Where There Is a Will, Is There a Way? Effects of Lay Theories of Self-Control on Setting and Keeping Resolutions

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We demonstrate the effect of consumers' lay theories of self-control on goal-directed behavior as evidenced by New Year's and other resolutions. Across three studies, we find that individuals who believe that self-control is a malleable but inherently limited (vs. unlimited) resource tend to set fewer resolutions. Using respondents' own idiographic resolutions, this result is shown to hold in general as well as in consumption-specific domains regardless of whether lay theories are measured or manipulated. The effect is reversed if respondents contrast beliefs regarding their own levels of self-control with their lay theories. The final field experiment shows that "limited self-control theorists" are less likely to succeed at their resolutions if they have low (vs. high) self-efficacy.

Every year a hundred million Americans and countless others worldwide set themselves goals to achieve in the coming New Year. According to Miller and Marlatt (1998), popular goals include starting to exercise (37% of respondents), eating better (13%), and reducing the consumption of tobacco, alcohol, caffeine, or other drugs (7%). Sixty-seven percent of respondents stated that they made at least three resolutions, and only 25% reported succeeding at the first attempt. What determines how many goals people set and how successful they are? To date, little research has systematically investigated these issues. This article examines the role of consumers' lay theories of self-control in goal setting and attainment.

Goal-directed behavior has often been modeled as a two-stage process—the setting of goals, followed by the effort to achieve them (Bagozzi and Dholakia 1999; Thaler and Shefrin 1981). Research in this area often recommends strategies such as precommitment (Ainslie 1975), implementa-

tion intentions (Gollwitzer 1999), and delay of gratification (Metcalfe and Mischel 1999) with which to bolster self-control and achieve chosen goals. In this article, we present a different look at the relationship between self-control and goal setting/achievement. Rather than assuming that success at achieving goals is a manifestation of effective self-control, we propose that lay theories about the nature of self-control (i.e., individual differences in naive beliefs regarding self-control) affect the setting and achieving of personal goals.

Lay theories have been shown to affect judgments and behavior in a number of domains (Furnham 1988). For example, Dweck's program of research demonstrates that theories about whether intelligence is a fixed quantity or an augmentable reserve can affect learning strategies and responses to failure (Dweck 1999). Similarly, we suggest that people's beliefs about self-control can influence their goal-directed behavior. We begin with a review of the relevant literatures on lay theories and goal-directed behavior and use these to derive our hypotheses.

THEORY

A goal may be defined as "a wished-for end that is considered to be attainable" (Geen 1995, 23). Goal setting and striving are independent processes that may be interrelated (Thaler and Shefrin 1981), so that people tend to set goals if they expect to be able to achieve them (Latham and Locke 1991; Tolman 1932). Goal setting may be related to self-control (Kivetz and Simonson 2002), whereas goal achievement can be taken as evidence of successful planning and good self-control in the form of effective strategy usage

(Gollwitzer 1999). Self-efficacy, defined as a belief about one's competencies, can also regulate goal-directed effort expenditure and persistence (Bandura 1986). Below, we draw on the literature in self-regulation (Carver and Scheier 1998) and goal setting (Locke and Latham 2002) to derive specific hypotheses regarding how naive beliefs or lay theories about the nature of self-control and beliefs regarding self-efficacy affect (*a*) goal-setting behavior and (*b*) success or failure at goal achievement.

Lay theories, or "what ordinary men and women believe about the existence and power of individual differences in personality" (Ross and Nisbett 1991, 119), have been shown to affect judgments and behavior in a number of domains. For example, people's attributions and judgments have been shown to depend on the implicit theories they hold (e.g. Butler 2000), which, in turn, may have been acquired from everyday experiences (Ross and Nisbett 1991), environments (Morris, Menon, and Ames 2001), or simply by self-observation (Bem 1967). Naive beliefs have been shown to affect predictions of the endowment effect (Van Boven, Dunning, and Loewenstein 2000), the correspondence bias (Van Boven, Kamada, and Gilovich 1999), and dynamic hedonic effects (Novemsky and Ratner 2003).

Research on the behavioral (rather than judgmental) effects of lay theories of self-control has been surprisingly scarce. People believe that self-control can help overcome issues such as obesity, drug addiction, and marital problems (Furnham and McDermott 1994). Kivetz and Simonson (2002) found that people may prefer to give hedonic items as gifts rather than money, based on a lay theory that the recipients have "too much" self-control, and, given cash, would spend the money on "practical things." However, these researchers did not study the effects of individual differences in lay theories of self-control. Our research question therefore builds on their work and asks, do people's naive beliefs about the nature of self-control affect their goal-setting and achievement behavior? Some support for such an effect comes from Dweck's program of research (see Dweck 1999). The classic finding here is that incremental theorists, who believe that intelligence and ability are malleable quantities and can be improved through effort, set themselves learning goals and treat failure as a challenge by increasing effort. On the other hand, entity theorists, who believe that intelligence and ability are fixed quantities and cannot be changed, set themselves performance goals and react to failure as an indictment of their ability (Dweck and Leggett 1988). Correspondingly, we examine the effects of the belief that self-control is an inherently (un)limited resource on personal goal setting and achievement.

Our specification of lay theory as limited or unlimited is informed by recent research that has proposed that self-control is an inherently limited (but malleable) resource, analogous to a muscle (Muraven and Baumeister 2000). Self-control is used here to denote self-control through willpower as opposed to mental accounting rules (Heath and Soll 1996) or precommitment (Ainslie 1975). As Elster (1979) notes, there are several self-control strategies and the exercise of willpower is but one of them. In this article, we use the term self-control in the sense of willpower.

The debate about whether self-control is limited or unlimited is an old one. The worldview of infinite ability given inclination has held wide currency among Western thinkers (see, e.g., Descartes 1649/1996). However, Muraven and Baumeister's (2000) recent model of self-control suggests exactly the opposite. This model asserts that self-control resembles a muscle in the sense that it is a limited resource; however, it is also malleable in that its limits can be extended over time. This view of malleable yet limited resources (in this case, self-control) contrasts with Dweck's view of incremental theories of intelligence that are characterized by malleable and unlimited resources (Dweck and Leggett 1988). Yet another lay theory would map on to Dweck's view of entity theorists who believe that resources such as intelligence are not just limited but also fixed. Drawing on the work of Baumeister as well as Dweck, we characterize self-control lay theories in terms of the amount of self-control people are believed to have (unlimited vs. limited) as well as the extent to which this self-control amount can be changed over time (malleable vs. fixed). We conceptualize beliefs in unlimited self-control as beliefs in a generally large store of self-control. That is, the terms "limited" and "unlimited" are only descriptors that represent the extremes at which this lay theory may be anchored. This large store may be fixed for all time or malleable to handle new demands that come in over time.

Consistent with the literature on the effects of lay theories on judgments and behavior in a number of domains, we predict that people's beliefs about the nature of self-control will affect their goal-directed behavior. This proposition is supported by expectancy-value theories of goal-directed behavior that suggest that the attractiveness of a given outcome, combined with the expectation that it may be achieved through effort, leads the outcome to be selected as a goal (Tolman 1932). It follows from this theory that expectations about achievability can also affect the number of goals that a person sets. In fact, the probability of choosing a given goal is increased if the individual thinks it can be attained (Bouffard-Bouchard 1990; Locke and Latham and Locke 1991). The more individuals believe that they will be able to expend the effort required to achieve a desirable goal, the more likely they are to set themselves that goal. Since each additional goal requires additional effort at the margin, and hence decreasing expectations of success after a point, individuals tend to set only as many goals for the future as they expect to achieve.

In general, beliefs regarding large (unlimited) stores of self-control should result in a larger number of goals than beliefs regarding small (limited) stores of self-control. However, if these beliefs go together with the belief that self-control is fixed, they may not have a significant effect because a large store of self-control today may not be a large enough store of self-control to meet future needs. The belief that self-control is malleable or expandable to an unlimited extent should therefore translate into increased expectancies

of goal achievement and, hence, the setting of more goals. Therefore, individuals who believe that people in general have malleable and unlimited self-control (unlimited-malleable theorists) are likely to set more goals than those who do not believe this to be the case (limited-malleable theorists as well as fixed theorists).

Expectancies of success are also likely to be fueled by individual differences in self-efficacy. Self-efficacy is defined as "the belief in one's capabilities to organize and execute the sources of action required to manage prospective situations" (Bandura 1986, 391). More generally, perceived ability to carry out a desired action is defined as a self-efficacy expectancy. Hence, belief in unlimited and malleable self-control among individuals high (vs. low) in self-efficacy is likely to result in the highest number of goals.

Lay theories of self-control can also have an impact on success in achieving one's goals. Individuals who believe that self-control is limited are more likely to give up on seemingly hard to attain goals. However, people react to challenges in different ways, and while some may give up, some may actually try harder when they believe self-control is limited. Self-efficacy is an important individual difference variable that captures individuals' responses to challenges. Self-efficacy beliefs may function as important determinants of self-regulation by influencing the amount of effort that people invest in a task and how long they persist when confronted with obstacles or in the face of failure. Hence, the stronger the perceived self-efficacy, the more vigorous and persistent are people's efforts (Bandura 1986). For example, Bouffard-Bouchard (1990) found that students whose perceived efficacy was illusorily raised performed at a higher level than students of equal cognitive ability whose perceived efficacy was reduced. The explanation for the effect of efficacy on performance is that increased efficacy beliefs increase commitment and the search for suitable strategies to achieve the goal (Locke and Latham 2002). Essentially, self-efficacy beliefs drive effort expenditure and persistence.

This discussion leads to the prediction that limited theorists who are also low (vs. high) in self-efficacy are more likely to fail at their goals, as they will tend to give up on their tasks; their level of doubt that they can achieve the task exceeds a threshold level leading to their giving up on the goal (Carver and Scheier 1998). The level of doubt is driven by an assessment of personal capabilities (self-efficacy) combined with an assessment of other causal forces (lay theories about limits to self-control). However, limited theorists who have high self-efficacy are likely to feel challenged and hence optimize their resources and are more likely to succeed at their goals. This proposition is also consistent with Carver and Scheier's (1998) self-regulation model, which suggests that factors such as a firmly established sense of confidence (e.g., beliefs of high self-efficacy) can help overcome other disruptive influences. On the other hand, the success or failure of unlimited theorists is unlikely to be affected by self-efficacy because these individuals are not likely to view goal attainment as a challenge. Below, we describe the results of three experiments designed to test these propositions in the domain of setting personal resolutions.

EXPERIMENT 1: THE EFFECT OF MANIPULATED LAY THEORIES ON GOAL SETTING

The goal of study 1 was to test the basic hypothesis that belief in unlimited-malleable self-control will result in the highest number of resolutions. Eighty-five students at a large northeastern university were recruited in return for monetary compensation by means of flyers put up around campus. The experiment was presented as two separate but consecutive tasks, both of which were embedded in a larger, unrelated study. The first task was presented as a reading comprehension study, where participants were asked to read a given passage (the lay theory manipulation) and answer the questions that followed. In keeping with the cover story, these questions were a comprehension test ("What is self-control said to resemble?"), measures of belief in each of the two lay theories (seven-point scales anchored at $1 =$ limited, $7 =$ unlimited and $1 =$ fixed, $7 =$ malleable), and a measure of how convincing the given passage was ($1 =$ not at all and $7 =$ extremely convincing).

Corresponding to the four experimental conditions, participants read one of four possible passages, representing the two lay theories (limited/unlimited and fixed/malleable), fully crossed. Each passage consisted of two paragraphs of equal length (80 words), and in all conditions the first paragraph manipulated limited versus unlimited lay theory while the second paragraph manipulated fixed versus malleable lay theory. The limited manipulation started with the statement that "Self-control is a limited resource." It then briefly presented Muraven and Baumeister's (2000) model, namely, the tenets that all acts of self-control require effort, which depends on a person's current level of self-control strength, and short-term losses of self-control can be explained as muscle fatigue. The unlimited manipulation drew from Elster's (1979) reading of Descartes, stating that "Self-control is an unlimited resource" and then asserting that "everyone has unlimited access to willpower" and "anyone can do anything" (Elster 1979, 55–56). The second paragraph in the malleable condition began "Self-control is also malleable" and then stated (corresponding to Dweck's 1999 measure of incremental theories) that "it only takes some effort to change one's self-control," "one's self-control is something that can be changed quite a lot," and "just as people can learn new things, they can also change their basic self-control." The passages in the fixed condition stated exactly the opposite.

The above "reading comprehension" survey was followed by a motivation assessment questionnaire, which looked completely different from the reading comprehension survey (e.g., a different font) to prevent participants from making any connections between the lay theory manipulation and this measure. Participants were presented with a blank table and asked to list all their current "personal, academic, or financial/consumption-re-

lated" goals in as much detail as possible and to draw a line after each goal. They also rated how disappointed they would be if they did not keep each goal that they listed (1 = not at all and 7 = extremely).

Results

Manipulation Checks. Between-subjects ANOVAs were conducted on the measures of agreement with each of the two manipulated lay theories using the complete 2 (limited vs. unlimited) × 2 (fixed vs. malleable) design. Twelve respondents who reported complete disagreement with the manipulated lay theory (e.g., a participant in the limited condition reporting an extreme belief in the unlimited theory, i.e., responding 7 on the manipulation check scale) were dropped from the analysis (three in each condition), resulting in a sample of 73 respondents. As expected, respondents who read the limited (vs. unlimited) passage were significantly more likely to believe that self-control is a limited resource (M's = 3.73 vs. 4.92, $F(1, 69) = 7.51$, $p < .01$). Respondents who read the fixed (vs. malleable) passage were marginally more likely to believe that self-control is a fixed quantity (M's = 4.78 vs. 5.47, $F(1, 69) = 2.97$, $p < .09$). In both cases, no other effects were significant.

Goal Setting. A 2 (limited vs. unlimited) × 2 (fixed vs. malleable) ANOVA conducted on the number of resolutions set revealed only a significant interaction effect ($F(1, 69) = 9.69$, $p < .01$). Consistent with our proposition, the most resolutions were set in the unlimited-malleable condition ($M = 5.78$ vs. M in the other three conditions = 4.39; $F(1, 69) = 8.16$, $p < .01$). Respondents in the malleable condition were significantly more likely to set fewer resolutions if they thought that self-control was limited ($M = 3.90$) as opposed to unlimited ($M = 5.78$, $F(1, 69) = 10.26, p < .001$). There was no effect of limited/unlimited in the fixed condition (M's = 5.00 vs. 4.28, $p > .2$). Resolutions did not differ qualitatively across conditions ($F < 1$); overall, participants said that they would be disappointed if they did not achieve their resolutions ($M = 5.16$). Table 1 presents the means.

Discussion

Results support the hypothesis and demonstrate that the belief that self-control is a malleable and unlimited resource causes people to set the most resolutions. Our explanation is that the lay theory manipulation primed expectancies of success that were then reflected in the goal-setting task. A methodological issue here concerns the plausibility of the manipulations; the fixed manipulation may not have been as convincing as the malleable manipulation (M_{fixed} = 2.86 vs. $M_{malleable} = 4.24$, $F(1, 69) = 12.57$, $p < .01$). Participants' natural beliefs may have been skewed toward malleable self-control. To address this issue, study 2 measures (rather than manipulates) beliefs regarding the malleability of self-control as well as limits to self-control. Measurement of the two lay theories also allows for control of naturally occurring correlations between them.

EXPERIMENT 2: REVERSING THE EFFECT OF LAY THEORIES ON CONSUMERS' GOAL SETTING

This experiment sought to replicate the results of experiment 1 and to pin down the role of expectancies of future success in goal setting by reversing the results of study 1. As discussed previously, increasing people's expectancies of success may increase the difficulty of tasks they set for themselves. Thus, making normally limited (unlimited) theorists believe that they themselves have unlimited (limited) self-control should increase (decrease) the number of goals they set for themselves.

In this study, we changed people's expectancies by a simple manipulation—making them respond to the lay theories questions followed by demographic questions immediately before they wrote down their resolutions. We reasoned that responding to the lay theory questions and then to questions about themselves would change participants' expectancies about their own likely success. Put another way, the lay theory will serve as a standard of comparison, and if participants are made to self-focus by answering demographic questions, they are likely to contrast their own abilities away from the standard. This notion is consistent with Mussweiler and Strack's (2000) finding that subjective self-judgments tend to be con-

TABLE 1

SUMMARY OF RESULTS

Study	Description	Dependent variable	Lay theory	Limited	Unlimited
1	Manipulated theories	Number of goals set	Malleable	3.90[a]	5.78[b]
			Fixed	5.00[a]	4.28[a]
2	Measured theories, consumption goals	Number of goals set (goal-setting task first)	Malleable	4.07[a]	5.34[b]
			Fixed	4.58[a]	4.54[a]
		Number of goals set (task order reversed)	Malleable	5.55[a]	4.00[b]
			Fixed	4.14[a]	4.44[a]
3	Manipulated theories, real-time assessment	Number of resolutions set	Malleable	3.71[a]	4.41[b]

NOTE.—Means in the same row with different superscripts are significantly different ($p < .05$).

trasted away from social comparisons because the comparison sets up a reference point.

Posing demographic questions just prior to the goal-setting task is also likely to make the self salient, thereby making beliefs about the self (rather than lay theories) the crucial input to the task. Hence, unlimited theorists will tend to believe that they themselves have limited self-control and therefore set fewer goals than limited theorists who will tend to believe they have unlimited self-control. Note that this effect is unlikely to be observed among those who believe that self-control is a fixed quantity. Even if they contrast their own amount of self-control away from the lay theory, beliefs about the amount of self-control being large or small do not relate to their expectancies of future success. In other words, beliefs about limits to self-control are not perceived to (and as found in study 1, do not) have a bearing on goals set for the future (i.e., a large store today may still be insufficient for future demands).

To summarize, the experiment manipulated the order of two measures—lay theory and resolution listing. We expected to replicate the previous result when resolutions were measured first, such that unlimited theorists set more resolutions than limited theorists when they believe self-control is malleable. However, when lay theories are measured first and followed by self-related questions, we expected to reverse the finding among malleable theorists such that limited theorists set more resolutions than unlimited theorists. Fixed theorists are unlikely to be affected by beliefs about limits to self-control regardless of the order of the two tasks.

Method

One hundred and thirty students participated for monetary compensation and were presented with this study in a set of other unrelated experiments. We restricted attention to consumption goals and asked respondents to list all the financial-, purchase-, and consumption-related resolutions that they would make in the order they came to mind. The order of this goal-setting questionnaire and the lay theories questionnaire was counterbalanced. Belief in the unlimited/limited theory was measured by rated agreement on scales anchored at 1 = strongly disagree and 7 = strongly agree to the following statements: "I believe that people are limited in their ability to control themselves," and "I believe that people cannot hold themselves back beyond a point." Belief in the malleable/fixed theory was assessed on the items "Everyone has a certain amount of self-control, and one can't do much to change this amount," and "People can get incentives and disincentives, but they can't really change their basic self-control" (adapted from Dweck 1999). Demographic questions on age, gender, and native language followed the measurement of lay theories.

Results

The mean of the two items used to measure the unlimited/limited theory was computed and used as the measure of this theory ($r = .55$, $p < .001$; $M = 3.98$, SD $= 1.45$). Similarly, the average of the two items used to measure the malleable/fixed theory was used as the measure of this theory ($r = .37$, $p < .001$; $M = 3.59$, SD $= 1.25$). Responses to the two scales were correlated ($r = .36$, $p < .001$), such that fixed theorists tended to believe in limited self-control. This correlation is controlled for in the regression analysis below.

The number of goals set was regressed on measures of the unlimited/limited theory, the malleable/fixed theory, the order of tasks, and all possible two- and three-way interactions. Significant effects were obtained for the order variable ($\beta = -2.78$, $t(121) = -4.09$, $p < .001$), the interaction between order and the unlimited/limited theory ($\beta = -2.84$, $t(121) = -3.87$, $p < 0.001$), the interaction between order and the malleable/fixed theory ($\beta = -1.14$, $t(121) = -3.12$, $p < .01$), and the three-way interaction ($\beta = 2.56$, $t(121) = 3.11$, $p < .01$). In order to investigate these results further, median splits were used to dichotomize each of the lay theories, unlimited versus limited and malleable versus fixed. A $2 \times 2 \times 2$ ANOVA was run using the order of the measures and the two lay theories as independent variables and the number of resolutions set as the dependent variable. Table 1 presents the means. A marginal interaction between order and the unlimited/limited theory ($F(1, 121) = 3.13$, $p < .10$) was qualified by a significant three-way interaction ($F(1,121) = 6.79$, $p < .05$). Results in the condition where respondents set their resolutions first replicated study 1, with malleable-unlimited theorists setting more resolutions than respondents in the other three conditions pooled ($M = 5.34$ vs. 4.37, $F(1,125) = 4.58$, $p < .05$). The simple effect for the unlimited/limited theory was not significant for fixed theorists ($M_{\text{limited}} = 4.58$ vs. $M_{\text{unlimited}} = 4.54$, $F < 1$) but was significant for malleable theorists ($M_{\text{limited}} = 4.07$ vs. $M_{\text{unlimited}} = 5.34$, $F(1, 121) = 5.07$, $p < .05$). In contrast, as predicted, measuring respondents' lay theories along with demographics prior to resolution setting reversed the direction of this effect for malleable theorists such that they set fewer resolutions if they were unlimited rather than limited theorists ($M_{\text{limited}} = 5.55$ vs. $M_{\text{unlimited}} = 4.00$, $F(1, 121) = 5.63$, $p < .05$). There was again no effect for fixed theorists ($M_{\text{limited}} = 4.14$ vs. $M_{\text{unlimited}} = 4.44$, $F < 1$).

Discussion

As hypothesized, making respondents change their expectancies of success served to reverse the effect among malleable theorists, making limited theorists set more resolutions than unlimited theorists. Results of study 1 were replicated in the resolutions-first conditions such that unlimited theorists set more resolutions than limited theorists in the malleable condition. Beliefs about limits to self-control had no effects on fixed theorists. These findings provide strong evidence that lay theories of limits to self-control serve as guiding expectancies of success and drive goal-setting behavior among those who believe that self-control is an augmentable reserve.

EXPERIMENT 3: REAL-TIME EFFECTS OF MANIPULATED LAY THEORIES ON GOAL SETTING AND ACHIEVEMENT

The aim of experiment 3 was to extend the investigation by (a) including a measure of self-efficacy, and (b) testing our propositions regarding success or failure.

Method

Session 1. One hundred and fifty-nine students were recruited at a large northeastern university. The study was advertised as being conducted in two parts, one in November and one in February. The procedure in the first session was similar to that used in experiment 1; only the malleable-theory condition was used. The limited versus unlimited manipulation was made stronger in two ways—by lengthening the passages, thereby strengthening the arguments by providing greater detail, and by tagging each passage with the relevant source ("Muraven and Baumeister, in *Psychological Bulletin* [2000]") in the limited condition and "Descartes, as quoted in Elster, *Ulysses and the Sirens* [1979]" in the unlimited condition.) Following the lay theory manipulation and comprehension/manipulation checks, respondents answered a seemingly different survey where they listed the resolutions that they planned to make the coming New Year. For each resolution, they also rated anticipated disappointment if they did not keep the resolution, anticipated satisfaction if they did, resolution importance, and anticipated difficulty, all with seven-point scales. After unrelated filler tasks, all respondents filled out a set of individual difference measures, including the Consumer Impulsiveness Scale (Puri 1996; a potential own self-control measure), the Need for Closure Scale (Webster and Kruglanski 1994), and the Generalized Self-Efficacy Scale (Schwarzer and Jerusalem 1995).

Session 2. Participants were contacted by e-mail 4 mo. later, in February-March, for the follow-up study. At the laboratory, they were presented with the follow-up questionnaire, which contained a photocopy of their resolutions from session 1. Participants indicated their success at each of these resolutions on a seven-point scale, where 1 = not at all successful and 7 = extremely successful, as well as how difficult the resolution had been to keep (1 = not at all difficult and 7 = extremely difficult). Following this, they were asked to select the metaphor for self-control that they had read at the first session 4 mo. ago from the following four alternatives: "(a) a surge-protector on a computer (according to Turing), (b) a muscle (according to Muraven and Baumeister), (c) a battle between passion and willpower (according to Descartes, reported by Elster), and (d) a person-situation interaction (according to Metcalfe and Mischel)." Option b was the correct answer for the limited condition and option c was correct for the unlimited condition. Respondents then moved on to other unrelated materials, and on completion, were paid, debriefed, and thanked.

Ninety-four participants returned for the second session, constituting a return rate of 66%. Eight participants were dropped because they either did not rate success or did not complete the self-efficacy scale. The remaining 86 respondents were evenly distributed across conditions. The manipulation check indicated that, regardless of lay theory, 82% of respondents correctly identified the message of the manipulation that they had been exposed to during the first session 4 mo. ago. Reported success at keeping resolutions was identical for the entire sample and for the subset that passed the manipulation check. For purposes of brevity, only the analysis on the entire sample is reported here.

Results

Session 1: Goal Setting. Two participants responded to the items irregularly, and 16 participants strongly disagreed with the manipulations. These participants were therefore dropped from all analyses, resulting in a usable sample of 141 respondents. A between-subjects ANOVA using lay theory and self-efficacy as the independent variables and the number of resolutions as the dependent variable revealed only a significant main effect for the lay theory ($M_{limited} = 3.71$ vs. $M_{unlimited} = 4.41$; $F(1, 138) = 4.16$, $p < .05$). Contrary to predictions, those with high self-efficacy in the unlimited condition did not set the highest number of goals ($M = 4.31$). The significant effect for lay theory remained when other individual difference measures were entered as covariates; none of the other effects was significant. Further, the same analysis on average importance of goals ($M = 5.49$), anticipated satisfaction ($M = 6.10$), anticipated disappointment ($M = 4.86$), and anticipated difficulty ($M = 4.73$) revealed no significant differences by condition (all F's < 1). Goals were also coded as approach-avoidance and abstract-specific; the mean number of each type did not differ across conditions. Most goals were approach goals (68%) and abstract (73%). Goals in different conditions were therefore qualitatively similar. At least half the resolutions were consumption related—regulating consumption of some product or service, spending less/more money on some specific product.

Session 2: Success. Success ratings were averaged across resolutions for each individual, and a composite success index was created. A 2 (lay theory) × 2 (self-efficacy) ANOVA was run on this average success rating. Only the interaction between lay theory and self-efficacy was significant ($F(1, 82) = 5.61$, $p < .05$). As predicted, for individuals in the limited condition, low self-efficacy led to significantly less success as compared to high self-efficacy ($M_{high} = 4.25$ vs. $M_{low} = 3.24$, $F(1, 82) = 7.02$, $p < .01$). However, self-efficacy had no effect on the success reported by individuals in the unlimited conditions ($M_{high} = 3.89$ vs. $M_{low} = 4.08$, $F < 1$). Note that high self-efficacy can completely neutralize the effect of limited lay theory, so that mean success was as high under this condition as under unlimited self-control beliefs. However, limited theorists with high self-efficacy were constrained by the fewer num-

ber of goals they had set. None of the other measured trait variables had significant effects on success.

A researcher studying goal setting might argue that people who set more goals are more likely to achieve them than those who set fewer goals. When the number of resolutions is introduced as a covariate in the analysis, it is marginally significant ($B = .110$, $t(81) = 1.79$, $p < .08$), such that people who set more resolutions are more likely to succeed. The effect of lay theory remains significant, as does the interaction; moreover, the pattern of means remains the same. A researcher studying goal setting might also argue that the most successful individuals are those who set difficult goals. However, resolutions set in the limited versus unlimited conditions did not differ on goal difficulty—both anticipated as reported above and actual ($M = 3.39$, $F < 1$). Further, goal difficulty ratings of the first three goals listed do not differ from the goal difficulty of all goals in both limited and unlimited conditions; unlimited theorists' goals are therefore not diluted by quantity. In sum, it appears that lay theories of limits to self-control act as generalized expectancies of success and that they, along with self-efficacy beliefs, determine success.

Discussion

Strong support was obtained for the experimental hypotheses, with the results of previous studies being replicated in real time. The response rate in session 2 is a possible cause for concern; however, this is alleviated by the fact that nonrespondents were evenly distributed across conditions. Priming manipulations continued to have an effect on people's (self-rated) success at achieving their own real resolutions as long as 4 mo. after they were administered. Individuals who were made to believe that self-control is a limited resource set fewer resolutions and appeared to give up on them if they were low in self-efficacy.

GENERAL DISCUSSION

The current research extends previous work on the relationship between lay theories of self-control and their effects on behavior (e.g., Kivetz and Simonson 2002) by providing empirical support for the link between lay theories of limits to self-control and one's own goal-directed behavior, in the domain of New Year's and other resolutions. Results consistently show that individuals who believe that self-control is malleable and an unlimited resource tend to set the most resolutions; further, these resolutions do not differ qualitatively from resolutions set by other individuals. Study 2 provides evidence for the underlying role of expectancies of success by showing that changing expectancies can reverse the effect.

Self-efficacy did not have an independent or interactive effect on goal setting. High self-efficacy should translate to higher expectancies of success; yet, no effects were found. One reason could be that generalized self-efficacy is a less reliable predictor than domain-specific self-efficacy (Bandura 1986). Other trait measures, including one of own self-

control (consumer impulsiveness), also did not predict the number of goals set. This finding may be related to the accessibility and perceived diagnosticity of the lay theory cue and the own self-control cue. However, this research did not directly measure beliefs about one's own amount of self-control on the same scales as lay theories of limits to self-control. Future research is needed to uncover the explanation for this finding as well as to establish the relationship between lay theories of self-control and beliefs about one's own amount of self-control and self-efficacy. As noted by an anonymous reviewer, pitting the role of lay theories versus different self-theories and uncovering when and why each one operates in goal setting behavior is a rich area for investigation.

In terms of achieving goals, malleable-limited theorists tend to report less success at achieving their resolutions if they are low (vs. high) on self-efficacy; in fact, limited theorists with high self-efficacy are as successful as unlimited theorists. However, even high self-efficacy cannot compensate for the limited reach of these individuals in terms of number of goals set. The fact that manipulations of lay theories can have an effect 4 mo. after the manipulation is impressive. In order for the self-control manipulation to be successful, most respondents must have had fairly weak lay theories about the nature of self-control.

Our findings contribute to research across the two fields of lay theories and goal-directed behavior. We extend the lay theory literature by demonstrating the effects of a specific theory, namely, lay theories of limits to self-control, in settings that are not confined to the laboratory. Our results show that these theories can have real and enduring effects on personal goals that are set in all earnestness. A careful exploration of reactions to success and failure, taking into account resultant affect as well as attributions made, is a promising direction for research. Individuals with high self-efficacy attribute failure to insufficient effort, while individuals with low self-efficacy attribute failure to deficient ability (Bandura 1997). These different attributions are likely to drive affective reactions to success and failure as well as future goal-setting and goal-striving behavior. An empirical test of these predictions can provide important insights into antecedents and consequences of goal achievement.

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