goals without emergency reserves for two reasons. First, they try to resist using their emergency reserves, which leads them to try to reach the difficult reference point, replicating the finding from Sharif & Shu (2017). Secondly, and central to this paper, they are more likely to persist after a subgoal violation.

Prior research on the goal-gradient hypothesis has demonstrated that people are more motivated when they feel that they have made more progress towards their goal. In Kivetz, Urminsky, and Zheng (2006), even the illusion of goal progress motivated consumers. For

example, consumers who received a 12-stamp coffee card with two pre-existing bonus stamps were more motivated to buy coffee than those with a regular 10-stamp coffee card. Thus, a potentially alternate explanation for our finding is that participants with Reserve goals feel like they have simply made more progress on their goal by the time of a subgoal failure than those with goals without emergency reserves, leading them to persist more after a failure. When participants fail to reach a subgoal, their emergency skip allows them to still receive credit for that day (if it is within the two skip limit). For example, in our field study, a participant who has completed their step goal only two days would feel like they have completed the task three days if they applied their emergency skip in the emergency reserve condition, whereas those in the Hard and Easy condition would feel like they have completed the task only two days (See Figure 1). Note, however, that this alternate explanation implies that the *timing* of the reserve or a bonus point is not an important part of the process - in other words, the reserve should not need to be applied after a subgoal failure in order to produce the observed effect. Just as the bonus coffee stamps were helpful before any coffee buying started, offering reserves at the very beginning of the week could have a similar effect.

We argue, however, that the timing of the reserve is an important component of the process, precisely because it offsets a failure rather than simply representing a step forward toward the goal. In other words, we hypothesize that emergency reserves need to be applied after a subgoal failure in order to lead people to persist more. Otherwise, the direct experience of the subgoal failure will lead people to feel less committed to their goal and thus be less likely to persist. In Study 2, we examined if we could replicate the central finding that people with goals with emergency reserves persist more after a subgoal failure than those with goals without

emergency reserves in a completely different domain and also test this alternate explanation by varying the timing of receiving a “bonus” or “emergency” point.

STUDY 2: WORD SEARCH FAILURE STUDY

Procedure

402 participants ($M_{\text{age}} = 34.91$; Age Range: 18-72; 149 males) completed this survey from Amazon Mechanical Turk. The experiment began by explaining to participants that they would be completing training for a hard word search test that would take place at the end of the study. If they performed well on this final word search test, they could be eligible for a potential survey in the future. In order to train for the word search test, they would be asked to complete a series of training word searches. They were told that the more word searches they practiced, the more likely it is they would do better on the hard word search test. Participants did not have to successfully complete their training goal in order to try the final word search test.

Participants were then randomly assigned to one of four training goal conditions - Easy, Hard, Reserve, or Hard-Bonus - in which the goal for how many word searches they should complete (out of three) was manipulated. They were told they would receive one point for every training word search that they beat. In the Easy condition, participants' goal was to score two points. In the Hard, Hard-Bonus, and Reserve condition, participants' goal was to score three points. However, participants in the Reserve condition were also told: “Throughout these games, you will have one optional “emergency” point available. If you fail to complete one word search, you can apply this emergency point and receive a point for that failed word search game.” Participants in the Hard-Bonus condition were told, “You will start off this game with one free bonus point.” Thus, participants in the Reserve condition would only receive their emergency

point after failing a game whereas those in the Hard-Bonus condition would receive their bonus point before even starting any of the games.

All participants then completed the very easy first word search. Participants were asked to find four words in three minutes; all participants were informed that they beat it. The second word search was very difficult, and most participants were unable to beat it. They were asked to find 10 words in 2 ½ minutes. After failing the second word search, participants in the Reserve condition were asked if they wanted to apply their emergency point. Thus, at this point in the survey, participants with Reserve goals and Hard-Bonus goals have two points; however, participants with Hard-Bonus goals received one bonus point at the very beginning of the survey and one point from the first game, while participants in the Reserve condition received one point from the first game and one emergency point from their reserve after failing the second game.

After failing the second game, all participants read a description of the third word search game, in which there would be unlimited time to find 10 words. Participants were then asked to choose one of three options: (1) Try the third word search game and the word search test, (2) Skip the word search game and move on to the word search test, or (3) Skip both the word search game and the word search test. Based on their choice, participants were directed to either the third word search game, the final word search test, or the remaining questions of the survey. After every word search throughout the survey, participants saw a graphical representation of their goal and their progress.

Results

Thirty-eight participants succeeded at beating the second difficult word search game and were removed from the analyses. Eight participants chose to not apply their emergency reserve and were also removed from the analyses. This leaves 356 participants for our analysis of

persistence after failing the second word search. We conducted two logistic regressions predicting two different dependent variables of interest with three dummy variables representing the Hard, Easy, and Hard-Bonus conditions, with the Reserve condition as the reference group.

In the first logistic regression, the dependent variable was whether or not participants tried the third word search game, indicating whether or not participants still tried to reach their higher-order end goal. We found that participants with Reserve goals were significantly more likely to try the third word search game than those in the Easy condition (85%_{Reserve} vs. 63.3%_{Easy}; $\beta = -1.19$, $\chi^2(1) = 9.68$, $p = .002$), the Hard condition (85%_{Reserve} vs. 55.9%_{Hard}; $\beta = -1.50$, $\chi^2(1) = 15.82$, $p < .001$), and the Hard-Bonus condition (85%_{Reserve} vs. 67.7%_{Hard-Bonus}; $\beta = -.99$, $\chi^2(1) = 6.70$, $p = .01$).

-----See Figure 11-----

In the second logistic regression, the dependent variable was whether or not participants gave up on not only the primary goal of trying the third word search but also the word search test. We found that participants with Reserve goals were significantly less likely to give up than those in the Easy condition (3.8%_{Reserve} vs. 63.3%_{Easy}; $\beta = 1.86$, $\chi^2(1) = 8.31$, $p = .004$), the Hard condition (3.8%_{Reserve} vs. 25.8%_{Hard}; $\beta = 2.19$, $\chi^2(1) = 11.91$, $p = .001$), and the Hard-Bonus condition (3.8%_{Reserve} vs. 17.2%_{Hard-Bonus}; $\beta = 1.67$, $\chi^2(1) = 6.64$, $p = .01$)

Discussion

Study 2 replicated the finding from Study 1 that participants with goals that include emergency reserves are more likely to persist after failing a subgoal than those with goals that do not include emergency reserves. Additionally, this study demonstrates that the timing of applying the emergency reserve is an important part of the process. Participants with Reserve goals and Hard-Bonus goals both had the same amount of progress by the end of the second word search,

yet participants with goals with emergency reserves were more likely to persist after failing. Therefore, the benefits of emergency reserves appear to stem from replacing a sense of subgoal failure with progress at the time the failure happens.

In the past two studies, the higher-order end goals were externally imposed. In the next two studies, we examined if we could replicate these findings with self-set goals rather than externally imposed goals. Secondly, we determined if there is mediation evidence to show that participants with goals with emergency reserves feel like they have made more progress on their goal after the failed word search game, which leads them to feel more committed to their goal, and thus be more likely to persist.

STUDY 3: SELF-SET GOAL WORD SEARCH STUDY-TIMING OF RESERVE

Procedure

452 participants ($M_{\text{age}} = 35.75$; Age Range: 18-74; 183 males) completed this survey on Amazon Mechanical Turk. Participants were assigned randomly to one of three conditions: the Reserve condition, the No-Reserve condition, or the No-Reserve-Bonus Condition. In all conditions, participants were informed that there were five word search games total. All participants were told, “Previous participants have found that setting a goal for the number of word search games they want to beat has helped them perform better. **We recommend you set a challenging goal (such as beating all 5 word searches).** There is no consequence for failing to reach your goal.” They were then asked, “What is your goal? How many word searches do you want to beat out of 5?”

After setting their goal, on the next screen, set up without the ability to go back and change their goal, participants in the No-Reserve-Bonus condition were informed, “You will

start off the game with one bonus point.” Participants in the Reserve condition were **instead** told on the next screen (also lacking the ability to go back and change their goal), “Previous participants have also included 1 optional "emergency" point in their goals. This emergency point is available just in case you need it to help you reach your goal. If you fail to complete 1 word search, you can use this "emergency" point and receive a point for that failed word search.” They were asked, “Do you want to add 1 emergency point to your goal?” Participants in the No-Reserve condition were not given any information about bonus or emergency points and simply proceeded to the main task.

All participants completed a practice training game. They then began the five word search games. The first two games were very easy (i.e., find four words in two minutes; find two words in two minutes). After each word search, they were informed how many points they had achieved at that point in the survey and were reminded of their goal. The third word search game was very difficult (find 10 words in 2 ½ minutes). Most participants were unable to beat this game. After failing to beat the third game, participants in the Reserve condition were asked if they wanted to apply their emergency point. Participants in all three conditions were then asked about their feelings of how this word search contributed to their feelings of progress toward this goal (“My performance on this word search suggests that I am getting further away from my goal”; “My performance on this word search will really decrease the chance of me reaching my goal.”) and commitment towards their goal (“My performance on this word search suggests that I am not committed to my goal.”; “My performance on this word search suggests that I must not care about my goal.”). These measures of progress and commitment were adapted from Fishbach, Dhar, & Zhang (2006). Afterwards, they completed the PANAS (Watson, Clark, and Tellegen, 1988).

All participants were then told a description of the fourth word search game (find 8 words with unlimited time). They were asked if they wanted to try the fourth word search game or if they wanted to skip the fourth word search game and move on to the remaining questions of the survey. If they chose to try the fourth word search game, they were directed to the fourth word search game. After the fourth word search game, they were told that they would have unlimited time to find 10 words in the fifth word search game, and asked if they want to try the fifth word search game or skip the fifth word search game and move on to the remaining questions of the survey. At the end of the survey, participants answered questions about their feelings of self-efficacy ($\alpha = .84$).

Results

38 participants beat the third word search game and were excluded from further analyses. 20 participants chose to not have an emergency reserve added to their goal and were excluded from further analyses. 13 participants chose to not apply their reserve after failing the third word search game and were also excluded from further analyses. This leaves 381 participants for our analysis of how emergency reserves affect persistence after failing the third word search.

Effect of Goal Setting. Overall, 55.4% of participants chose a goal to score 5 points, 19.7% chose a goal to score 4 points, 18.4% chose a goal to score 3 points, 4.7% chose a goal to score 2 points, and 1.8% chose a goal to score 1 point.

In the first analysis, we conducted a logistic regression predicting willingness to try the fourth word search game (i.e., the next game after failing the difficult, third word search game) with two dummy variables representing the No-Reserve condition and the No-Reserve Bonus condition (with the Reserve condition as the reference group), participants' self-set goals, and the two interactions between the dummy variables and participants' self-set goals.

We found a significant 2 (Reserve vs. No-Reserve) x Continuous (Self-Set Goal) interaction ($\beta = -.68, \chi^2(1) = 4.07, p = .044$) and a marginally significant 2 (Reserve vs. No-Reserve-Bonus) x Continuous (Self-Set Goal) interaction ($\beta = -.60, \chi^2(1) = 3.25, p = .071$) predicting willingness to try the fourth word search game. Thus, participants' self-set goal determined whether participants with emergency reserves were more willing to try the 4th word search game. More specifically, a floodlight analysis determined that participants who set a goal to score between 4-5 points were more likely to try the 4th word search game if they were in the Reserve Goal condition than in the No-Reserve condition (Johnson Neyman Point = 4.27) and participants who set a goal to score between 4-5 points were more likely to try the 4th word search game in the Reserve condition than those in the No-Reserve-Bonus condition (Johnson Neyman Point=4.72).

Participants in the Reserve condition had a total of three points when they were asked if they want to try the fourth game; they scored two points on the first two games and earned an additional point with their emergency point after failing the third game. Therefore, if participants with Reserve goals initially set their goals to score *below* four points, they had already reached their goal when they were asked about their willingness to try the fourth word search game and thus had little motivation to try the fourth word search and surpass their goal (consistent with goals as reference points: Heath, Ledger, and Wu, 1999). The interaction effects thus suggests that participants with Reserve goals only persist more after failing if they have not yet reached their goal, providing confirming evidence that participants' choices are guided by their self-set goals and that participants with emergency reserves only persist more after a subgoal failure that impacts their likelihood of reaching their end-goal.

-----See Figure 12-----

Process Evidence. Only individuals who had not yet succeeded at their goal after failing the third word search were included in the below analyses. 69 participants had already succeeded at their goal and were excluded, leaving a total of 312 participants for the following analyses.

We predicted our measure of progress ($\alpha = .78$) from two dummy variables representing the No-Reserve and No-Reserve Bonus condition with the Reserve condition as the reference groups. Participants in the Reserve condition felt like they had made significantly more progress on their goal after failing the third word search and applying their emergency reserve than those in the No-Reserve condition ($\beta = .89, p < .001$) and in the No-Reserve-Bonus condition ($\beta = .65, p = .004$). There were no significant differences between conditions for negative emotion, positive emotion, or self-efficacy.

After finding that emergency reserves increased perceived progress, we examined how perceived progress influences commitment. We found that as participants felt more progress to their goal they felt more committed ($\alpha = .81$) to their goal ($\beta = .89, p < .001$) Next, we examined how commitment influences persistence. We found that as participants felt more committed to their goal, they were more likely to try the fourth word search ($\beta = -.32, \chi^2(1) = 9.61, p = .002$)

Lastly, we conducted a serial mediation analysis. We found a significant serial mediation for both the No-Reserve and the No Reserve-Bonus compared to the Reserve condition, such that the reserve leads participants to feel a greater sense of perceived progress after failing the third word search, leading them to feel more committed to their goal, and thus more likely to persist: No-Reserve vs. Reserve (Reserve \rightarrow more progress \rightarrow greater commitment \rightarrow more persistence) ($a_1 \times d_{21} \times b_2 = -.03$), with a 95% confidence interval excluding zero (-.09 to -.004); No-Reserve-Bonus vs. Reserve (Reserve \rightarrow more progress \rightarrow greater commitment \rightarrow more persistence) ($a_1 \times d_{21} \times b_2 = -.02$), with a 95% confidence interval excluding zero (-.07 to -.003).

Discussion

This study replicated our finding that people with goals that include emergency reserves persist more after a subgoal failure than those with goals that do not include emergency reserves. Further, it demonstrated that this finding holds when participants set their own goals, rather than the goals being externally imposed as in our earlier studies. Lastly, and importantly, this study demonstrates evidence of the proposed process that emergency reserves applied *after a failure* induce consumers to feel that they are making progress towards their goal, leading them to feel more committed and thus more likely to persist.

In the next study, we aim to replicate this finding and the mediation evidence. Further, we explore if it is necessary for consumers to know about the emergency reserve before pursuing their goal. If consumers persist more with emergency reserves due to the increased progress they feel after failing at a subgoal and applying their emergency reserve, then they may not need to know about the emergency reserve ahead of time. An unexpected emergency reserve may still help consumers persist after a subgoal failure.

STUDY 4: SELF-SET GOAL WORD SEARCH STUDY-EXPECTED VS. UNEXPECTED RESERVE

Procedure

300 participants ($M_{\text{age}} = 37.75$; Age Range: 19-87; 112 males) completed this survey on Amazon Mechanical Turk. This study was identical to Study 3 except that the No-Reserve-Bonus condition was replaced with an Unexpected Reserve condition. Participants in the Unexpected Reserve condition were not told about their available emergency reserve until after failing the third word search game. After failing to beat the third game, participants in the

Unexpected Reserve condition were told, “For your first loss, you are granted one ‘emergency’ point. If you apply this emergency point, you will receive one point for this word search that you failed to complete. Do you want to apply your emergency point?”

Results

12 participants chose to not have an emergency reserve added to their goal and were excluded from further analyses. 18 participants chose to not apply their reserve after failing the third word search game and were also excluded from further analyses. Of these participants, 19 participants beat the third word search game and were excluded from further analyses. This leaves 251 participants for our analyses of how emergency reserves affect persistence after failing the third word search.

The Effect of Goal Setting. Overall, 58.4% of participants chose a goal to score 5 points, 19.1% chose a goal to score 4 points, 17.2% chose a goal to score 3 point, 3.8% chose a goal to score 2 points, and 1.5% chose a goal to score 1 point.

In the first analysis, we conducted a logistic regression predicting willingness to try the 4th word search game from 2 dummy variables representing the Expected Reserve condition and the Unexpected Reserve condition with the No-Reserve group as the reference group, participant’s self-set goal, and the two interactions between each dummy variable and the participant’s self-set goal.

We replicated the 2 (Expected Reserve vs. No Reserve) x Continuous (Self-Set Goal) interacting predicting willingness to try the 4th word search game ($\beta = 1.11, \chi^2(1) = 7.27, p = .007$). From a floodlight analysis, we determined that participants who set goals to score around 4 to 5 points points (Johnson Neyman Point =4.24) were significantly more likely to try the fourth word search if they had an Expected Reserve goal than a No-Reserve goal.

Additionally, we found a significant 2 (Unexpected Reserve vs. No-Reserve) x Continuous (Self-Set Goal) interaction predicting willingness to try the 4th word search game ($\beta = .89, \chi^2(1) = 6.18, p = .013$). From a floodlight analysis, we determined that participants who set goals to score around 4 to 5 points (Johnson Neyman Point = 4.69) were significantly more likely to try the fourth word search if they had an Unexpected Reserve goal than a No-Reserve goal. Like Study 3, we also found no significant differences between conditions for negative emotion, positive emotion, or self-efficacy.

-----See Figure 13-----

Process Evidence. We only selected individuals who had not yet succeeded at their goal after failing the 3rd word search. 55 participants had already succeeded at their goal and were excluded; thus 251 participants were used in the analyses below.

We replicated the same mediation analysis for both the Expected Reserve and Unexpected Reserve conditions compared to the No Reserve condition, demonstrating again that emergency reserves lead people to feel a greater sense of progress after failing a subgoal, leading them to feel more committed to their end-goal, and thus increasing their likelihood of persisting: (Expected Reserve vs. No-Reserve \rightarrow more progress \rightarrow greater commitment \rightarrow more persistence) ($a_1 \times d_{21} \times b_2 = .12$), with a 95% confidence interval excluding zero (.026 to .27); (Unexpected Reserve vs. No-Reserve \rightarrow more progress \rightarrow greater commitment \rightarrow more persistence) ($a_1 \times d_{21} \times b_2 = .09$), with a 95% confidence interval excluding zero (.02 to .23).

Discussion

Study 4 replicated the finding that consumers with goals with emergency reserves persist more after a failure than those with goals without emergency reserves and also replicated the mediation evidence. Further, this study demonstrates that emergency reserves work equally

effectively whether they are expected or not announced until after a failure has already occurred. Thus, while the timing of *applying* the emergency reserve after a failure is crucial, the timing of being informed of the emergency reserve does not affect the impact of the emergency reserve.

GENERAL DISCUSSION

This paper reveals that emergency reserves can help consumers persist after a subgoal failure by increasing the sense of perceived progress toward, and thus commitment to, the larger end goal. In Study 1, we demonstrated in a real-world setting that consumers with exercise goals including emergency reserves perform better than those with goals without emergency reserves. Importantly, consumers with goals with emergency reserves were more likely to persist after failing to reach their daily step goal (subgoal) on any given day compared to those whose goals did not have emergency reserves. In Study 2, we replicated this effect of better persistence after failing a subgoal in a different domain. Further, we demonstrated that the timing of applying the emergency reserve is an important component of the process, finding that increasing perceived progress through emergency reserves only *after* a failure occurs leads to greater persistence. In Study 3 and Study 4, we demonstrated that participants who have emergency reserves persist more after a subgoal failure even when the goals are self-set rather than externally imposed. Lastly, we provided mediation evidence that applying emergency reserves (whether expected or not) increases the perceived sense of progress after a subgoal failure, leading participants to feel more committed to their goal, and thus increasing their likelihood of persisting.

This paper contributes to the existing research on emergency reserves by demonstrating there are two benefits of emergency reserves. As demonstrated in Sharif & Shu (2017),

consumers try to resist using their emergency reserves, leading them to try to reach a difficult reference point. Secondly, as demonstrated in his paper, if they do need to use their emergency reserves, they will also be more likely to persist after a failure. Both of these benefits may contribute to why participants with emergency reserves perform better on their goals, both before and after subgoal failure. Future research should disentangle if both benefits are at play for a given individual or if different benefits are at play for separate segments of consumers. For example, consumers who find their goal too difficult (and thus are more likely to experience a subgoal failure) might be more likely to persist after a failure with emergency reserves; thus they persist more due to the benefit described in this paper. However, for those who find the goal easier and are thus less likely to fail with emergency reserves, the resistance to use the emergency reserve might help motivate them more; thus they benefit more from the benefit described in Sharif & Shu (2017). Additionally, both of these benefits might be at play for another group of consumers.

While prior research has documented many negative effects of setting too flexible goals and plans (Ainslie, 2001; Cheema & Soman, 2006; Shin & Milkman, 2016), this research contributes to some of the recent research demonstrating the possible benefits of flexible goals. For example, high-low goals (e.g., score 2-4 points) have been found to lead consumers to be more likely to pursue their goal again (Scott & Nowlis, 2013). Recent research has also demonstrated that students who make more concrete plans are more likely to fail to follow through with their plan than those with more broad plans (Yeomans & Reich, 2010). Thus, while strict plans and goals might be helpful in the short-term, this growing body of research suggests that allowing flexibility in goals for failure may help consumers persist in longer-term goals, where failure is more likely.

This research also contributes to the literature on goal violation by demonstrating that framing a goal with an emergency reserve can reverse the negative effects of goal violation. Further this work contributes to the literature on the goal-gradient hypothesis by revealing that even “perceived” progress rather than “real” progress can lead consumers to be more committed to their goal, and thus be more likely to persist after a failure. Crucially, it demonstrates that the timing of this “perceived progress” can dramatically influence people’s persistence after a subgoal failure and thus performance in the long-term. The emergency reserve is one way in which a failure can be translated into an illusion of progress; future research can explore what would constitute an “emergency reserve” or an illusion of progress in other domains and develop other methods in which the psychological impact of failure can be reduced.

This paper examined how emergency reserves with only psychological costs (by terming it an “emergency”) affect persistence after a subgoal failure. However, the type of cost of the emergency reserve may moderate the effect. For example, if the emergency reserve had a future cost (e.g., if you skip going to the gym today, you have to do 50 extra sit-ups tomorrow), consumers may feel more demotivated to persist after a failure (as they will have to do additional work the next day). Future research should explore how different types of costs of the reserve affect people’s persistence after a failure.

Consumers are constantly struggling to reach long-term goals. Despite the desire to save money for the future, roughly a quarter of all income levels have more credit card debt than savings (Steiner, 2013). Across the nation, people are struggling not only with this goal to save money, but also with their goal to lose weight. About twenty percent of adults are on a diet and almost sixty percent of adults want to lose at least twenty pounds (Hellmich, 2013), but as many as 95% of people who succeed in losing weight gain most or even more of it back (Brody, 1991).

Throughout long-term goal pursuit, consumers are bound to experience at least one failure. This research demonstrates framing a goal with an emergency reserve can inhibit the negative consequences of goal and subgoal violation, helping consumers reach these long-term goals they have been struggling to achieve.

FIGURES

Figure 1: Preference for the Reserve vs. Hard and Easy Goals in a Weight Loss Program in Chapter 1, Study 1

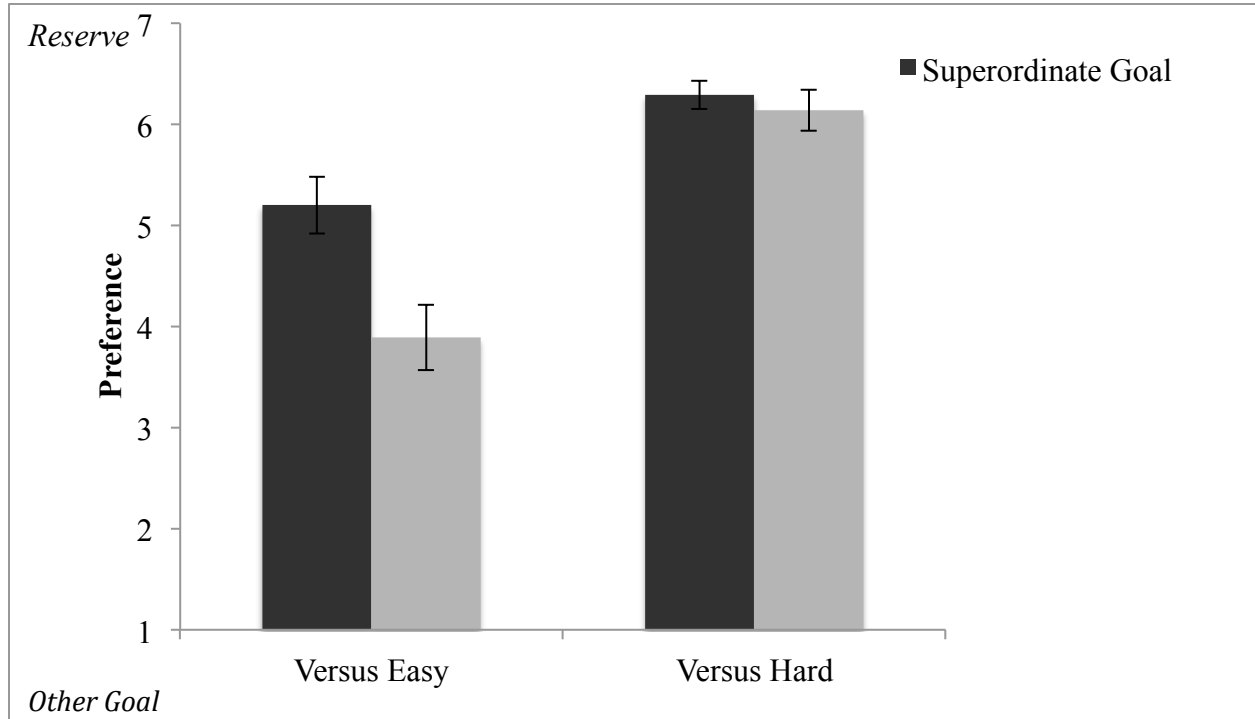


Figure 2: Preference, Perceived Attainability, and Perceived Value of the Reserve vs. Hard, Easy, and other Flexible Goals in Chapter 1, Study 3

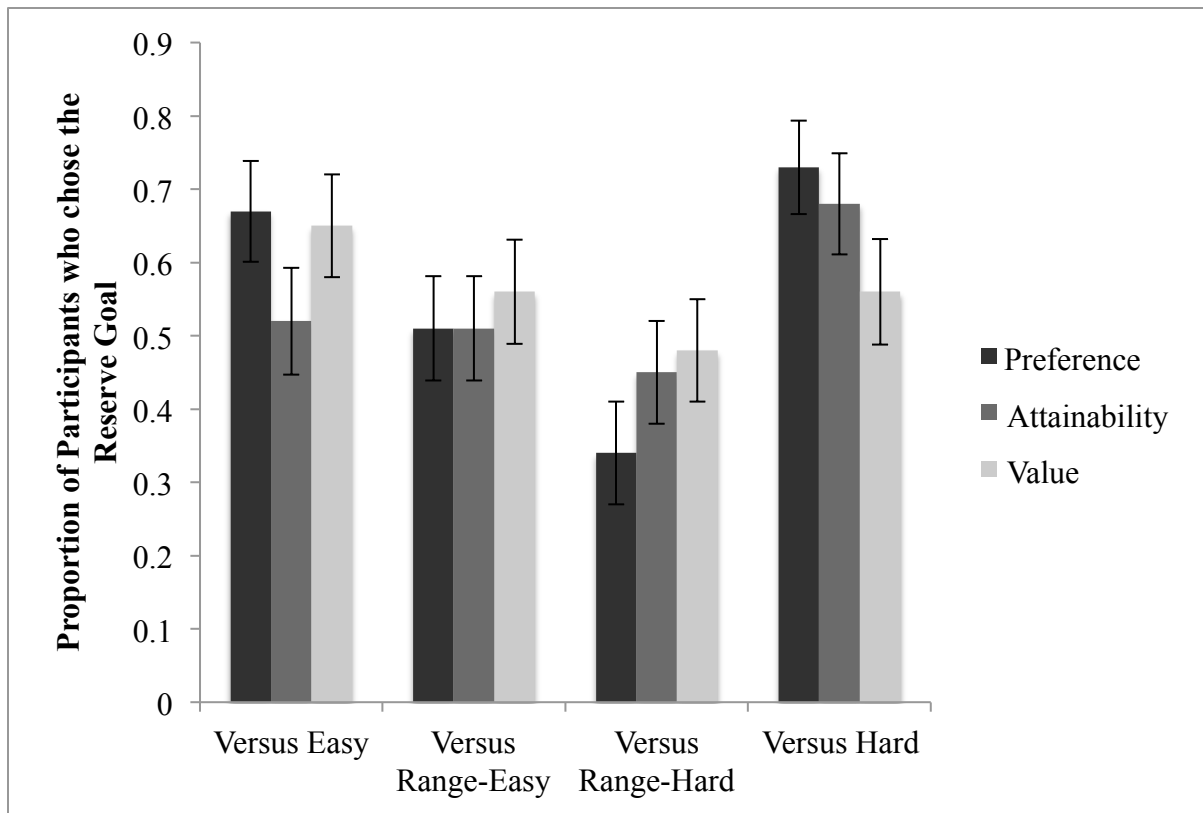


Figure 3: Histogram of Proportion of Participants who Reach 5-Day Goal, Split by Goal condition in Chapter 1, Study 4

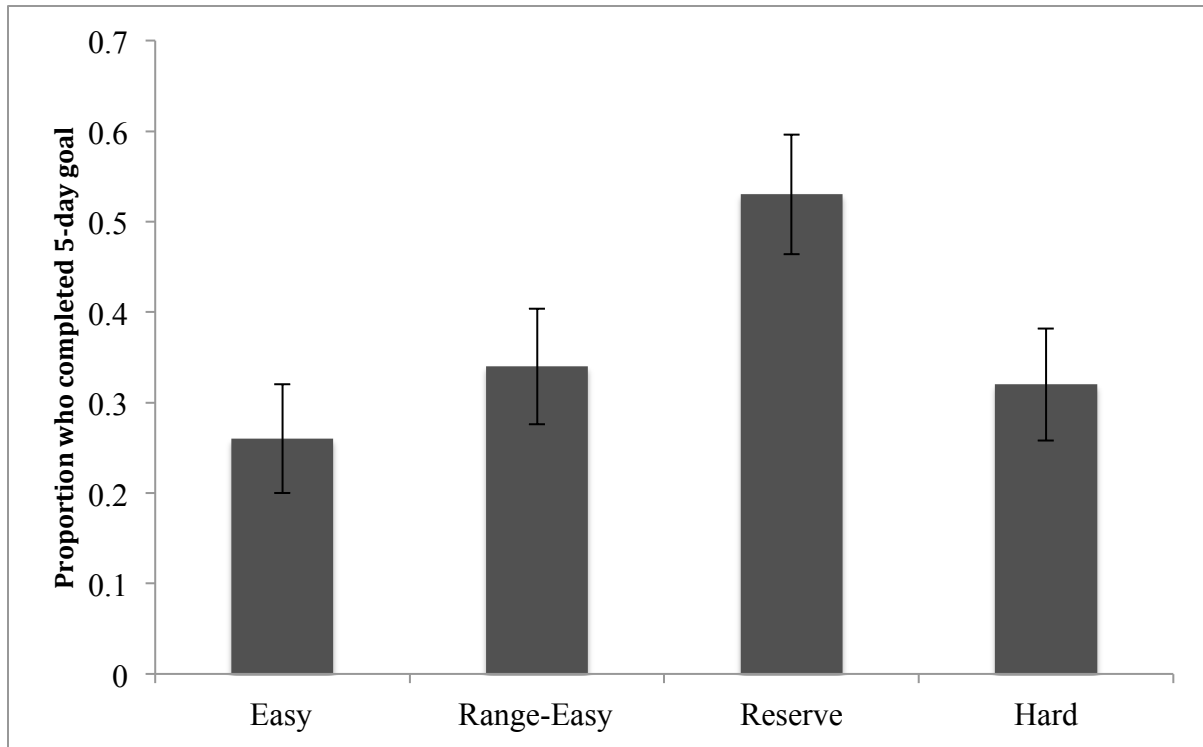


Figure 4: Image of Bonus Reserve vs. Emergency Reserve in Chapter 1, Study 5

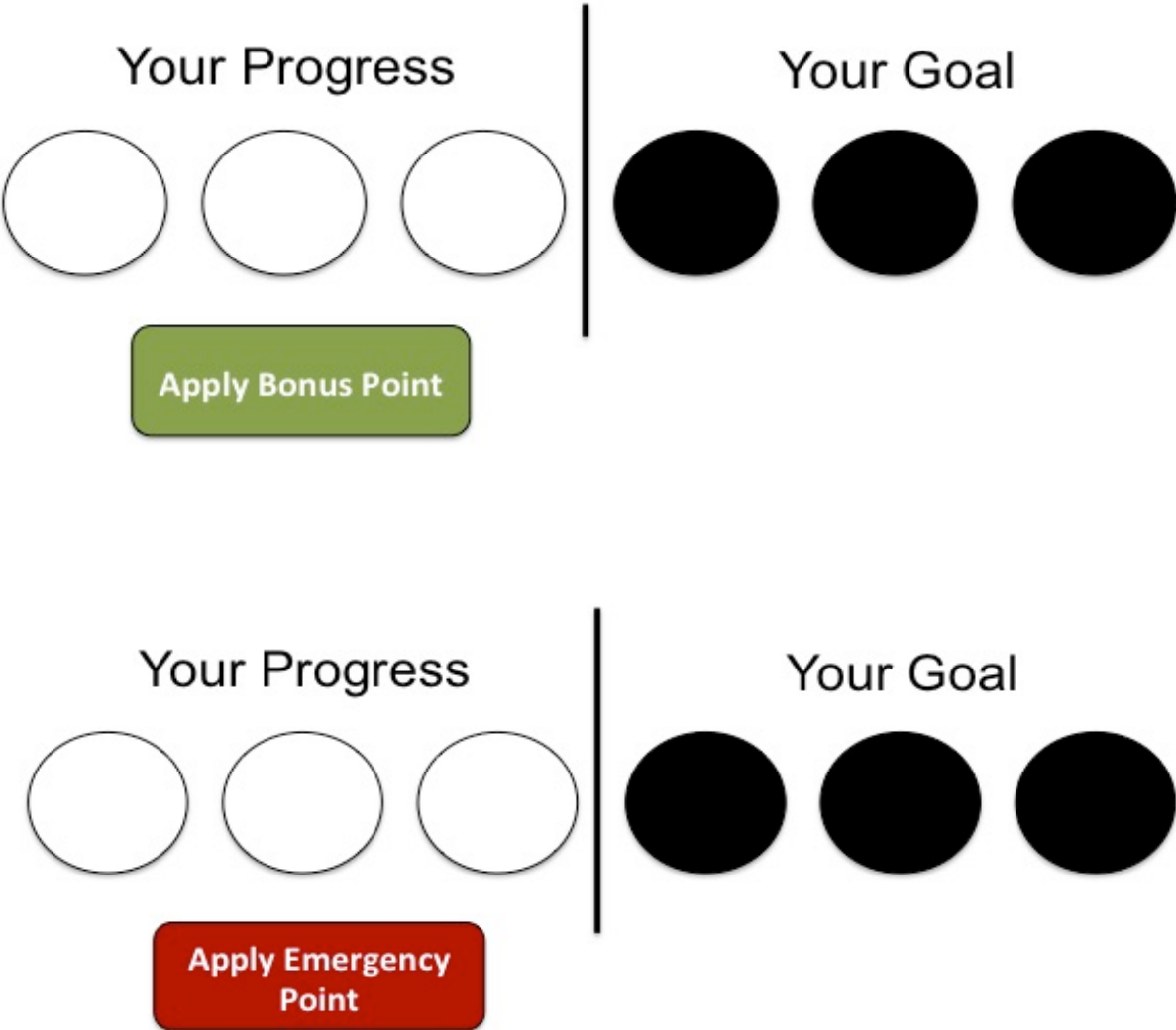


Figure 5: Image of Difficult Spot-the-Difference Game in Chapter 1, Study 5

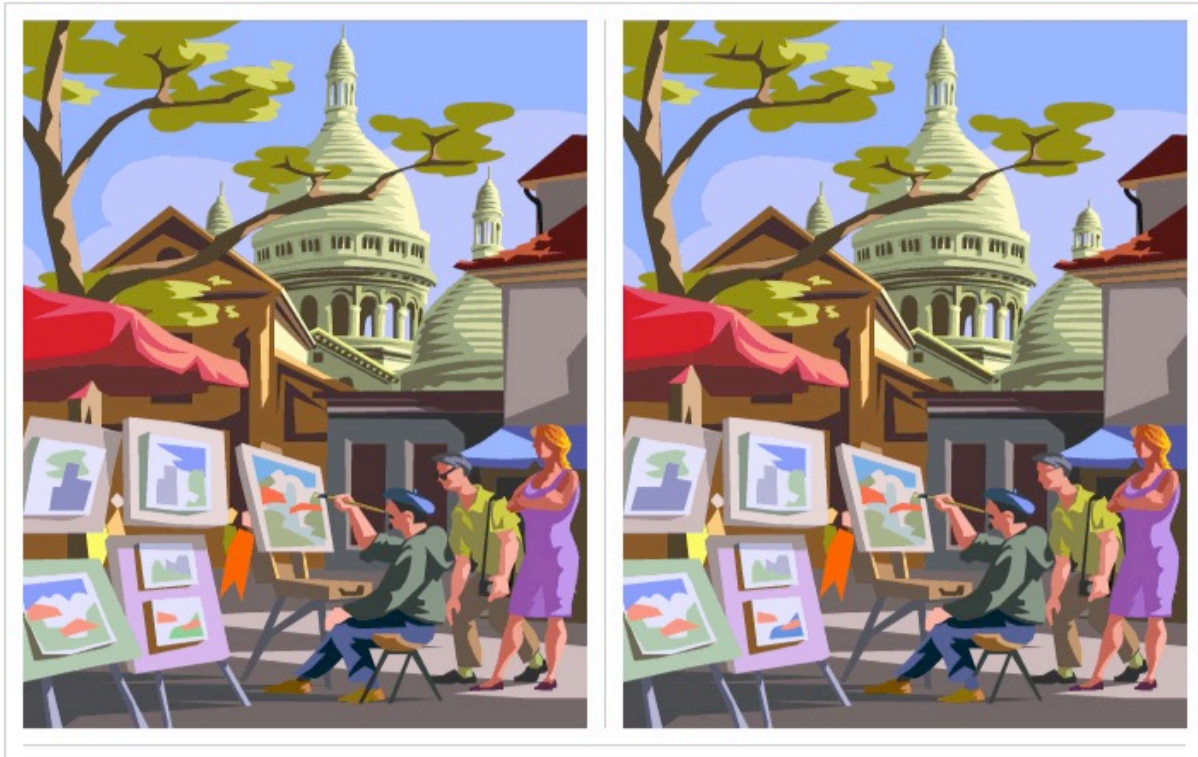


Figure 6: Histogram of Number of Differences Found in the Spot-the-Difference Game in Chapter 1, Study 5

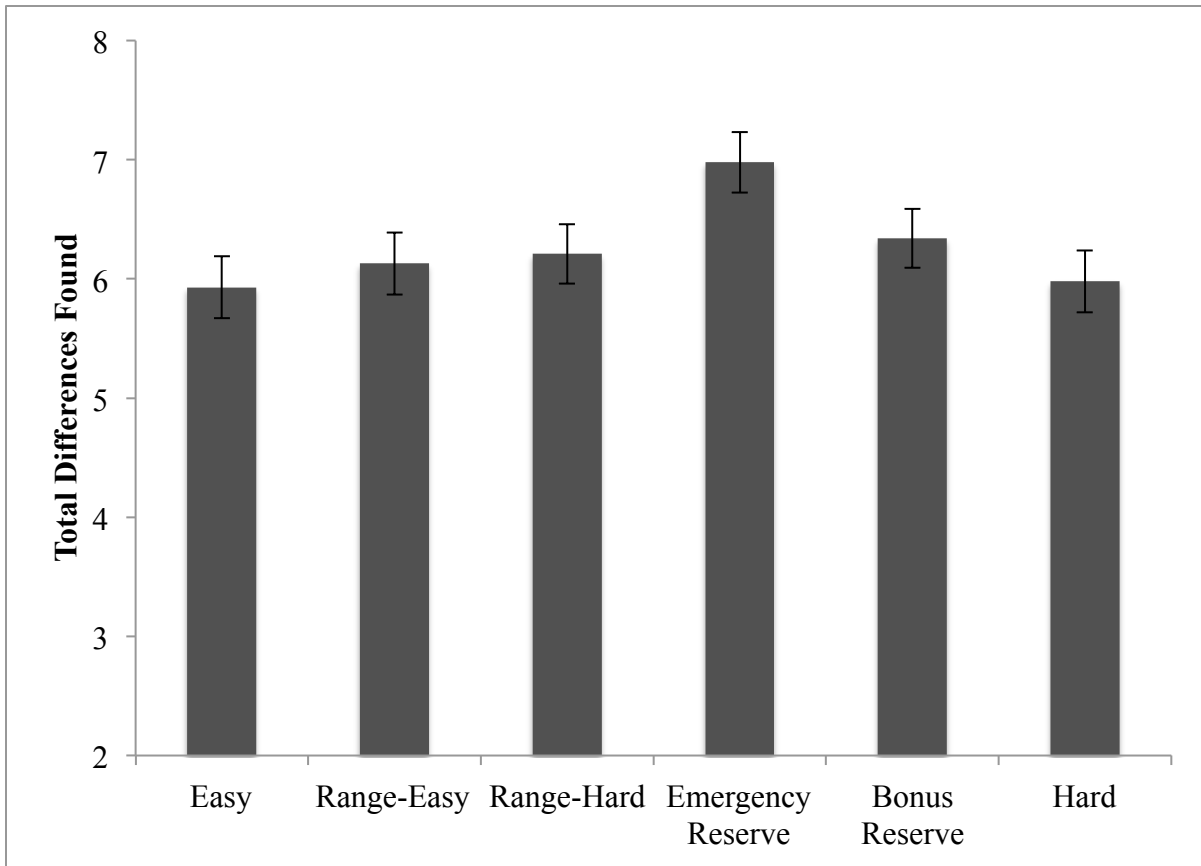


Figure 7: Histogram of Proportion of Participants who Tried the Third Word Search Game in Chapter 1, Study 6

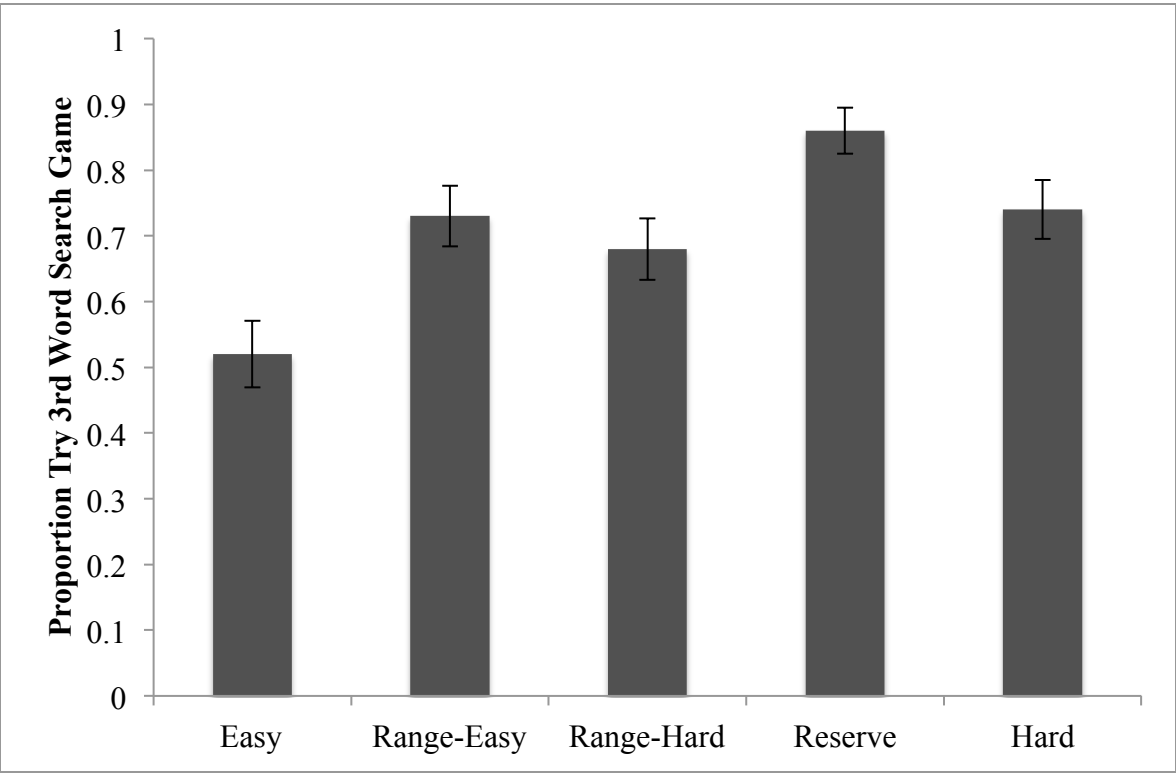


Figure 8: Screenshots of Google Spreadsheets in Chapter 2, Study 1

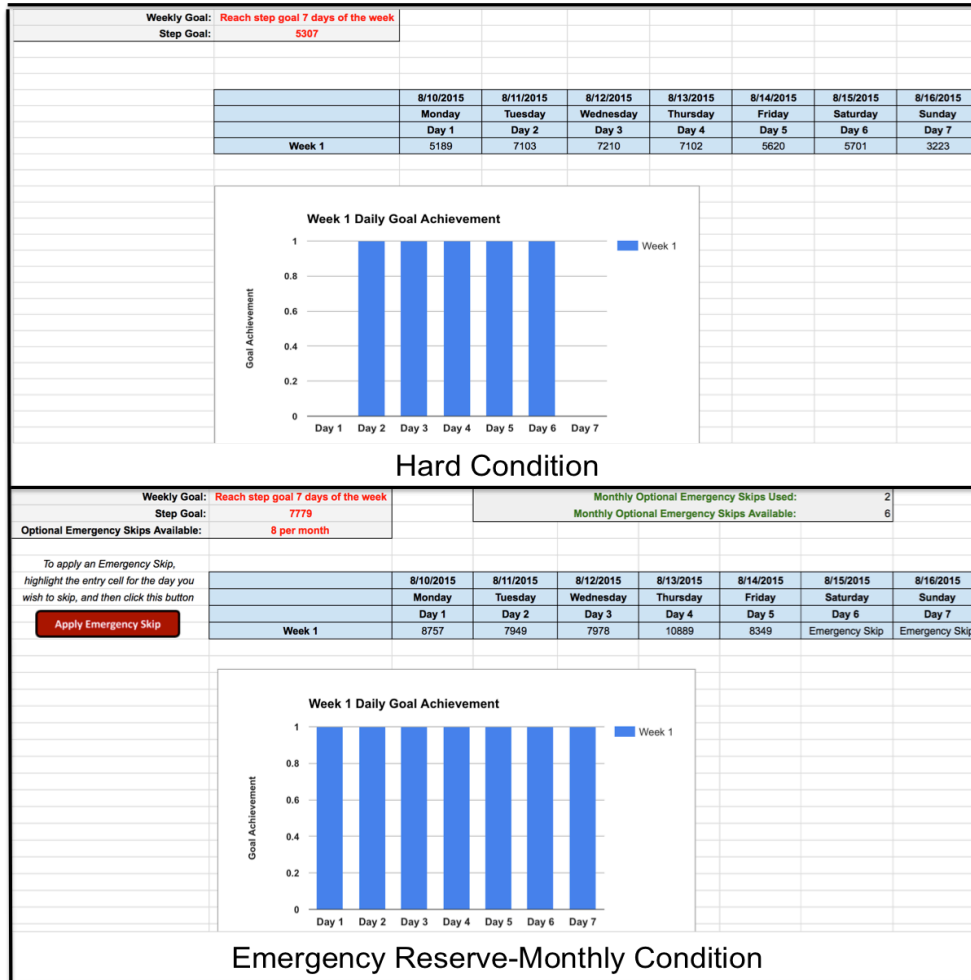


Figure 9: Histogram of Average Days Per Week Reached Step Goal Split by Goal Conditions in Chapter 2, Study 1

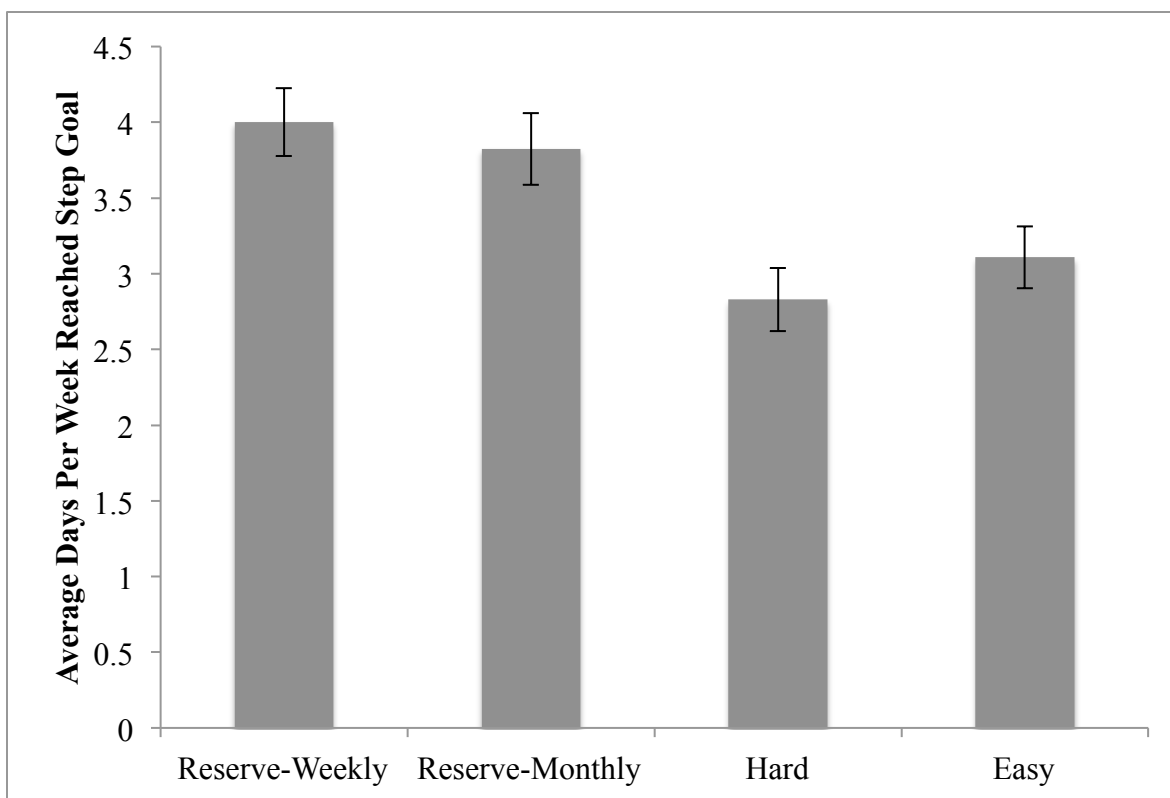
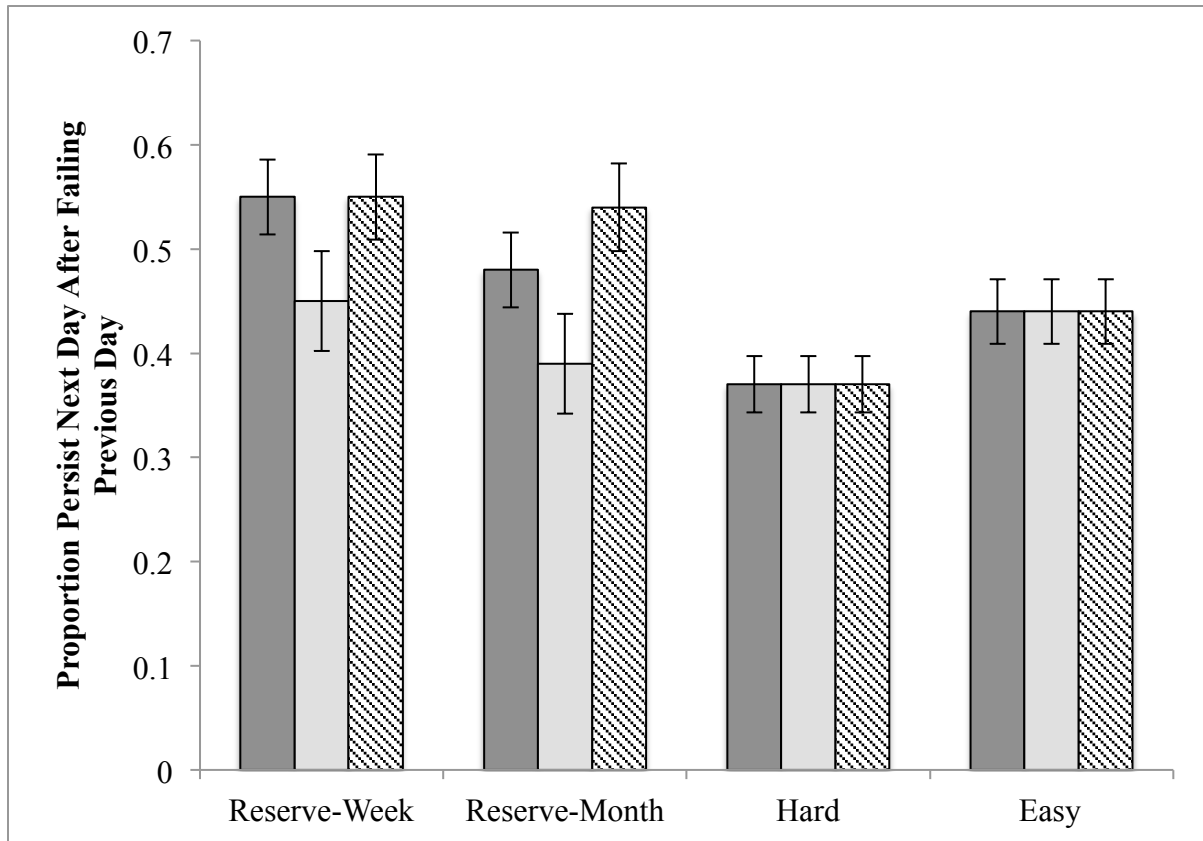
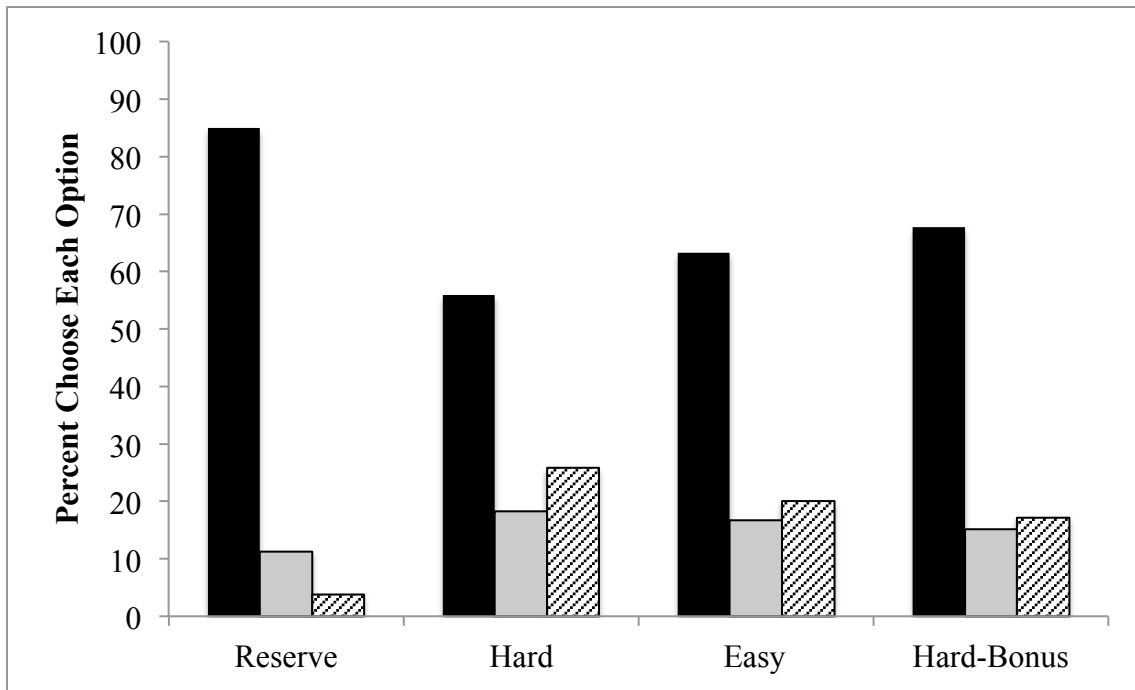


Figure 10: Histogram of Proportion of Participants who Succeed at Reaching Their Step Goal the Next Day after Failing to Reach it the Previous Day Split by Goal Conditions in Chapter 2, Study 1



Note. The dark grey bars only examine participants who failed to reach their step goal and applied their emergency reserve in the Reserve conditions; the light grey bars only examine participants who failed to reach their step goal and did not apply their emergency reserve in the Reserve conditions; the striped bar examines participants regardless of whether or not they applied their emergency reserve in the Reserve conditions. All bars in the hard and easy condition examine all participants who failed to reach a step goal at least one day.

Figure 11: Histogram of Percent of Persistence Choices after Subgoal Failure Split by Goal Conditions in Chapter 2, Study 2



Note. The black bars represent the percent of participants who chose to try the 3rd word search and the word search test, the grey bars represent the percent of participants who chose to skip the 3rd word search and try the word search test, and the striped bars represent the percent of participants who chose both to skip the 3rd word search and the word search test.

Figure 12: Histogram of Percent of Participants who Persist after Subgoal Failure Split by Condition and Self-Set Goal in Chapter 2, Study 3

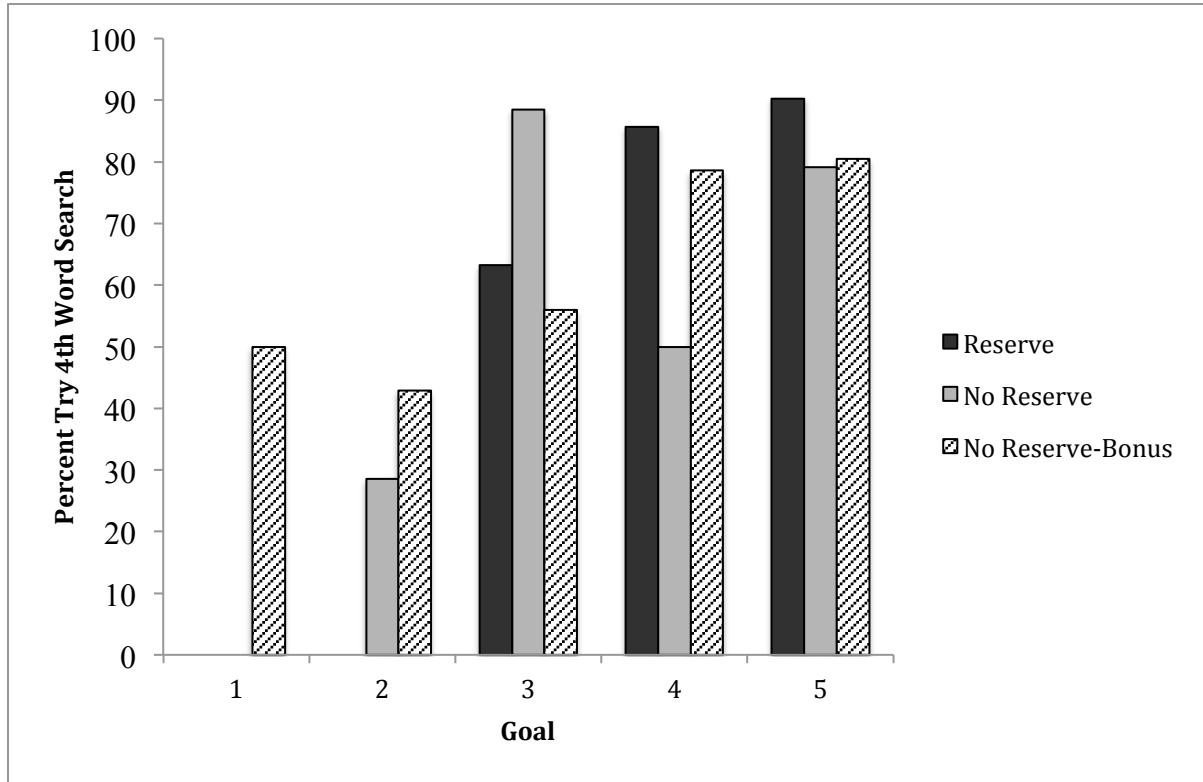
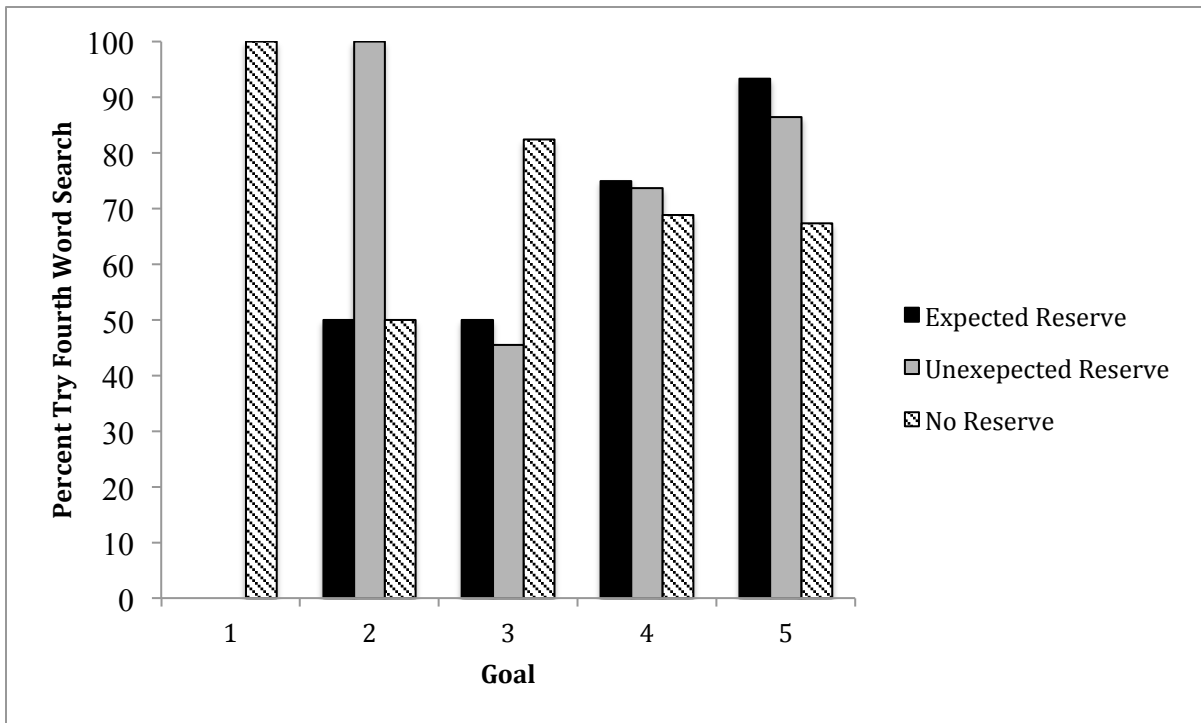


Figure 13: Histogram of Percent of Participants who Persist after Subgoal Failure Split by Condition and Self-Set Goal in Chapter 2, Study 4



APPENDIX A: CHAPTER ONE

Materials for Chapter 1, Study 1a/1b

Imagine you want to lose weight. You come across 3 different point-based weight loss program. In these programs, the number of points that are available to you correspond to calories that you can consume. The fewer points that you consume the more weight you are likely to lose. If you chose to join, you would keep a food diary of the foods you consume in order to keep track of your point-use. You would also meet with a nutritionist from the program at the end of the week to show them your food diary.

Program A: You would be able to consume up to **30 points per day (210 points per week)**. You would be assigned 30 points based on your personal demographics (height, weight, age, gender, etc.) Different participants in the program receive different points. The points would **not** roll over to the next day if you did not use them.

Program B: You would be able to consume up to **30 points per day (210 points per week)**. You would be assigned 30 points based on your personal demographics (height, weight, age, gender, etc.). Different participants in the program receive different amounts of points. The points would **not** roll over to the next day if you did not use them. You also would have available up to **2 optional emergency points per day [14 optional emergency points per week]** that you can use anytime throughout the week just in case you need them. These points are also based on your personal demographics. These points would **not** roll over to the next week if you don't use them.

Program C: You would be able to consume up to **32 points per day (210 points per week)**. You would be assigned 32 points based on your personal demographics (height, weight, age, gender, etc.) Different participants in the program receive different points. The points would **not** roll over to the next day if you did not use them.

By consuming the specified number of points in each program, you are likely to meet your weight loss goal.

Materials for Chapter 1, Study 2

Career Exam Condition- Easy [Hard] vs. Reserve:

Imagine you have to take a class. **This class is a preparatory class for a larger exam you will need to take in order to be certified for your future career. The more you learn in this class the better you will do on your larger career exam.**

There are two different teachers that teach the exact same class. The classes are taught similarly and you receive the exact same final test at the end of the class.

The more you study for the exam the better you will score. Therefore, your score is a reflection of how much you have learned in the class.

Teacher A: You need to receive a 15/25 [20/25] on your final exam in order to pass the class.

Teacher B: You need to receive a 20/25 on your final exam in order to pass the class. However, you also have the opportunity to earn 5 emergency extra credit points in case you need them. You can earn these emergency points by completing an extra assignment if you receive below a 20/25 on your final exam.

No Career Exam Condition-Easy [Hard] vs. Reserve:

Imagine you are required to take a class. **This class does not contain material that you will need throughout your career and you will not be required to take another related class in the future.**

There are two different teachers that teach the exact same class. The classes are taught similarly and you receive the exact same final test at the end of the class.

The more you study for the exam the better you will score. Therefore, your score is a reflection of how much you have learned in the class.

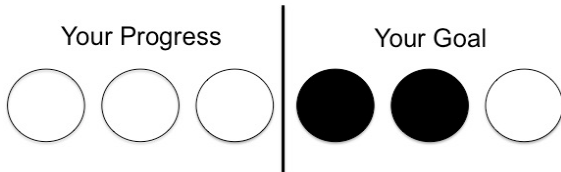
Teacher A: You need to receive a 15/25 [20/25] on your final exam in order to pass the class.

Teacher B: You need to receive a 20/25 on your final exam in order to pass the class. However, you also have the opportunity to earn 5 emergency extra credit points in case you need them. You can earn these emergency points by completing an extra assignment if you receive below a 20/25 on your final exam.

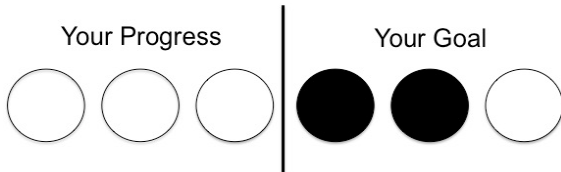
Different Goal Options in Chapter 1, Study 3

Participants chose between the Reserve option and one of the other goal options (Easy, Range-Easy, Range-Hard, or Hard).

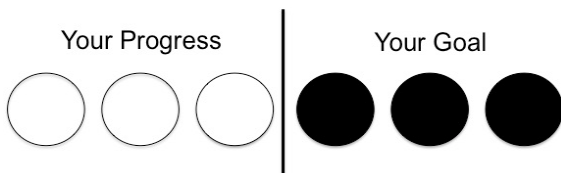
Your goal is to score 2 points. **(Easy)**



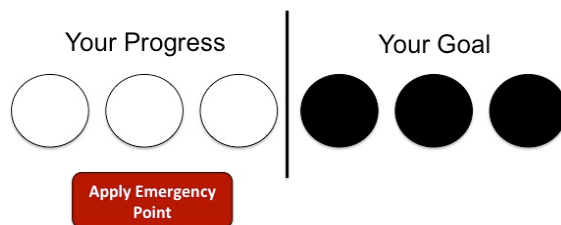
Your goal is to score 2 points. However you should aim to score 3 points. You will be able to try the final word search if you score 2 points. **(Range-Easy)**



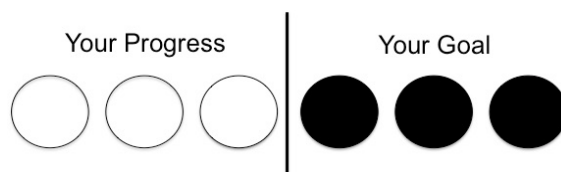
Your goal is to score 3 points. However, it's okay if you score 2 points. You will be able to try the final word search if you score 2 points. **(Range-Hard)**



Your goal is to score 3 points. However, you also have one emergency point that you can apply if you fail one word search test. If you fail to complete one word search test, you can apply this emergency point and receive a point for that failed word search test. **(Reserve)**



Your goal is to score 3 points. **(Hard)**



APPENDIX B: CHAPTER TWO

More Details on Methods for Chapter 2, Study 2

This experiment had three phases. In the first phase, participants completed an initial questionnaire and tracked their steps without any goal. In the second phase, they were assigned a weekly goal and a step goal, completed a brief questionnaire, and tracked their steps for four weeks. In the third phase, they completed a third questionnaire.

First Phase

316 students and staff from a large university in the southwest signed up for this study. Participants were informed that they only qualify for the survey if they have 1) an iPhone or Android smart phone, 2) willing to download a free app on their phone, 3) able to update a spreadsheet of their steps on a daily basis, 4) able to e-mail screenshots from their phone on a weekly basis of the number of steps you take, 5) be available to complete three questionnaires a) initially, b) after 1 week, and c) after 5 weeks.

If participants still wanted to participate in the study, they answered the following questions:

- 1) Are you a graduate, undergraduate, staff, or faculty?
- 2) Are you currently enrolled in summer school?
 - a. How many classes are you taking?
- 3) Which smart phone do you have?
 - a. Which model do you have (e.g., iPhone 4, iPhone 6, Samsung Galaxy S4, etc.)
- 4) How much do you weigh?
- 5) How tall are you?
- 6) Do you currently want to improve your physical fitness?
- 7) Do you currently want to lose weight?
- 8) How often do you currently engage in physical exercise?
- 9) How often do you set fitness goals?
- 10) How often do you set weight loss goals?
- 11) How often do you achieve your fitness goals?
- 12) How often do you achieve your weight loss goals?
- 13) Which reason below best describes the reason why you signed up for this study? *Because I want to become more fit, Because I want to earn more money, or Because I'm interested in participating in this study*

Afterwards, participants received instructions on how to download and install the pedometer application, *Pacer*. They also received instructions on how to use the application and how to view the weekly graph that they were asked to send to the researchers.

Participants were highly encouraged to carry their phone with them at all times and to carry it in their hand, pocket, or purse. They were told to contact the researchers if their steps were not recorded. Participants received \$2.50 for every questionnaire they completed. They received a

\$40 bonus if they completed all steps of the experiment on time (e.g., sent in all of their weekly screenshots, updated their Google spreadsheet on a daily basis, and completed all questionnaires on time).

After completing this initial questionnaire, participants were sent an email with a link to their shared Google spreadsheet in order to start tracking their steps. The email also contained instructions on how to use the Google spreadsheet. All participants began tracking their steps on the same day. Participants were asked to exercise as they normally would for a week and to record their steps nightly on the Google Spreadsheet.

Second Phase

On the last day of the baseline week, participants were asked to complete another questionnaire. 43 participants had resigned or were eliminated from the study at this point.

Participants' Google Spreadsheets were updated with Week 1, Week 2, Week 3, and Week 4 tabs. Participants received a Step goal that was 120% of their average steps from the baseline week. Additionally, they were randomly assigned to a weekly goal. In the Hard, Reserve-Weekly, and Reserve-Monthly conditions, they were assigned to reach their step goal 7 days of the week. In the Easy condition, they were assigned to reach their step goal 5 days of the week. The Google spreadsheet displayed the Step Goal, the Weekly goal, and a graph representing their daily progress. Participants received instructions on where these goals were located on the spreadsheet and also what would happen if they succeeded at their daily goal (a blue bar would emerge on the graph) and if they failed to reach their daily goal (no blue bar would emerge).

Additionally, participants in the Reserve-Weekly Condition were told, "You have 2 optional 'emergency skip' days per week. These 'emergency skip days' are available just in case you need them to help you reach your weekly goal. If you cannot reach the number of steps 1 or 2 days, you can use one of your optional "emergency skip" days. These emergency skips do not roll over to the next week if you do not use them. You also do not have to use them; they are optional, available just in case you need them." Participants in the Reserve-Monthly Condition were told, "You have 8 optional 'emergency skip' days per month. These 'emergency skip days' are available just in case you need them to help you reach your goal. If you cannot reach the number of steps, you can use your optional 'emergency skip' days. You do not have to use the 'emergency skip' days; they are optional, available just in case you need them."

Reserve participants received instructions on where the Google spreadsheet would track these emergency skips for them and how to apply their emergency skip. In order to apply their "emergency skip," participants had to click on the cell where they wanted to apply their "emergency skip" and then had to click on a red "Apply Emergency Skip" button. If they used an "emergency skip," a blue bar would emerge for that day. In designing how the Reserve would be used, we wanted to amplify participants' tendency to resist using their emergency skips by making the button red and terming it an "emergency" skip. However, once the emergency skip was used, we wanted Reserve participants to feel as if they had not failed to reach their step goal that day, thus reducing the negative consequences of sub-goal violation failure and increasing the chance of persistence. We accomplished this by making the graphical depiction of applying the Reserve after failing to reach the step goal the same as actually succeeding at the step goal for the day (a blue bar for that day). Participants would receive a warning message if they used more

than their allocated emergency skips. If the participants continued to use more than their allowed skips, the researcher emailed the participant to ask them to remove the excessive skips.

Participants were then asked the following questions on 7 point Likert Scale with 1 = *Not at all Likely* and 7 = *Very Likely*.

- 1) How committed do you feel to your goal?
- 2) How difficult do you think it will be to accomplish this goal?
- 3) How likely do you think it is that you will accomplish your goal?

Participants were informed they would still receive their payment even if they did not reach their weekly goal. For the next four weeks, they tracked their steps and recorded them on the Google spreadsheet. Participants' Google spreadsheets were randomly checked every few days to ensure that they were recording their steps on the Google spreadsheet. If participants did not record their steps on the Google Spreadsheet for over 2 days, they were warned they may not receive their \$40 payment. If participants still continued to not update their Google Spreadsheet, they were eliminated from the study.

Third Phase

After four weeks, 246 remaining participants were asked to complete a final questionnaire. Participants were asked to refer to a calendar and to their Google Spreadsheets. On their Google Spreadsheet, they were asked to type a reason, such as had to study, event, tired, didn't feel like it, sick, don't know, etc., for why they failed their step goal above each failed day. In the Reserve conditions, participants were also asked to list reasons for why they used their emergency skips and to list the number of steps they took on the days that they used the skips. A research assistant blind to the hypotheses later coded these reasons.

Participants were then asked the following questions: Questions with * and parts of questions with [] were only asked from participants in the Reserve conditions.

- 1) Did you have any strategies for when you used your emergency skip days? If so, please describe it below. *
- 2) How committed were you to reaching your weekly goal?
- 3) Did you ever get discouraged about reaching your weekly goal?
- 4) How satisfied did you feel after failing to reach your step goal, **if you applied your emergency skip day?***
- 5) How determined did you feel after failing to reach your step goal, **if you applied your emergency skip day?** *
- 6) How much guilt did failing to reach your step goal make you feel, **if you applied your emergency skip day?** *
- 7) How satisfied did you feel after failing to reach your step goal, [**if you could not/did not apply your emergency skip day?**]
- 8) How determined did you feel after failing to reach your step goal, [**if you could not/did not apply your emergency skip day?**]
- 9) How much guilt did failing to reach your step goal make you feel, [**if you could not/did not apply your emergency skip day?**]

- 10) How satisfied were you with your performance for each week? (for Week 1-Week 4)
- 11) How determined did you feel after each week to meet the weekly goal the following week? (for Week 1-Week 4)
- 12) How much did your performance each week make you feel guilt? (for Week 1- Week 4)
- 13) Overall, how satisfied are you with your performance across all 4 weeks?
- 14) Did you feel any guilt applying your "emergency skip" days?*
- 15) How difficult was it for you to complete your weekly goal each week?
- 16) How motivated were you to complete your weekly goal each week?
- 17) Did you give up at any point to reach your weekly goal?
 - a. Why?
- 18) Do you plan on continuing to use the Pacer app?
- 19) Would you sign up for this study again in the future?
- 20) Would you recommend the weekly goal you had to a friend?
- 21) Imagine when you were asked to sign up for this study you could have chosen your weekly goal (with the same step goal). Which goal would you have chosen from below? (You can choose your same goal from the study or you can choose a different goal)
 - a. Reach your step goal 5 days of the week, Reach your step goal 7 days of the week
 - b. You also have 2 optional "emergency skip" days each week just in case you need them to help you reach your goal. If you cannot reach the number of steps, you can use the optional "emergency skip" days. These emergency skips do not roll over to the next week if you do not use them
 - c. Reach your step goal 7 days of the week. You also have 8 optional "emergency skip" days throughout the 4 weeks just in case you need them to help you reach your goal. If you cannot reach the number of steps, you can use the optional "emergency skip" days
 - d. Reach your step goal 7 days of the week
- 22) Why would you make this choice?
- 23) If you had the same weekly goal but could choose how many emergency skip days you had, would you change the number of emergency skip days you had?*
- 24) How many would you have (total)?*
- 25) How physically fit do you feel relative to when you first started the task?
- 26) Please enter your weight (in pounds) today.
- 27) Were you on vacation during any part of this study (including the baseline week)?
- 28) What were the dates that you were on vacation?
- 29) What percent of your exercise do you think was recorded with the Pacer app?
- 30) Did you engage in other types of exercise?
- 31) How many minutes per week did you engage in these activities?

Participants also completed the Brief Self-Control measure, the Propensity-to-Plan scale for short-term time, a brief measure of personality, and a measure of satisficing behavior.

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