The Progress Bias in Goal Pursuit: When One Step Forward Seems Larger than One Step Back

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Consumers often pursue goals (e.g., losing weight) where the chance of attaining the goal increases with some behaviors (e.g., exercise) but decreases with others (e.g., eating). Although goal monitoring is known to be a critical step in self-control for successful goal pursuit, little research investigates whether consumers accurately monitor goal progress. Seven experiments demonstrate that consumers tend to show a progress bias in goal monitoring, perceiving that goal-consistent behaviors (e.g., saving $45) help progress more than goal-inconsistent behaviors of the equivalent size (e.g., spending $45) hurt it. Expectations of goal attainment moderate the progress bias; reducing the expectation that the goal will be reached reduces the tendency to perceive goal-consistent behaviors to have a larger impact on goal progress than equivalent goal-inconsistent behaviors. A study on exercise and eating shows that although the progress bias can increase initial goal persistence, it can also lead to premature goal release due to poor calibration of overall progress.

Consumer behavior is goal-driven. Consumers adopt products, purchase services, and engage in a range of activities in pursuit of goals to make friends, woo lovers, care for their families, win money, get an education, lose weight, save for a comfortable retirement, impress others, and so on (Baumgartner and Pieters 2008; Van Osselaer and Janiszewski 2012). Reaching many of these goals requires consumers to self-regulate in order to repeatedly engage in behaviors that move them closer to and avoid behaviors that move them further from their goals over time (Baumeister and Heatherton 1996). For example, reaching a weight-management goal necessitates repeatedly engaging in goal-consistent behaviors, like exercising or skipping dessert, while minimizing goal-inconsistent behaviors, like watching TV or eating dessert, over the course of days, months, or even years.

Goal monitoring, which includes assessing the influence of behavior on distance from a focal goal, has been identified as an important step in the self-regulation process (Baumeister and Heatherton 1996; Carver and Scheier 1998; Vohs, Baumeister, and Tice 2008). Goal monitoring is important for two reasons: (1) It determines consumers' perceptions of how close or far they are from the goal, which influences goal motivation and commitment and thus continued goal pursuit (Bandura 1989; Bonezzi, Brendl, and De Angelis 2011; Kivetz, Urminsky, and Zheng 2006; Koo and Fishbach 2012); (2) goal monitoring helps consumers assess whether or not they are making adequate progress, such that they can decide if there is a need to adjust their behavior in order to reach their goals (Carver and Scheier 1982, 1998). Consequently, active goal monitoring can increase success in goal pursuit (Colletti and Kopel 1979; Polivy et al. 1986), although monitoring alone does not ensure goal attainment (Baumeister and Heatherton 1996).

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Although research has investigated the effect of perceived distance from a goal (an outcome of goal monitoring) on subsequent motivation (e.g., Bonezzi et al. 2011; Koo and Fishbach 2012) and the effect of whether or not consumers actively engage in goal monitoring (Colletti and Kopel 1979; Polivy et al. 1986), surprisingly little is known about whether consumers accurately monitor the impact of their behaviors on movement toward or away from their goals (Baumgartner and Pieters 2008; Huang, Zhang, and Broniarcyzk 2012; Vohs et al. 2008). Our research addresses this gap by examining how consumers monitor the impact of behaviors that move them toward their goals (i.e., goal-consistent behaviors) relative to behaviors that move them further from their goals (i.e., goal-inconsistent behaviors). We propose that consumers' assessment depends on the goal consistency of a behavior. Specifically, we hypothesize and find that consumers typically exhibit a "progress bias" such that they perceive goal-consistent behaviors to have a larger impact on goal attainment than similar goal-inconsistent behaviors. For example, consumers with a saving goal perceive that saving $45 helps their goal progress more than spending $45 hurts it. We posit that this asymmetry occurs, at least in part, because consumers tend to expect goals to be reached and give more weight to behaviors that confirm this expectation than those that disconfirm it when assessing the impact of the behaviors on goal progress. Consistent with this, we find that goal-consistent behaviors are perceived to have a larger impact than comparable goal-inconsistent behaviors when goal attainment is expected. Conversely, consumers are less likely to exhibit a progress bias when their expectations of goal attainment are lower, such as when they believe the goal is difficult to reach or fail at initial attempts at goal pursuit.

MONITORING GOAL PROGRESS

For most goals, consumers can engage in behaviors that move them toward or behaviors that move them away from successful goal attainment. For example, a student with a goal to get a good course grade can stay in and study or go out to a party with friends. Because many goals require repeated choices between goal-consistent and goal-inconsistent behaviors over time, consumers often engage in both types of behaviors during the course of goal pursuit. For example, a student cannot study all the time, a worker cannot save all of his or her money for retirement, and a dieter cannot stop eating altogether. Thus, consumers often face the nontrivial task of assessing how both goal-consistent and goal-inconsistent behaviors influence their paths toward goal attainment. Whether consumers are typically accurate in such assessment is an important question that the literature has not addressed and is the focus of our research.

Our focal question is whether goal-consistent behaviors are perceived to have the same influence on movement toward a goal as equivalent goal-inconsistent behaviors are perceived to have on movement away from the goal. In other words, is one step forward (a goal-consistent behavior) perceived to have the same impact as one equal step backward (a goal-inconsistent behavior)? Objectively, one step forward equals one step back. Therefore, in order to be accurate, consumers should perceive that goal-consistent behaviors (such as saving $45) help their goal progress as much as similar goal-inconsistent behaviors (such as spending $45) hurt their progress. However, given the large body of research that shows that consumers make systematically biased judgments in a variety of domains (e.g., Slovic, Fischoff, and Lichtenstein 1977; Tversky and Kahneman 1974), it is possible that goal monitoring could be biased. The term bias does not necessarily imply that a goal monitoring asymmetry is harmful; it merely conveys that consumers have a tendency to perceive one type of behavior as more effective than the other, even in the case of equivalent but opposite goal-consistent and goal-inconsistent behaviors.

Some research provides evidence of a negativity bias, such that people tend to overweight the impact of bad things relative to good things of equal magnitude. For example, negative events tend to evoke more physiological arousal, elicit more attention, have a stronger effect on learning, and influence mood more than positive events (Baumeister et al. 2001; Rozin and Roysman 2001). Similarly, people typically overweight the subjective value of expected losses relative to the value of expected gains, a pattern of behavior labeled loss aversion (Kahneman and Tversky 1979). The negativity bias suggests that consumers might exhibit a regress bias in goal monitoring by overweighting the negative impact of goal-inconsistent behaviors relative to the positive impact of goal-consistent behaviors. In other words, consumers may perceive one step forward to be *smaller* than one step back.

In the domain of monitoring goal progress, however, there is reason to expect consumers to show a progress bias by giving more weight to good (goal-consistent) relative to bad (goal-inconsistent) behaviors. Goals differ from contingency learning or judgments about uncertain outcomes in that consumers tend to expect goals to be attained (Polivy and Herman 2002). Models of goal pursuit suggest that setting a goal requires an expectation that the goal will be reached (Kopetz et al. 2012; Locke and Latham 2002). Goal systems theory, for example, defines goals as "desirable end states that are attainable through action" (Kopetz et al. 2012, 211). People do not set or pursue goals unless they believe there is a good chance of success (Kruglanski 1996). Goals with low success expectancy are typically abandoned, and receiving feedback that success is less likely than initially expected can prompt goal release (Laran, Janiszewski, and Cunha 2008; Luoro, Pieters, and Zeelenberg 2007). This is why there are many more 8 year-olds than 18 year-olds with a goal to be an NBA star. Consistent with an expectation of goal attainment, people overestimate the rate at which they will complete projects and the probability that they will successfully engage in goal-consistent behaviors, exercise self-restraint, and ultimately achieve their goals (Buehler, Griffin, and Ross 1994; Epley and Dunning 2006; Nordgren, van Harreveld, and van der Pligt 2009).

Given that people set attainable goals and release goals

that seem unreachable, knowing that someone has set a goal indicates that the person who set the goal thinks it can be achieved. By extension, unless there is reason to believe otherwise, simply knowing that someone has set a goal may prompt an implicit expectation that the goal will be attained. A study with 61 US Amazon Mechanical Turk workers confirmed this tendency. Participants read that, "Jane weighs 150 pounds. According to the body mass index (BMI), she should lose 20 pounds to be in the 'normal weight' range." This was all that 31 of the participants read, while 30 others also read that Jane had set a goal to lose 20 pounds. Participants who learned that Jane had set a goal to lose weight thought it was significantly more likely that she would ($M = 4.57$ on a 7-point scale) than those who did not learn that she had set a goal ($M = 3.13$; $t = 7.38$, $p < .001$). The pretest supplements the literature by demonstrating that consumers tend to expect people to reach the goals that they have set.

If someone expects goal attainment, then goal-consistent behaviors confirm, whereas goal-inconsistent behaviors disconfirm expectations. For example, a consumer who sets a saving goal will expect to save money; saving $90 will confirm this expectation, but spending $90 will disconfirm it. Information that is consistent with beliefs is easier to process and thus more likely to be used when forming judgments than inconsistent information (Wyer and Srull 1989). People tend to strongly weight information that supports their expectations while discounting information that disconfirms expectations, an effect labeled "the confirmation bias" (Klayman and Ha 1987; Nickerson 1998). The confirmation bias persists in the goal domain; consumers selectively test the "hypothesis" that they will successfully attain their goals by behaving ideally in the future (Tanner and Carlson 2009) and seek information that confirms that they will be able to attain their goals (Zhang and Fishbach 2010; Zhang and Huang 2010).

Given the confirmation bias, we expect that consumers will typically assess expectation-confirming goal-consistent behaviors as having a larger impact on progress than disconfirming goal-inconsistent behaviors. Whereas goal-inconsistent behaviors may seem relatively inconsequential because of a belief that the goal will be attained despite the setback (Polivy and Herman 2002), goal-consistent behaviors may seem especially influential because they further confirm consumers' expectation of goal attainment (Tanner and Carlson 2009). Therefore, we hypothesize that consumers tend to perceive that goal-consistent behaviors have a larger impact on movement toward goal attainment than equivalent goal-inconsistent behaviors have on movement away from goal attainment. That is, we predict that consumers tend to exhibit a progress bias by perceiving one step forward as being *larger* than one step back.

ATTAINMENT EXPECTATIONS AND THE PROGRESS BIAS

We propose that the progress bias occurs because consumers tend to expect goal attainment and weight behaviors that confirm this expectation more heavily than disconfirming behaviors when monitoring goal progress. Although there could be additional, motivational influences on the progress bias, we focus on the role of expectations as a primary driver of the progress bias. Consumers have a tendency to expect goals to be attained, but expectations will vary depending on the characteristics of the goal and person pursuing it. We predict that factors that influence expectations will thus moderate the progress bias.

One influence on attainment expectations is the perceived ease or difficulty of reaching the goal. Easy goals are likely to be attained despite setbacks such as an occasional goal-inconsistent behavior. On the other hand, difficult goals are such that an occasional goal-inconsistent behavior is more likely to result in failure. For example, a basketball player with a goal to score five points in a game can miss a lot of shots and still hope to reach her goal, whereas a player cannot miss very many shots if she hopes to reach the far more difficult goal of scoring 50 points.

Attainment expectations also depend on whether a person has previously moved closer to or further from the goal. Goal pursuers who initially take a step (or multiple steps) toward a goal will be perceived as more likely to reach the goal than goal pursuers who initially move away from the goal. For example, if two consumers both have a goal to save $500,000 for retirement, a consumer who has saved $150,000 should seem more likely to reach the goal than a consumer who has fallen $150,000 into debt. Thus, we hypothesize that a reduction in attainment expectations, resulting either from the goal seeming difficult or the goal pursuer initially regressing away from the goal, will reduce the progress bias.

INFLUENCE OF THE PROGRESS BIAS ON GOAL PURSUIT

A remaining question is whether and how the progress bias influences motivation and goal pursuit. The literature suggests that the downstream effects of the progress bias are likely to be complex. Some research suggests that a progress bias may facilitate continued goal pursuit. Goals that appear overly difficult to reach are more likely to be released prior to attainment (Laran et al. 2008; Louro et al. 2007). Overweighting the impact of goal-consistent behaviors may facilitate goal attainment by making goals seem more attainable, thereby reducing consumers' likelihood of releasing the goal. Thus, a progress bias could help prevent small goal failures from prompting consumers to give up. Additionally, motivation to continue pursuing a goal is often inversely related to the perceived distance from the end goal (Kivetz et al. 2006; Nunes and Dreze 2006). Thus, a progress bias could increase the motivation to continue pursuing a focal goal by reducing the perceived distance from the goal. Indeed, research shows that consumers who are far from an end goal tend to exaggerate perceived progress in order to bolster motivation to continue pursuing the goal (Huang et al. 2012). These lines of research suggest that the progress

bias may facilitate goal attainment by increasing persistence toward a distant goal.

On the other hand, self-regulation theory (Baumeister and Heatherton 1996; Carver and Scheier 1982) suggests that inaccurate goal monitoring could hinder goal attainment by preventing consumers from properly adjusting their behavior in order to stay on course. For example, consumers who perceive goal-consistent behaviors to have a larger impact than goal-inconsistent behaviors may "make up" for eating 300 extra calories one day by consuming 200 fewer calories the next, or they may reward themselves for avoiding 300 calories at lunch by consuming an additional 400 at dinner. In other words, the progress bias could lead to misregulation (Baumeister and Heatherton 1996) by causing consumers to believe that they have made sufficient goal progress when they have not actually achieved the level of overall progress that they perceive. Given that consumers often release goals when they believe they have made, or even merely expect to make, progress (Fishbach and Dhar 2005; Zhang, Fishbach, and Kruglanski 2007), a bias in perceiving more movement toward the goal than away from the goal could result in consumers prematurely disengaging before completing the goal. We hypothesize that both processes may be at work. Specifically, consumers with a progress bias may be more likely to initially persist toward a goal, while progress toward the final goal may be higher for consumers who hold an accurate assessment of their overall progress.

OVERVIEW OF STUDIES

We examined the proposed progress bias in three stages. Studies 1, 2, and 3 provide evidence of the progress bias. Studies 4, 5, and 6 examine alternative explanations and moderators of the progress bias. Study 7 demonstrates consequences of the progress bias for goal persistence and completion. Seven studies utilizing a variety of goal domains, stimuli, methods, and measures provide strong evidence that: consumers tend to perceive goal-consistent behaviors to have a larger impact on goal progress than opposite goal-inconsistent behaviors; the extent to which consumers expect the goal to be attained moderates this bias; and the progress bias has important implications for consumer behavior.

STUDY 1: GOAL-CONSISTENT VERSUS GOAL-INCONSISTENT EATING BEHAVIORS

The purpose of study 1 was to test the hypothesis that consumers tend to overweight the impact of goal-consistent relative to goal-inconsistent behaviors. We used real behaviors and a self-relevant goal by having consumers with a healthy eating goal engage in actual goal-consistent or goal-inconsistent behaviors. Consumers with a healthy eating goal can move toward their goal by eating healthy foods and not eating unhealthy foods. Conversely, they can move away from their goal by not eating healthy foods and eating unhealthy foods. We thus tested participants' accuracy in monitoring goal progress by comparing the perceived impact of eating (goal-consistent behavior) versus not eating a healthy food (goal-inconsistent behavior) and of eating (goal-inconsistent behavior) versus not eating an unhealthy food (goal-consistent behavior). We expected to find a progress bias in both cases.

Method

Undergraduate students ($N = 111$) with a healthy eating goal (and no food allergies) responded to an advertisement to participate in an eating study in exchange for partial course credit. The study used a 2 (behavior consistency: goal-consistent, goal-inconsistent) × 2 (food: donut, carrots) mixed-design with goal-consistency manipulated between-subjects and food manipulated within-subjects. All participants received an unhealthy food (a donut) and a healthy food (five organic baby carrots). We randomly assigned participants to eat one of the foods; half ate carrots and did not eat a donut (goal-consistent) and the other half ate a donut and did not eat carrots (goal-inconsistent). While they ate by themselves in individual cubicles, participants completed a brief survey on current hunger and decoy questions about the carrots and donuts.

After eating all of their assigned food, participants wrote about their specific healthy eating goals. Participants in the goal-consistent condition rated (counterbalanced for order) the extent to which (1) not eating the donut and (2) eating the carrots helped their progress, whereas participants in the goal-inconsistent condition rated the extent to which (1) eating the donut and (2) not eating the carrots hurt their progress, on a 9-point unipolar scale anchored by "not at all" and "a lot." Thus, each participant rated the perceived impact of eating a food (a commission) and not eating a food (an omission), but the goal-consistency of the behaviors depended on condition. In this and subsequent studies we measured standard demographic variables, including gender, age, and education level (in studies with nonstudent participants). With one exception—participants with more education showed a slightly smaller progress bias in study 6—demographic differences did not influence goal monitoring, so we do not discuss them further.

Results and Discussion

We tested for the progress bias in goal monitoring by analyzing perceived progress with a 2 (goal-consistency) × 2 (food) repeated measures ANOVA. As hypothesized, there was a main effect of goal-consistency: participants judged that goal-consistent behaviors helped progress more than goal-inconsistent behaviors hurt progress ($F(1, 109) = 19.47$, $p < .001$, $\eta^2 = .15$; table 1). Although the interaction between goal consistency and the food replicate was also significant ($F(1, 109) = 5.79$, $p < .05$, $\eta^2 = .05$), contrasts revealed that the interaction did not qualify the main effect of goal consistency. Participants indicated that eating the carrots helped goal progress more than not eating the carrots

TABLE 1

EFFECTS OF GOAL-CONSISTENT AND GOAL-INCONSISTENT BEHAVIORS ON PERCEIVED PROGRESS/REGRESS

		Inconsistent		Consistent		Inconsistent		Consistent	
Study 1: Healthy diet (N = 111)		Eat donut 4.25 (2.38)		Don't eat donut 5.48*** (2.37)		Don't eat carrots 3.96 (2.63)		Eat carrots 6.20*** (2.38)	
Study 2: Saving (N = 203)		Spend \$45 1.63 (.73)		Save \$45 2.05*** (.86)		Spend \$90 1.99 (.70)		Save \$90 2.33** (.83)	
		Calorie estimate				Fat % estimate			
Study 3: Healthy diet (N = 71)		Eat ice cream 198.9 (22.95)		Don't eat 269.1** (23.30)		Eat ice cream 18.2 (3.56)		Don't eat 33.0*** (3.72)	
		Self-perspective ("You")				Other perspective ("Jill")			
Study 4: Weight loss (N = 1032)		Gain 1.5 lbs 1.73 (.93)		Lose 1.5 lbs 2.14*** (.86)		Gain 1.5 lbs 1.77 (.93)		Lose 1.5 lbs 2.32*** (.81)	
		Past progress toward goal				Past regress away from goal			
Study 5: Winning Blackjack (N = 281)		+300	+100	+300	+100	−300	−100	−300	−100
		Lose 3.97 (1.54)	Lose 4.65 (1.66)	Win 5.12*** (1.85)	Win 6.08*** (1.75)	Lose 5.47 (2.52)	Lose 5.79 (2.08)	Win 3.94*** (1.91)	Win 4.59*** (1.91)
		Attainment easy				Attainment difficult			
Study 6: Winning Blackjack (N = 280)		Win 1st	Lose 1st	Win 1st	Lose 1st	Win 1st	Lose 1st	Win 1st	Lose 1st
	47 vrula	Lose 5.88 (2.14)	Lose 6.39 (1.78)	Win 7.83*** (1.27)	Win 6.58 (1.69)	Lose 6.39 (1.87)	Lose 6.64 (1.61)	Win 7.13** (1.66)	Win 6.55 (1.58)
	53 vrula	6.26 (1.99)	6.51 (1.87)	8.06*** (1.17)	7.24** (1.41)	6.16 (1.86)	6.84 (1.88)	7.45*** (1.60)	7.16 (1.59)

NOTE.—Means (SD) of the perceived impact of goal-consistent and goal-inconsistent behaviors in studies 1–6. Asterisks indicate a significant difference between the mean of the goal-consistent behavior and the corresponding goal-inconsistent behavior of equal magnitude.

**$p < .05$.

***$p < .01$.

hurt progress (M = 6.20 vs. 3.96; $F(1, 109) = 22.02$, $p < .001$), and that not eating the donut helped more than eating the donut hurt (M = 5.48 vs. 4.25; $F(1, 109) = 7.42$, $p < .01$). Participants perceived the goal-consistent behavior to have a larger impact on progress than the goal-inconsistent behavior both when the goal-consistent behavior involved eating (a commission) and when it involved not eating (an omission).

Study 1 finds that consumers with a healthy eating goal who did not eat a donut and who ate carrots perceived each of these goal-consistent behaviors to help progress toward the goal more than those who ate a donut and did not eat carrots perceived their goal-inconsistent behaviors to hurt. The study provides initial evidence that consumers sometimes perceive goal-consistent behaviors to have a larger influence on progress than goal-inconsistent behaviors. Study 2 sought to replicate the progress bias using a broader set of progress measures and in a different goal domain with equal but opposite goal-consistent and goal-inconsistent behaviors of two different magnitudes.

STUDY 2: GOAL-CONSISTENT VERSUS INCONSISTENT FINANCIAL BEHAVIORS

Study 2 replicated the progress bias in a different goal domain (saving money). The study also varied the magnitude of the goal-consistent and inconsistent behaviors in order to examine whether perceptions of progress in goal monitoring show a similar or different pattern as perceived value in prospect theory or motivation in the goal gradient hypothesis. Participants assessed the impact of smaller or larger movements toward or away from a financial goal. We expected that money saved would have a larger influence on perceived progress than an equivalent amount of money spent and that this tendency would occur regardless of the amount.

Method

Undergraduate students at the University of Colorado (N = 203; 28% female) participated in a 2 (consistency of

behavior: goal-consistent, goal-inconsistent) × 2 (behavior magnitude: small, large) between-subjects study for course credit. We asked participants to imagine that they had a goal to save money. Participants in the small [large], goal-consistent condition read: "This week you ended up saving an extra $45 [$90]. When you went to the store you saw a product that you wanted, but you decided not to buy it. Because you did not make this purchase, your savings increased by $45 [$90]." Participants in the goal-inconsistent conditions imagined spending $45 [$90] such that "your savings decreased by $45 [$90]." A pretest with different participants from the same population revealed a significant difference in the perceived difficulty of saving $45 versus $90 ($N = 36$; $t = 2.17$, $p < .05$).

We measured the perceived impact of the behavior on goal progress using three items. First, participants rated the extent to which the behavior helped or hurt their progress on a 9-point unipolar scale from "not at all" to "a lot." Because research suggests that responses may be influenced by whether the response scale includes both positive and negative or only positive response categories (Schwarz et al. 1991), participants also rated the perceived impact of the behavior on two bipolar scales (−4 to +4): "To what extent does your decision move you further from or closer to attaining your savings goal?" (*much further/much closer*), and "How does your decision influence the likelihood that you will attain your savings goal?" (*less likely to attain goal/more likely to attain goal*). To compare the perceived negative effect of performing a goal-inconsistent behavior with the perceived positive effect of performing a goal-consistent behavior, we took the absolute value of the ratings on the bipolar scale (0 to 4). Since the three measures of perceived goal impact were significantly correlated ($\alpha = .75$) and the patterns of results were the same, we report results using a combined scale created by standardizing the items to a similar metric and adding them together. To ease interpretation of the means, we set the average of the combined measure to two, the scale midpoint of the bipolar measure.

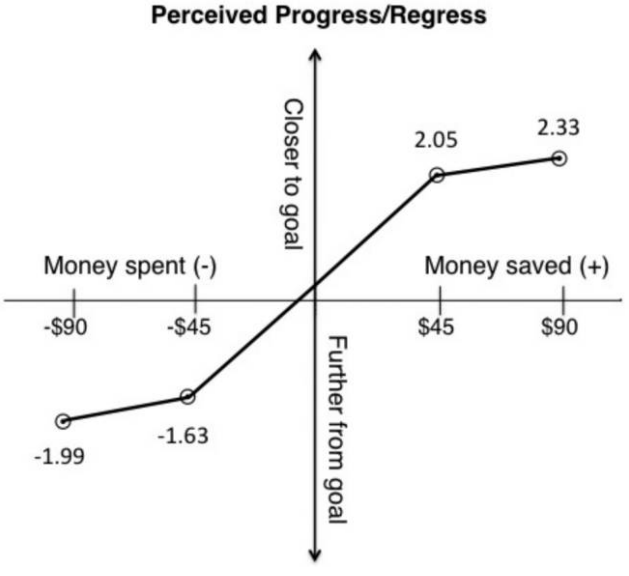
Results and Discussion

We analyzed effects on perceived progress using a 2 (consistency: goal-inconsistent, goal-consistent) × 2 (behavior magnitude: small, large) ANOVA. As expected, there was a significant main effect of magnitude such that saving or spending $90 had a larger perceived impact on perceived progress than saving or spending $45 ($M = 2.16$ vs. 1.84; $F(1, 199) = 8.16$, $p < .01$, $\eta^2 = .04$). Importantly, a significant main effect of consistency revealed a progress bias: participants perceived goal-consistent behaviors (saving) to have a larger impact than goal-inconsistent behaviors (spending; $M = 2.19$ vs. 1.81; $F(1, 199) = 12.03$, $p < .001$, $\eta^2 = .06$). Participants perceived saving to have a larger impact than spending an equivalent amount of money regardless of whether the amount was $45 ($M = 2.05$ vs. 1.63; $F(1, 199) = 7.35$, $p < .01$) or $90 ($M = 2.33$ vs. 1.99; $F(1, 199) = 4.80$, $p < .05$; interaction: $F(1, 199) = .14$, NS; table 1).

Study 2 replicates that consumers tend to overweight the impact of goal-consistent relative to goal-inconsistent behaviors when monitoring progress. The progress bias emerged across both relatively smaller and larger goal-consistent and inconsistent behaviors and with both unipolar and bipolar measures. There are two additional things to note about the results. First, although we propose that the progress bias arises because of a tendency to believe that goals will be successfully attained, a progress bias could also arise if consumers monitor progress on a convex function with the final goal as the reference point, similar to the goal gradient model of effort in goal pursuit (e.g., Kivetz et al. 2006). Our results do not, however, support a convex function toward the final goal for monitoring progress (see fig. 1). Second, these results cannot be explained by prospect theory, which suggests that in risky decisions the psychological impact of an expected loss is greater than the psychological impact of an equal gain (Kahneman and Tversky 1979). In the realm of monitoring goal-related behaviors, as compared to risky decisions, our data show the opposite pattern: gains in goal progress have a larger perceived impact than losses in progress (see fig. 1). The results thus illustrate that goal monitoring is different from both effort motivation and risky decisions.

FIGURE 1

PERCEIVED IMPACT OF MONEY SAVED OR SPENT ON PROGRESS/REGRESS IN STUDY 2



NOTE.—The perceived impact of money spent or money saved on progress toward or regress away from a savings goal. Although participants perceived money saved to have a larger impact than the same amount of money spent, the pattern of means shows an *s*-shaped pattern around a no progress (i.e., $0 saved or spent) reference point rather than a convex pattern approaching a final goal reference point.

The first two studies support the proposed progress bias by demonstrating that consumers perceive goal-consistent behaviors to have a greater impact than goal-inconsistent behaviors. Despite an effort to measure perceived progress in several different ways, it is possible that the observed difference may be an artifact of participants interpreting one scale unit of movement toward a goal as representing a different psychological magnitude than one scale unit of movement away from a goal (McGraw et al. 2010). The purpose of the next study is to rule out this possible explanation by measuring perceptions of product attributes perceived to be instrumental to goal attainment. For example, the amount of calories and fat in a food determine the impact of eating, or not eating, the food on movement toward or away from a healthy eating goal. Product attributes have the same meaning regardless of whether the attribute indicates movement toward or away from the goal. We propose that consumers will tend to perceive a higher level of goal-relevant attributes when a product is used in a goal-consistent manner than a goal-inconsistent manner. Such a finding would rule out the possibility that the progress bias occurs because participants assign a different meaning to scale values representing gains than losses and replicate the progress bias in consumers' perceptions of product attributes.

STUDY 3: A PROGRESS BIAS IN ESTIMATING GOAL-RELEVANT ATTRIBUTES

In study 3, we assessed the impact of goal consistency on perceptions of product attributes that represent either movement toward or away from a goal. The impact that a food has on a healthy diet goal depends, in part, on its caloric and fat content. We thus predict that consumers will perceive more calories and fat in a decadent dessert when they avoid eating the dessert (a goal-consistent behavior) than when they eat the dessert (a goal-inconsistent behavior).

Method

Undergraduates at the University of Colorado ($N = 71$; 54% female) participated either for class credit or a small gift. Since there were no effects of recruitment method, we combined the samples. Participants imagined that they had a healthy diet goal and an opportunity to eat a 5-ounce scoop of ice cream. Participants imagined either that they decided not to eat the ice cream (goal-consistent behavior) or to eat the ice cream (goal-inconsistent behavior). Participants then answered, "How many calories do you think are in this scoop of ice cream?" and "What percentage of the total fat that you should eat in one day do you think is in this scoop of ice cream?"

Results and Discussion

We eliminated one participant for failing to follow instructions and two for a calorie estimate more than 4 standard deviations from the mean (one from each condition). Three participants did not provide calorie estimates, while only one did not estimate the percentage of fat; this is reflected in different degrees of freedom for these analyses. ANOVA revealed a significant effect of goal consistency on the estimated number of calories ($F(1, 63) = 4.60$, $p < .05$, $\eta^2 = .07$) and percentage of fat ($F(1, 65) = 8.26$, $p < .01$, $\eta^2 = .11$). As predicted, participants estimated that the same scoop of ice cream had more calories ($M = 269.1$) and fat ($M = 33.0\%$) when forgone than when consumed ($M_{\text{calories}} = 198.9$; $M_{\text{fat}} = 18.2\%$). Study 3 thus extends the progress bias to participants' perceptions of goal-relevant product attributes. The study confirmed that the progress bias in goal monitoring is not merely an artifact of participants assigning different psychological weights to positive and negative scales. Consumers perceived an unhealthy food to have more calories and fat when the calories and fat represented the positive impact of avoiding an unhealthy food than when they represented the negative impact of consuming it.

Our conceptualization is that the progress bias seen in these first three studies occurs because consumers weight information that is consistent with an expectation of goal progress more heavily than inconsistent information. However, the same pattern of asymmetric weighting could occur because consumers are motivated to maintain a favorable self-view. A large literature suggests that people have overly optimistic views of themselves and their futures (Weinstein 1980). People tend to overestimate the probability that they will behave optimally and often distort information in order to maintain a positive self-view (Dunning and Cohen 1992; Greve and Wentura 2003). People may similarly downplay the significance of goal-inconsistent behaviors and/or embellish the influence of goal-consistent behaviors in order to maintain positive self-views. The next study thus tests whether self-enhancement explains why consumers tend to overweight the perceived impact of goal-consistent behaviors.

STUDY 4: DOES SELF-ENHANCEMENT DRIVE THE PROGRESS BIAS?

The primary purpose of study 4 is to examine whether self-enhancement could account for the progress bias. If a desire to maintain a favorable self-view drives the progress bias, then it should occur when consumers evaluate their own progress but not when they evaluate the progress of another person. Conversely, if the progress bias occurs because consumers tend to expect goals (both their own and others') to be attained, then the bias should persist regardless of whether participants evaluate their own progress or the progress of someone else. Study 4 teases apart these two process explanations by crossing the goal consistency of a behavior (i.e., losing vs. gaining weight) with whether the participant or another person performs the behavior.

Method

Members of an online Qualtrics panel participated for a small payment. Potential participants first completed a screening question about their active goals. Participants who indicated that they had a goal of "Controlling my weight" were directed to this study ($N = 1032$), while those who did not report a weight control goal completed a different study. Although we requested a fairly large sample in order to ensure the power to detect effects driven by either process, a programming error resulted in an even larger sample (and a lack of demographic information). However, the unexpectedly large sample size is beneficial because it increases the stability of the mean estimates and the power to detect significant effects.

Participants read one of four versions of a scenario in which a person who has a goal to lose weight either gains (goal-inconsistent condition) or loses (goal-consistent condition) one and a half pounds. In order to test whether the progress bias results from a motivation to view oneself favorably we also manipulated whether the participant or a different person gained or lost the weight. The study used a 2 (behavior: goal-consistent, goal-inconsistent) × 2 (perspective: self, other) between-subjects design. Participants in the self/inconsistent [consistent] condition read: "You have a goal to try to lose weight by eating healthier food and exercising. At the end of each week, you weigh yourself to see how you are doing with respect to your weight loss goal. This week you got on the scale and discovered that you gained [lost] 1.5 pounds." Participants in the "other" condition read one of the scenarios written with a third-person perspective about a person named "Jill." After reading the scenario, participants rated the extent to which the behavior helped or hurt their [Jill's] progress on a 9-point unipolar scale from *not at all* to *a lot* and by taking the absolute value of the extent to which the behavior moved them [Jill] further from or closer to attaining the goal on a 9-point bipolar scale (from −4: *much further* to 4: *much closer*). Since these scales were significantly correlated ($r = .58$) and showed the same patterns, we standardized and averaged the measures and centered the mean at 2, as we did in study 2.

Results and Discussion

A 2 (goal consistency: consistent, inconsistent) × 2 (perspective: self, other) ANOVA showed a main effect of goal consistency. Participants perceived a goal-consistent behavior (losing 1.5 lbs) to have a larger impact than an equal but opposite goal-inconsistent behavior (gaining 1.5 lbs; $F(1, 1028) = 77.99$, $p < .001$, $\eta^2 = .07$). The perspective manipulation had a small but significant main effect ($F(1, 1028) = 4.33$, $p < .05$, $\eta^2 = .004$) but did not interact with goal consistency ($F(1, 1028) = 1.64$, NS). In contrast to the explanation that a self-enhancement motive drives the progress bias, participants perceived the goal-consistent behavior to have a larger impact than the goal-inconsistent behavior both when imagining that they lost or gained weight ($M = 2.14$ vs. 1.73; $F(1, 1028) = 27.39$, $p < .001$) and when imagining another person lost or gained weight ($M = 2.33$ vs. 1.77; $F(1, 1028) = 53.26$, $p < .001$).

Participants perceived a goal-consistent behavior (losing weight) as having a larger impact than an equivalent goal-inconsistent behavior (gaining weight) even when evaluating the progress of another person. These results are inconsistent with the explanation that people show a progress bias in order to maintain a favorable self-view. In contrast, the results are consistent with the explanation that the progress bias occurs because consumers tend to expect people to reach their goals and therefore overweight expectation-confirming goal-consistent behaviors relative to expectation-disconfirming goal-inconsistent behaviors. Our next two studies directly test the expectancy-confirmation explanation by examining whether expectations of goal attainment moderate the progress bias.

Although all four studies to this point document a progress bias in goal monitoring, the goals in all were open-ended without a specific end-state. The healthy eating goals in studies 1 and 3 were open-ended because there is not a point at which "healthy eating" is finally achieved. Similarly, the goal in study 2 was to save money in general rather than to save some specific amount. The goal in study 4 was a weight-loss goal but without a specific desired amount of weight to lose. Study 5 thus sought to further generalize the results by examining perceptions of movement toward or away from a goal with a defined end point.

A related aspect of the first four studies is that the initial distance from the goal was unspecified. As noted earlier, consumers' perceptions of distance from a goal can influence motivation and effort (e.g., Bonezzi et al. 2011; Kivetz et al. 2006). In fact, consumers may sometimes overestimate progress toward the goal when the goal is distant and attainment is uncertain but underestimate progress when the goal is closer and attainment is more assured, in order to maintain motivation (Huang et al. 2012). If consumers strategically overweight the impact of goal-consistent relative to goal-inconsistent behaviors in order to maintain motivation, then consumers who have made only a little progress toward the goal should exhibit a larger progress bias than those who have made a lot of progress, and consumers who have regressed further away from the goal—who should be most uncertain about goal attainment—should show an even larger progress bias.

On the other hand, it is likely that moving toward a goal bolsters attainment expectations, while regressing away from the goal reduces or potentially even reverses expectations of successful attainment. If, as we propose, goal-consistent behaviors have a relatively larger perceived impact on goal progress because they confirm expectations, then the progress bias should be less likely for consumers who have moved further away from a goal. If regress reverses expectations such that the consumer expects goal failure, it is even possible that a "regress bias" could occur. Study 5 thus examines whether past movement toward or away from a goal moderates the progress bias and, if so,

whether the progress bias increases or decreases with distance from the goal. Our expectancy-confirmation hypothesis predicts that consumers will perceive goal-consistent behaviors to have a larger impact than equivalent goal-inconsistent behaviors after previously progressing toward a goal but not after previously regressing away from a goal.

STUDY 5: DOES DISTANCE FROM THE GOAL MODERATE THE BIAS?

Study 5 examines whether the progress bias occurs because consumers strategically distort perceptions of progress (e.g., Huang et al. 2012) or because consumers perceive expectation-confirming behaviors to have a larger impact on goal progress than expectation-disconfirming behaviors. We tested the two explanations by varying whether participants with a specific performance goal experienced either a goal-consistent or a goal-inconsistent behavior after initially making: (1) a small amount of progress, (2) a large amount of progress, (3) a small amount of regress, or (4) a large amount of regress toward or away from the goal. If the progress bias occurs because of strategic distortion, then it should increase linearly with consumers' distance from the goal. Conversely, if the progress bias occurs because of expectancy confirmation, then consumers who initially moved closer to the goal should show a larger progress bias than consumers who previously moved away.

Method

Undergraduates in a subject pool at the University of Colorado ($N = 101$; 33% female) and members of a Qualtrics panel ($N = 180$; 60% female; mean age = 46.7, range = 20–78) participated. Because the sample did not interact with any of the results below, we combined the participants into a single sample. Participants were randomly assigned to a 2 (behavior consistency: win, lose) × 2 (direction: progress, regress) × 2 (distance: small, large) between-subjects design.

The study examined goal monitoring using real behaviors. Participants played multiple rounds of a computerized version of Blackjack. In each round participants made a bet, chose whether or not to get an additional card, and subsequently won or lost "Blackjack dollars" (BJD). We encouraged participants to set a goal of accumulating 500 BJD by stating that everyone who successfully reached the goal would be entered into a lottery to win $50. Participants read detailed instructions on how to play Blackjack and played a trial game (see appendix, available online). They then indicated their personal expectations for and importance of reaching the goal. Participants rated expectancy of attainment on a pair of 9-point semantic differential scales anchored by "very low chance/very high chance" and "not at all confident/very confident" ($r = .86$, $M = 5.89$, SD = 1.95). They rated the importance of reaching the goal on two 5-point agree-disagree items: "Winning at least 500 BJD is important to me," and "I care a lot about accumulating at least 500 BJD"; $r = .77$, $M = 3.79$, SD = .83).

Participants first played three rounds to establish an initial level of progress or regress from the goal. The first and third rounds manipulated whether participants moved a small or a large distance toward or away from the 500 BJD goal, while the second round was a draw in which all participants neither won nor lost money regardless of condition. Participants in the large [small] regress condition lost 160 [60] BJD in the first and 140 [40] BJD in the third round. Participants in the large [small] progress condition won 160 [60] and 140 [40] BJD. Thus, at the start of the fourth round, all participants had a goal of 500 BJD, but by random assignment they had won or lost such that their level of progress was −300, −100, +100, or +300 BJD.

In the critical fourth round, participants either won (goal-consistent) or lost (goal-inconsistent) 35 BJD. Participants rated the perceived impact of the outcome of the round on two 9-point unipolar scales: "To what extent did the outcome of this last round (winning/losing 35 BJD) help/hurt your progress?"; and "To what extent did this round move you closer/further from your goal of accumulating 500 BJD?" ($r = .54$). Participants then answered two questions measuring their expectancy of goal attainment ("If you were to play another round, what do you think your chances of winning the round would be?"; and "What do you think your probability of accumulating at least 500 BJD would be if you were to keep playing?") by adjusting a continuous slider between 0 and 1 ($r = .69$). Participants next read that the Blackjack game was over, but since they did not get the opportunity to reach the goal of earning 500 BJD, they would be entered into the lottery for the $50 bonus prize regardless of their performance in the game.

Results and Discussion

We hypothesized that prior progress toward the goal would increase expectations of reaching the goal, but that prior regress away from the goal would reduce or even reverse these expectations. Consistent with this hypothesis, a 2 (goal consistency: win, lose) × 2 (direction: progress, regress) × 2 (distance: small, large) ANOVA showed a significant main effect of direction on goal attainment expectancy ($F(1, 272) = 49.80$, $p < .001$, $\eta^2 = .16$). Participants perceived a higher probability of reaching the goal after progressing toward rather than regressing away from the goal during the first three rounds of the game ($M_{progress} = .59$, $M_{regress} = .43$). Neither goal consistency ($F(1, 272) = .52$, NS) nor distance ($F(1, 272) = 1.49$, NS) influenced expectations. There was a marginally significant interaction between direction and distance ($F(1, 272) = 3.60$, $p = .06$, $\eta^2 = .01$); participants had lower expectations (albeit insignificantly) after regressing a large as opposed to a small distance (.41 vs. .43; $F(1, 272) = .23$, NS) but higher expectations after progressing a large as opposed to a small distance (.63 vs. .55; $F(1, 272) = 4.80$, $p < .05$). No other effects were significant ($p > .2$). In sum, participants who initially regressed away from the goal had relatively low expectations of attainment, whereas participants who initially made progress expected to reach the goal. Our ex-

pectancy-confirmation hypothesis thus predicts that participants who initially moved toward the goal should show a progress bias, but those who initially moved away from the goal should not.

To examine whether the progress bias depended on participants' prior goal movement, we analyzed ratings of the perceived impact of the goal-consistent (winning 35 BJD) or inconsistent (losing 35 BJD) outcome of the fourth round using a 2 (goal consistency) × 2 (direction) × 2 (distance) ANOVA. The analysis revealed the predicted interaction between goal consistency and direction ($F(1, 273) = 33.51$, $p < .001$, $\eta^2 = .11$; table 1). Participants who initially moved closer to the goal perceived winning 35 BJD to help their goal progress more than losing 35 BJD hurt ($M_{\text{consistent}} = 5.56$, $M_{\text{inconsistent}} = 4.32$; $F(1, 272) = 19.70$, $p < .001$), whereas participants who initially moved further from the goal perceived winning 35 BJD to help less than losing 35 BJD hurt ($M_{\text{consistent}} = 4.28$, $M_{\text{inconsistent}} = 5.63$; $F(1, 272) = 15.56$, $p < .001$). Initially moving away from the goal moderated the progress bias to the extent that participants who had regressed away from the goal showed a regress bias, perceiving the goal-consistent behavior as having *less* impact than the goal-inconsistent behavior.

The only other significant effect was a main effect of distance ($F(1, 273) = 8.05$, $p < .01$, $\eta^2 = .03$); participants' perceived winning or losing 35 BJD as having a larger impact if they had moved a small, versus a large, distance toward or away from the goal during their initial rounds of play ($M_{\text{small}} = 5.22$, $M_{\text{large}} = 4.61$; $F(1, 272) = 8.05$, $p < .01$). This main effect probably occurred because 35 BJD seemed relatively larger when compared to 40 and 60 BJD (the amounts won or lost in the small distance condition) than when compared to 140 and 160 BJD (the amounts in the large distance condition). The extent to which participants moved toward or away from the goal did not, however, interact with either goal consistency ($F(1, 272) = .42$, NS) or direction ($F(1, 272) = .53$, NS; three-way interaction: $F(1, 272) = .002$, NS). That is, whether consumers showed a progress bias or a regress bias did not depend on their distance from the goal but only on whether they had previously moved closer to or further from it.

Study 5 supported the expectancy-confirmation explanation of the progress bias; notably, initial movement away from a goal moderated both attainment expectations and the progress bias. The study did not support the alternative hypothesis that consumers are more likely to exhibit a progress bias after initially moving away from their goals. Prior movement toward or away from a goal did moderate the progress bias; however, instead of showing a larger progress bias, participants who had previously moved further away from the goal perceived goal-consistent behaviors as having a smaller impact than goal-inconsistent behaviors.

STUDY 6: THE MODERATING EFFECT OF GOAL LIKELIHOOD

The purpose of study 6 was to provide additional evidence that expectations of attaining a goal moderate the extent to which consumers perceive goal-consistent behaviors to have a larger impact on progress than goal-inconsistent behaviors. The current study examines two factors that influence expectations of goal attainment: (1) the difficulty of attaining the goal and (2) initial success or failure. We predicted that participants would perceive that winning rounds in a game would have a larger influence on perceived progress than losing rounds (i.e., a progress bias), but that the tendency to overweight the impact of winning would decrease when participants believed the goal would be difficult to reach and when participants experienced an initial failure.

Method

Qualtrics panel members ($N = 280$; 50% female; average age = 47.8) completed the study for a small payment. Participants played computerized Blackjack (as in study 5). They were encouraged to set a goal to accumulate as many points (called vrula) as possible to increase their chance of winning a $20 bonus. We manipulated perceptions of the difficulty of goal attainment by describing the bonus as either relatively easy or difficult to win. Each participant played four rounds, winning 47 and 53 vrula in two rounds (goal-consistent behaviors) and losing 47 and 53 vrula in two others (goal-inconsistent behaviors). We manipulated initial success or failure by varying whether participants won (initial success) or lost (initial failure) their first game. The study thus used a 2 (behavior consistency: win, lose) × 2 (attainment difficulty: easy, difficult) × 2 (initial outcome: success, failure) × 2 (game replicate: 47 vrula, 53 vrula) mixed factorial design with initial outcome and attainment difficulty manipulated between subjects and goal consistency and game replicate manipulated within subjects.

After reading the instructions and playing a practice game (see the appendix), participants received the attainment difficulty manipulation. In the easy [difficult] attainment condition, participants read, "the probability that you will achieve your performance goal and win the prize is fairly high [low]." Participants completed a manipulation check measure by indicating their perceived chance of attaining the performance prize goal on a 9-point scale anchored by "very low chance" and "very high chance."

Next, participants played four rounds of Blackjack, programmed so that participants had the following outcomes: win 47 vrula, win 54 vrula, lose 47 vrula, and lose 54 vrula. Half of the participants first played one of the winning rounds (initial success condition) and the other half first played one of the losing rounds (initial failure condition); the order of the remaining three rounds was randomized. After each round, participants indicated the extent to which they perceived the round to move them closer to or further from their goal of earning a high vrula total on two 9-point, unipolar measures anchored by "did not help (hurt)/helped (hurt) a lot" and "not at all closer (further)/a lot closer (further)" ($r = .69$). After completing all four rounds, participants answered additional questions measuring their expectations of successfully reaching the goal. Specifically, they estimated the probability of winning the next round

and the probability of winning the $20 bonus on continuous slider scales from 0 to 1 ($r = .60$).

Results

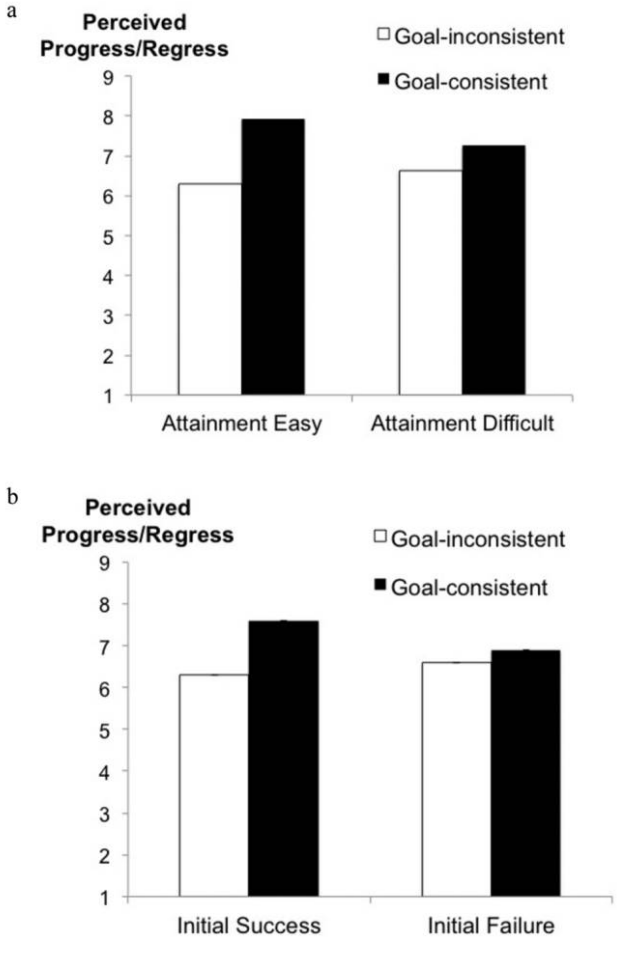
The attainment difficulty manipulation worked as expected. Participants who read that it would be relatively easy to win the performance prize believed that they had a better chance of reaching the goal than participants who read that it would be difficult ($M_{easy} = 6.55$, $M_{difficult} = 4.91$; $F(1, 278) = 46.99$, $p < .001$, $\eta^2 = .15$).

We examined participants' perceptions of progress using a 2 (behavior consistency: win, lose) × 2 (attainment difficulty: easy, difficult) × 2 (initial outcome: success, failure) × 2 (replicate: 47 vrula, 53 vrula) repeated-measures ANOVA. On average, participants perceived goal-consistent behaviors (winning) to have a larger impact than goal-inconsistent behaviors (losing), as indicated by a significant main effect of goal consistency ($M_{consistent} = 7.24$, $M_{inconsistent} = 6.39$; $F(1, 276) = 51.89$; $p < .001$, $\eta^2 = .16$; table 1). The main effect, however, was qualified by three significant two-way interactions. Consistent with the hypothesis that attainment difficulty reduces the progress bias, participants showed a larger progress bias when they expected the goal to be easy to reach ($M_{consistent} = 7.42$, $M_{inconsistent} = 6.26$; $F(1, 138) = 38.18$; $p < .001$) than when they expected it to be difficult to reach ($M_{consistent} = 7.06$, $M_{inconsistent} = 6.52$; $F(1, 138) = 11.02$; $p < .01$; interaction: $F(1, 276) = 6.33$; $p = .01$, $\eta^2 = .02$; fig. 2*a*). Consistent with the hypothesis that initial failure reduces the progress bias, participants also showed a larger progress bias if they won their first round ($M_{consistent} = 7.62$, $M_{inconsistent} = 6.17$; $F(1, 138) = 64.77$; $p < .001$) than if they lost their first round ($M_{consistent} = 6.88$, $M_{inconsistent} = 6.60$; $F(1, 138) = 2.99$; $p = .09$; interaction: $F(1, 276) = 23.28$; $p < .001$, $\eta^2 = .08$; fig. 2*b*). Although there was an unpredicted interaction between the replicate and goal consistency ($F(1, 276) = 7.00$; $p < .01$, $\eta^2 = .03$), the progress bias was significant both when participants won or lost 47 vrula ($M_{consistent} = 7.01$, $M_{inconsistent} = 6.33$; $F(1, 279) = 22.86$; $p < .001$) and when they won or lost 53 vrula ($M_{consistent} = 7.47$, $M_{inconsistent} = 6.45$; $F(1, 279) = 53.07$; $p < .001$). None of the higher-order interactions were significant ($p > .10$), indicating that the predicted interactions between goal consistency, attainment difficulty, and initial success were similar across the two sets of rounds.

If participants rate goal-consistent behaviors as having a larger impact on progress than goal-inconsistent behaviors because they expect to attain the goal, then both attainment difficulty and initial outcome should moderate the progress bias by altering participants' attainment expectations. To test this, we calculated a progress bias score for each participant by subtracting the average rating of movement away from the goal for the two losing rounds from the average rating of movement toward the goal for the two winning rounds. We then investigated whether measures of participants' expectancy of reaching the goal mediated the effects of the attainment difficulty and initial outcome manipulations on this progress bias score. Because the effects of attainment difficulty and initial outcome were independent, we ran two separate mediation models, one with attainment difficulty as the independent variable and the other with initial outcome as the independent variable, using the bootstrapping procedure pioneered by Preacher and Hayes (2008). Participants who initially read that the goal would be easy to attain had a higher expectancy of reaching the goal after four rounds than participants who read that the goal would be difficult to attain ($b = .04$, $t = 3.53$, $p < .01$), and the perceived likelihood of reaching the goal significantly mediated the effect of the attainment difficulty manipulation

FIGURE 2

PERCEIVED IMPACT OF WINNING OR LOSING AT BLACKJACK IN STUDY 6



NOTE.—The perceived impact of winning (goal-consistent) and losing (goal-inconsistent) rounds of Blackjack on progress toward or regress away from a performance goal depending on (*a*) whether the participant believed the performance goal would be easy or difficult to attain and (*b*) whether the participant initially won or lost.

on the progress bias (indirect effect = .16, 95% confidence interval = .08 to .26). Similarly, participants who experienced initial success believed that they would be more likely to reach their goal (even after playing the subsequent three games) than participants who experienced initial failure (b = .03, t = 2.26, p = .02), and perceived likelihood of reaching the goal mediated the effect of the initial outcome on the progress bias (indirect effect = .10, 95% confidence interval = .02 to .21).

Discussion

This study replicated the finding that consumers tend to perceive goal-consistent behaviors to have a larger impact on goal progress than equal but opposite goal-inconsistent behaviors. More importantly, expectations of goal attainment mediated the tendency to overweight goal-consistent relative to goal-inconsistent behaviors. Both perceiving the goal as difficult to reach and encountering an initial setback decreased attainment expectations, thereby reducing the progress bias.

An important next question is how the progress bias influences behavior related to goal pursuit. The progress bias may motivate persistence when a goal remains distant by making the goal seem closer and more attainable, similar to the effect demonstrated by Huang et al. (2012). However, the progress bias also creates a lack of accuracy in understanding actual progress toward the goal. The lack of accuracy may lead to misregulation whereby consumers prematurely disengage from a goal because they falsely believe they have made sufficient progress (Baumeister and Heatherton 1996). We conducted a final study to examine the consequences of holding a progress bias on the motivation to initially persist toward and the tendency to prematurely disengage from the goal.

STUDY 7: CONSEQUENCES OF THE PROGRESS BIAS FOR GOAL PURSUIT

To test the consequences of holding a progress bias on goal pursuit, we manipulated the presence of the bias by providing (or not providing) participants with feedback about their level of progress toward a calorie-burning goal. As we have seen, participants will have a progress bias when there is no feedback, but feedback about overall progress should de-bias participants. Based on the literature showing that consumers are less motivated to persist toward goals that appear to be too distant or difficult (Huang et al. 2012; Kivetz et al. 2006), we predicted that the progress bias would increase the probability that participants would attempt to reach the goal. However, based on the literature suggesting that inaccurate goal monitoring may result in prematurely releasing the goal (Carver and Scheier 1982), we also predicted that participants with a progress bias would complete less of the goal before disengaging from the task.

Method

Undergraduates (N = 119; 35% female) participated in a study on exercise and eating in exchange for partial course credit. We encouraged participants to set a goal of burning 70 net calories during the study by providing a $5 bonus to anyone who completed or surpassed the net −70 calorie goal. All participants then engaged in a goal-consistent behavior (burning 50 calories) and a goal-inconsistent behavior (consuming 50 calories). Based on our prior studies, we expected participants to show a progress bias, believing they had burned more calories than they had consumed. We randomly assigned half of the participants to a de-biasing condition, informing them that they had objectively burned and consumed an equal number of calories. We then examined whether there were differences between participants who held a progress bias (no feedback condition) and those who did not (feedback condition) on subsequent goal persistence and completion.

Participants completed the study in a private room under the supervision of an experimenter. After weighing the participant, the experimenter gave the participants background information and instructions for the study (see the appendix). Each participant engaged in an exercise session by stepping up and down an 8-inch exercise step. Unbeknownst to the participant, the experimenter counted the number of steps and stopped the participant when he or she had burned 50 calories. (We calculated the number of steps that each participant needed to take in order to burn 50 calories using the body-weight normed calculation derived from Bassett et al. [1997]). Next, the participant sat at a table with a bottle of water and a plate containing half of a small energy bar that, unbeknownst to participants, contained 50 calories. The experimenter asked the participant to eat the bar. All participants ate the entire serving.

We expected that participants would have a biased perception of progress such that they would believe that they had made progress toward the calorie-burning goal. In order to manipulate whether or not participants continued to have a progress bias, the experimenter gave feedback aimed at eliminating the progress bias to half of the participants randomly assigned to the feedback condition. Specifically, the experimenter told participants in the feedback condition, "At this point in the experiment you have not yet reached the goal of burning 70 net calories. In fact, you have consumed exactly the number of calories from eating as you burned during the initial exercise session. You consumed 50 calories and you burned 50 calories." Participants in the no-feedback condition were told that they had not yet reached the goal of burning 70 net calories but did not receive any information about their specific level of progress.

Next, all participants learned that they would have an opportunity to reach the goal of burning 70 net calories by engaging in an additional, voluntary exercise session. Participants completed a brief paper survey, which included a manipulation check ("How many calories do you think you still need to burn in order to reach your goal?") and a measure of intent to exercise ("How long do you plan to ex-

ercise?") and decided whether or not to engage in the voluntary exercise session. The experimenter debriefed and dismissed participants who decided not to exercise. Participants who decided to exercise stepped up and down the 8-inch step until they decided to stop or until they took enough steps to burn 80 calories (10 more than the goal), at which point the experimenter stopped them. Finally, the experimenter debriefed the participants and paid those who successfully completed the calorie-burning goal.

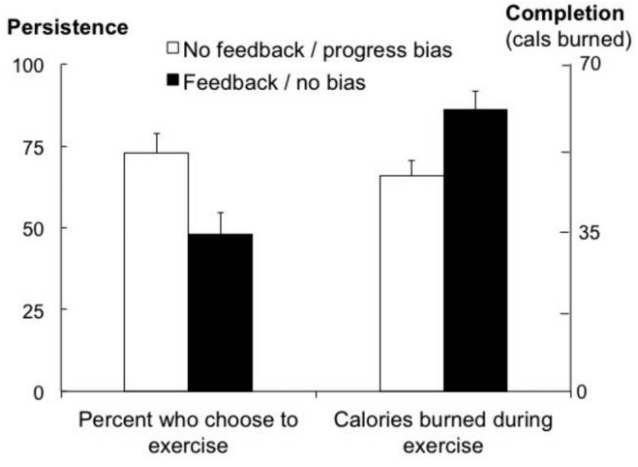
Results and Discussion

Participants who did not receive feedback after the initial exercise and eating sessions showed a progress bias; on average they estimated that they needed to burn only 48.89 (SD = 25.07) calories to reach their goal—significantly less than the 70 calories that they actually needed ($t = -6.47$, $p < .001$). The feedback manipulation, however, successfully de-biased participants; on average participants who received the feedback manipulation estimated that they needed to burn 68.77 (SD = 22.79) calories, which was not significantly different from 70 ($t = -.42$, NS). Thus, participants in the no-feedback condition entered the voluntary exercise session with a progress bias, whereas participants who received feedback entered with a relatively accurate assessment of their net progress (or lack thereof).

The feedback manipulation influenced participants' plan to exercise. Participants who received feedback and consequently did not hold a progress bias planned to exercise longer than participants who did not receive feedback (M = 12.03 vs. 8.39 minutes; $F(1, 117) = 7.10$, $p < .01$, $\eta^2 = .06$). Participants' stated plan, however, was not directly reflected in their behavior. Consistent with the hypothesis that the progress bias can motivate initial persistence, a higher percentage of participants in the no-feedback condition actually chose to exercise (73% vs. 48%; $\chi^2 = 7.50$, $p < .01$). However, consistent with the hypothesis that the progress bias results in premature disengagement from the goal, participants who chose to exercise burned more calories, thereby attaining a higher level of goal completion, if they previously received the de-biasing feedback ($M_{\text{no feedback}} = 46.38$, $M_{\text{feedback}} = 60.41$ calories burned; $F(1, 70) = 7.54$, $p < .01$, $\eta^2 = .10$; fig. 3). The tendency for participants with a progress bias to prematurely release the goal ended up offsetting the initial bump in persistence resulting in an approximately equal proportion of participants in the no-feedback and feedback conditions reaching the goal (23% vs. 15%; $\chi^2 = 1.23$, NS). The lack of an overall effect on goal attainment disguised two competing consequences of holding a progress bias. Overestimating perceived progress toward a goal decreased participants' likelihood of giving up because the goal seemed too difficult to reach, but it also increased their likelihood of stopping before completing the goal. Although additional tests are needed to verify the robustness of these findings, study 7 suggests that the progress bias may help by encouraging persistence toward a goal but also hurt by leading consumers to disengage because they inaccurately believe they have attained a greater level of overall progress than is the case.

FIGURE 3

EFFECTS OF HOLDING A PROGRESS BIAS ON GOAL PERSISTENCE AND COMPLETION IN STUDY 7



NOTE.—Persistence indicates the percentage of participants who engaged in a voluntary exercise session. Completion indicates the average number of calories burned by the participant during the voluntary exercise session (note: they needed 70 to reach the goal). The error bars indicate the standard error for the proportion of participants who persist (*left*) and the mean number of calories burned (*right*).

GENERAL DISCUSSION

Our research offers a deeper understanding of consumers' goal pursuit processes by providing insight into how consumers monitor the extent to which their behaviors move them closer to or further from their goals. We found evidence for a progress bias in goal monitoring across seven experiments in which participants attempted to eat healthfully (studies 1 and 3), save money (study 2), lose weight (study 4), win money in a gambling game (studies 5 and 6), and burn calories (study 7). Participants perceived goal-consistent behaviors to have a larger impact than goal-inconsistent behaviors across different measures of progress, when evaluating real behaviors (studies 1, 5, 6, and 7) and behaviors presented in scenarios (studies 2, 3, and 4), when participants rated the progress of themselves or another person (study 4), and after making only a little progress toward the goal or a large amount of progress (study 5).

Collectively, the studies demonstrate that goal monitoring, like many other aspects of cognition, judgment, and decision-making, is prone to inaccuracy. Interestingly, the typical pattern of inaccuracy in goal monitoring appears to be quite different from the pattern that often occurs in other domains. In contrast with literature documenting a negativity

bias (Baumeister et al. 2001; Rozin and Roysman 2001) and loss aversion (Kahneman and Tversky 1979), we find that consumers tend to show a progress bias such that goal-consistent behaviors, such as saving $45 or resisting a donut, are perceived to have a larger influence on goal progress than equivalent goal-inconsistent behaviors, such as spending $45 or eating a donut. The progress bias is, however, consistent with, although unpredicted by, the literature documenting an optimism bias (e.g., Tanner and Carlson 2009; Weinstein 1980).

Why Do Consumers Show a Progress Bias?

The empirical results are most consistent with our expectancy confirmation explanation of the progress bias: consumers overweight goal-consistent relative to goal-inconsistent behaviors because the goal-consistent behaviors confirm an expectation of goal attainment and people tend to assign greater weight in judgment to expectation-confirming information than disconfirming information (Nickerson 1998). Consequently, consumers are less prone to a progress bias when something reduces their expectation of goal attainment. The progress bias is smaller when a goal seems difficult to reach and when consumers initially fail in an attempt at pursuing the goal (study 6). Additionally, the bias is smaller, and may even reverse, when consumers have previously regressed further away from the goal (study 5). The data were not consistent with alternative explanations for the progress bias. Study 4 discredits a self-enhancement account by showing that consumers perceive goal-consistent behaviors to have a larger impact than goal-inconsistent behaviors regardless of whether they evaluate their own goal-relevant behaviors or the behaviors of someone else. The finding in study 5 that the amount of distance moved toward a goal did not influence consumers' tendency to show a progress bias, casts doubt upon an alternative explanation that the progress bias occurs because consumers strategically distort perceptions of the impact of consistent versus inconsistent behaviors on goal progress in order to facilitate goal attainment. Although our results are most consistent with an expectancy confirmation explanation of the progress bias, there are likely other mediating processes and moderating factors that we do not address. Uncovering additional factors that mediate and moderate the progress bias is an important direction for future research.

Implications

Holding a progress bias has important downstream effects for consumers. Study 3 shows that consumers perceive a product as containing higher levels of attributes that thwart goal attainment (i.e., calories and fat in a food) when they avoid rather than consume the product. Study 7 demonstrates that outweighing the perceived impact of goal-consistent relative to goal-inconsistent behaviors can prompt behaviors that both benefit and harm goal pursuit. On the one hand, biased perceptions of progress can encourage consumers to persist toward a goal by reducing the likelihood that they get discouraged and release a goal that seems too distant or difficult to reach (e.g., Huang et al. 2012). Thus, the progress bias may facilitate goal attainment by helping prevent small failures from leading to a "what the hell effect" whereby consumers who miss a subgoal abandon pursuit toward the superordinate goal (Cochran and Tesser 1996).

On the other hand, biased perceptions of progress can lead to a false sense of attainment that results in consumers disengaging from a goal before making sufficient progress. Premature disengagement could potentially make otherwise effective self-regulation strategies, such as developing implementation intentions (Gollwitzer and Brandstaetter 1997), precommitments (Green and Rachlin 1996), and mental budgets (Krishnamurthy and Prokopec 2010) ineffective. Cognitive mechanisms such as exaggerating perceived impact of the goal-inconsistent temptation (Zhang et al. 2010) may be similarly ineffective in the presence of a progress bias. Consistent with this idea, the health literature finds increases in physical exercise may actually lead to increases in food consumption, such that increased exercise does not result in weight loss and often results in weight gain (e.g., King, Tremblay, and Blundell 1997). People appear to overcompensate for exercise, or even thinking about exercise, by eating more (Knauper et al. 2004; Werle, Wansink, and Payne 2011). It has been suggested that people may erroneously believe that the exercise they have engaged in more than compensates for increased eating (e.g., Ragiau, Knauper, and Miquelon 2006). Such compensatory beliefs could be examples of the progress bias; people may perceive the impact of the goal-consistent exercise behavior to be larger than the impact of the goal-inconsistent eating behavior, as we observed in study 7.

Whether the progress bias helps or hurts goal attainment may be a function of whether goal attainment depends more heavily on properly adjusting behavior in response to feedback from the goal monitoring process (e.g., Carver and Scheier 1982) or on maintaining motivation to continue pursuing the goal (e.g., Huang et al. 2012). When motivation is strong but the necessary steps to reach the goal are unclear, as is likely the case with a goal to lose weight, then a progress bias seems likely to hurt goal attainment. Conversely, when the steps to goal attainment are clear but motivation is less certain, as is likely the case with a goal to collect a target number of donations, then a progress bias seems likely to help goal attainment. A deeper understanding of how consumers monitor goal progress, how the goal monitoring process influences subsequent behavior, and when the progress bias hurts versus helps goal pursuit are important topics for further inquiry.

DATA COLLECTION INFORMATION

The two authors were full partners in this research. The first author supervised the collection of data for studies 1, 2, 3, and part of the sample for 5 by research assistants in the Behavioral Research Lab and outside of the library at the Leeds School of Business at the University of Colorado from 2009 to 2014. The first author supervised data collec-

tion by Qualtrics for studies 4, part of the sample for 5, and 6 in spring 2013 through spring 2014. The second author supervised data collection by the lab manager and research assistants at Texas A&M for study 7 in spring 2014. The data analyses were primarily conducted by the second author in consultation with the first author, although the first author analyzed study 3 in consultation with the second author.

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