Amar Cheema & Rajesh Bagchi

The Effect of Goal Visualization on Goal Pursuit: Implications for Consumers and Managers

This research demonstrates that as people approach a goal, external representations, which increase the ease of visualizing the goal, enhance goal pursuit. Specifically, consumers judge easy-to-visualize goals to be closer than difficult-to-visualize goals, which in turn increases effort and commitment. Ease of visualization affects performance in swimming competitions and the physical effort exerted in the lab. Visualization also affects commitment toward savings, willingness to wait for service, and performance in a simulated sales task. Importantly, the beneficial effects of visualization exist only when people are close to the goal. In addition, the effect of visualization attenuates when the goal is split into subgoals. Managers can use these results to enhance consumer goal pursuit, influence consumer satisfaction in online service encounters, and motivate employees to improve performance. In these varied contexts, visual representations of goal progress (e.g., progress bars) enhance motivation as people approach their goal.

Keywords: goals, motivation, visualization, goal-gradient effect, progress

Imagine that a firm implements a sales competition in which salespeople who achieve 20% more than their annual target win a vacation to Hawaii. Because this is a highly desired prize, members of the sales team are in hot pursuit of their individual goals. Imagine that it is the last quarter, and the salespeople can frequently check their results relative to the final target. Their progress can be reported in three ways: (1) numeric form as sales dollars (e.g., "You have completed $80,000 of sales toward a competition target of $95,000"), (2) numerically in terms of percentage completed (e.g., "84.2% of your competition target of $95,000"), or (3) visually in the form of a progress bar depicting the amount of progress made toward the goal. Which representation of progress is likely to motivate salespeople the most? In this scenario, we predict that the graphic representation, which allows salespeople to visualize their results relative to the goal, will be the most motivating.

Prior research has demonstrated that mental simulation enhances people's ability to visualize outcomes, thus increasing goal pursuit (Pham and Taylor 1999). Research on distance perception suggests that people who can see an object judge it to be physically closer than people who judge the distance of an equidistant hidden object (Nasar 1983). Visual representations of the goal, which are easier to process than other forms of representations (Larkin and Simon 1987), also enhance people's ability to visualize their goals. Thus, the ease with which an external goal marker can help visualize the goal might increase people's perceptions of goal proximity, leading to increased effort (Naylor and Ilgen 1984).

Research on goal following also indicates that proximal goals, which are easier to attain than distal goals, increase motivation and performance (Bandura and Schunk 1981; Naylor and Ilgen 1984). The goal-gradient effect reveals that effort invested in reaching a goal increases with proximity to that goal (Hull 1932; Kivetz, Urminsky, and Zheng 2006). In other words, people pay more attention to the goal as they get closer to attaining it.

This research investigates the effect of goal visualization on goal pursuit as people approach a goal. We posit that the ease of visualizing a goal may enhance proximity perceptions and goal pursuit. Consistent with the goal-gradient effect, we expect that this influence is stronger when people are near their goal and paying attention to it than when they are farther away from it.

Across five studies, we show that when people are near their goal, those who can easily visualize the goal exert more effort and report greater commitment than those who cannot easily visualize the goal. In Study 1, we analyze data from 1500-meter Olympic and sectional swimming competitions to show the effect of visualization on effort. Because it may be easier to visualize the finish of a race when swimming toward (rather than away from) the finish line, swimmers should expend greater effort to reach the finish line. Moreover, the beneficial effect of visualization is likely to

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be stronger toward the end of the race than at the beginning. Our analyses confirm these predictions. In Study 2, we replicate the effects of visualization on effort by measuring people's ability to exert a sustained grip pressure. Although fatigue leads to a decline in the force exerted over time, this decline is less steep for people who can easily visualize the goal than for those who cannot.

Studies 3 and 4 replicate the effect in marketing contexts and provide a process explanation. When people are near their goal, ease of visualization increases proximity perceptions or perceptions of progress. Specifically, Study 3 shows the effect of visualization on savings and reveals that even when consumers are provided with precise textual information, those in the easy-to-visualize condition judge the goal to be closer and are more committed to reaching it than those in the difficult-to-visualize condition. Study 4 illustrates how progress perceptions mediate the effect of visualization on consumers' goal following in a service setting. Finally, in Study 5, we replicate these effects in a sales context with monetary rewards and identify goal framing as a moderator. Framing a goal of 20 sales in a consolidated manner elicits greater effort (the goal is achieved faster) than when this goal is split into four separate subgoals of 5 sales each. Furthermore, ease of visualization enhances effort in the consolidated goal condition, but the effect of ease of visualization on effort is attenuated when goals are divided into subgoals. This is because the amount of effort required to achieve each of the subgoals is likely to be smaller when a goal is split into several subgoals, and therefore the advantage of ease of visualization is also likely to be lower than when the goal is consolidated.

This research strives to make four important contributions. First, from a theoretical standpoint, given the research on the goal-gradient effect, we demonstrate that ease of visualization enhances goal pursuit when people near their goal. We identify this phenomenon in real-world settings and replicate these effects in the laboratory. Second, we identify the underlying process of this phenomenon—namely, ease of visualization makes the goal appear closer and, consequently, increases effort expended. Third, because much of consumer behavior is goal directed (Bagozzi and Dholakia 1999), we demonstrate implications of goal visualization in the marketing-relevant contexts of consumer savings and a service setting. Fourth, we identify boundary conditions for these effects. We show that the effect of ease of visualization is stronger when goals are framed in a consolidated manner. Separating a goal into multiple subgoals attenuates the effect of visualization on goal pursuit. These results are especially relevant for managers who are interested in influencing consumers and increasing employee productivity. In consumer contexts, we find that ease of visualization has a stronger influence on inferences when the goal is near. Thus, managers could increase commitment, persistence, and effort by enhancing ease of visualization as people approach their goals in several contexts, such as in service settings (e.g., waiting in line) or loyalty rewards contexts.

Our findings are also useful in increasing employee productivity. Extant research demonstrates the importance of goal pursuit in managerial settings (Brown, Cron, and Slocum 1998; Brown and Peterson 1994) and shows how goal setting influences employee engagement, optimism, and individual performance (Medlin and Green 2009). Our findings suggest that in addition to goal proximity, goal framing can affect performance. We find that ease of visualization has a stronger influence on goal pursuit when the goal task is framed in a consolidated manner than when it is split into multiple subgoals.

Theoretical Background

In a review of goal-related literature, Austin and Vancouver (1996, p. 338) characterize goals as "representations of desired states." In the current research, this desired end state manifests in different ways across the five studies. The studied goals include finishing a 1500-meter swim as quickly as possible (Study 1), reaching the end of 130 seconds when exerting effort (Study 2), saving $750 by the end of six months (Study 3), waiting until the end of 13 minutes (Study 4), and selling to 20 clients as quickly as possible (Study 5). These goals have specific start and finish points, which are necessary to study goal proximity effects. Furthermore, because our objective is to study the effect of goal visualization on perceptions and effort contingent on distance from one specific goal, we examine these influences for a single goal in the absence of competing goals. We elaborate on these considerations in the "General Discussion" section.

Goal Proximity Increases Effort

Observing the academic performance of school students, Bandura and Schunk (1981) find that proximal goals lead to greater individual motivation and better performance than distal goals. They suggest that proximal goals provide immediate and achievable incentives and rewards, while distal goals are ineffective in mobilizing effort or directing action. Similarly, Naylor and Ilgen (1984) posit that perception of enhanced feasibility increases the likelihood that people will internalize a goal, thus increasing the effort exerted to achieve it. Other research also highlights the relationship between proximity and ease of attainability. Specifically, according to Proffitt (2006), people perceive destinations as being farther away when they are more difficult to reach (e.g., when a person must walk with a heavy rather than a light backpack).

The goal-gradient hypothesis similarly predicts that the effort invested in reaching a goal increases with proximity to that goal. For example, Hull (1932) finds that rats run progressively faster as they approach food. A related study finds that rats attached to an apparatus exert more force when food is close versus farther away (Brown 1948). Forster, Higgins, and Idson (1998) replicate this effect of goal proximity on exerted effort. In their study, people who must solve a series of anagrams exert increasing amounts of pressure on a metal plate (between anagrams) as they approach the end of the task. Forster, Higgins, and Idson propose that goal proximity increases effort because when the goal is near, a fixed increment of progress covers a greater proportion of the remaining distance than when the

goal is farther away. Thus, the value of the incremental progress increases as the finish draws near.

Research on loyalty rewards reveals that people accelerate purchases when approaching redemption goals (Kivetz, Urminsky, and Zheng 2006). Humphrey et al. (2004) find that completion goals gain salience as a project nears its end, often superseding economic goals. These streams of research suggest that increasing goal proximity enhances attention paid to the goal and, thus, the effort exerted to reach the goal. In the next section, we discuss research on distance perception to illustrate how people near their goal (and thus focused on the goal) may perceive easy-to-visualize goals as closer than difficult-to-visualize goals.

Ease of Visualization and Perceptions of Proximity: the Moderating Role of Goal Distance

Extant research demonstrates that mental simulation enhances the ability to visualize actions and outcomes and thus enhances goal-directed behaviors (Pham and Taylor 1999). In this research, we examine the role of external markers in aiding visualization and investigate how this influences goal following. Newell and Simon (1972) document the facilitating role of external representations (e.g., diagrams, scribbles) in enhancing discovery and inference. Furthermore, Suwa and Tversky (2002) suggest that external representations reduce working memory load and allow people to focus more attention on the problem.

The form of external representation (visual vs. textual) can also affect inferences. In their seminal article, Larkin and Simon (1987) show that even when visual versus textual forms are informationally equivalent (the information in one form can be derived from the other), they may differ in terms of computational equivalency. Two forms of representations are computationally equivalent if (1) they are informationally equivalent and (2) the same inference from each can be quickly and easily drawn. Larkin and Simon argue that visual representations are easier to process and therefore are computationally less intensive than textual representations. Thus, judgments about distance may be more easily inferred from visual representations than from other forms of representations.

In the context of goal pursuit, a visual external marker (that allows easy visualization of the end goal) may influence proximity judgments. Prior research on distance perception has found that visible objects are judged to be physically closer than equidistant hidden objects. Nasar et al. (1985) find that students judge a visible building to be closer than an equidistant hidden building. Cubukcu and Nasar (2005) show a similar effect in virtual environments. Consistent with this effect of visibility, we posit that visual representations of the goal not only enhance the ease with which the goal can be visualized but also enhance proximity perceptions, thus influencing goal pursuit (effort and commitment).

We manipulate visualization in different ways across the five studies. Study 1 uses data in which swimmers in 1500-meter Olympic and sectional competitions are either approaching the end of the finish line or swimming away from it. We argue that it is easier to visualize the race's finish when swimming toward the finish line than when swimming away from it. In Studies 2 and 5, we manipulate different visual representations (that vary in ease of visualizing the goal) in a lab setting. In Studies 3 and 4, people in the easy visualization conditions see a visual representation of their current position relative to the start and finish. In the difficult visualization conditions, identical numerical information is provided. The Appendix illustrates these manipulations.

Consistent with our discussion in the preceding section (in which we assert that attention paid to a goal increases with proximity), we posit that the influence of ease of visualization on goal pursuit is stronger as a person approaches the goal. In other words, for people near their goal, those who can easily visualize the goal should perceive the goal as closer and easier to achieve and thus should exert greater effort than people who cannot easily visualize the goal.

However, when people are far from a goal, we do not expect ease of visualization to have a beneficial effect on effort and commitment. First, from a perceptual standpoint, people far from the goal are relatively less focused on the finish and, instead, may assess progress made from the start. In the realm of distance perception, Lappe, Jenkin, and Harris (2007) find that people perceive their destination as closer than it really is if they make this judgment by looking at the destination. However, when looking back at the start to assess distance, people underestimate the distance traveled (they perceive the start to be closer than it really is). Thus, when people are far from the goal, those who can easily visualize the start may underestimate their progress more (judge the start to be closer) than those who cannot easily visualize the start. Second, seeing a distant goal emphasizes the difficulty in attaining it (Proffitt 2006) and may demotivate people who can easily visualize the goal (Locke 1968; Naylor and Ilgen 1984). Consequently, we expect that ease of goal visualization enhances effort and commitment, but only for people who are near the goal.

H_1: Ease of visualization increases effort and commitment when people are near the goal but not when they are far from the goal.

We test H_1 in Studies 1–5. In these studies, we manipulate goal distance (proximity) in different ways. In Studies 1, 2, and 5, goal distance varies within subjects, and in Studies 3 and 4, the goal distance varies between subjects. More specifically, in the scenario-based Studies 3 and 4, participants near their goal have completed a majority of the task (70%–80%), but those far from their goal have completed only a small proportion of it (20%–30%).

We also note two reasons for possible contrasting effects of goal proximity, in which proximal (vs. distal) people may show a weaker effect of visualization. First, because people closer to a goal have traversed a longer distance than those farther away, they have more information about the effort needed to approach the goal (this is especially the case in Studies 1, 2, and 5, in which goal proximity varies within subjects). Thus, proximal people may be less influenced by external markers than distal people.

Second, extant literature in the area of construal representations suggests that psychological proximity engenders a more concrete or implemental mind-set, while distal events lead to a more abstract or deliberative mind-set (Liberman and Trope 1998; McCrea et al. 2008; Trope and

Liberman 2003). An implemental mind-set forces people to develop "concrete plans concerning the when, where, and how of pursuing a goal" and leads to quicker implementation of goal-directed behaviors than deliberative mind-sets (McCrea et al. 2008, p. 1309; see also Vallacher, Wegner, and Somoza 1989). Because ease of visualization increases proximity perceptions, the beneficial effect of an implemental concrete (vs. abstract) mind-set should be greater when the goal is distant. Thus, people in the easy visualization condition can reap the maximum benefit of an implemental concrete mind-set compared with those with an abstract mind-set when the goal is distant. When the goal is near, the relative advantage that ease of visualization bestows is likely to be lower because the goal is construed concretely. However, we do not expect to observe this pattern of results because the beneficial effect of visualization is likely to occur only when the person is focused on the goal, and this is more likely to happen when the goal is proximal (as the goal-gradient effect also demonstrates). Next, we discuss how ease of visualization affects inferences when a goal is framed as a consolidated goal and when it is split into several subgoals.

Ease of Visualization and Goal Framing: Consolidated Goals Versus Subgoals

Extant literature suggests that separating a goal into several subgoals can affect goal pursuit positively or negatively. Positive effects derive from the subgoals acting as discrete progress markers that provide feedback, thus enhancing performance (Early et al. 1990; Erez 1977; Locke and Latham 1990). However, recent research identifies conditions in which splitting a goal into subgoals can also have a detrimental effect (Amir and Ariely 2008). This is because separating a goal into subgoals results in two countervailing forces. On the one hand, subgoals make the tasks more manageable and, consistent with goal-gradient theory, may increase effort and performance. On the other hand, multiple subgoals may also shift motivational focus away from the main goal, increasing complacency and therefore decreasing performance. The nature of the influence of subgoals on performance depends on whether the distance to the goal is uncertain or certain. When distance is uncertain (e.g., selling quickly to as many clients as possible), separating a goal into subgoals improves performance. Conversely, when distance to the goal is well known and information is certain (e.g., selling to 20 clients quickly), splitting a goal into subgoals increases complacency and decreases performance.

Therefore, the influence of ease of visualization on performance is likely to be different when a goal is split into several subgoals than when the goal is consolidated. In the former case, the amount of effort required to achieve each of the subgoals is likely to be smaller. Correspondingly, the beneficial advantage of ease of visualization is also likely to be lower for each of the individual subgoals. Furthermore, because after reaching each of the subgoals people are likely to be more complacent and may "rest on laurels" (Amir and Ariely 2008), the combined advantage of ease of visualization is likely to be smaller when a goal is split into multiple subgoals than when it is consolidated.

H_2: Ease of visualization increases effort to a greater extent when a goal is framed in a consolidated manner than when it is split into subgoals.

We test H_2 and the moderating role of goal framing in Study 5.

Study 1: Effect of Visualization on Swim Times

Data Description

We analyzed data from several 1500-meter freestyle swimming competitions from 2004 to 2008. The data were from the two most recent Olympics freestyle preliminaries (2008 Olympics, Beijing, n = 35; 2004 Olympics, Athens, n = 34) and several sectional competitions (2008 U.S. Open, Minneapolis, n = 35; 2008 Speedo Junior Nationals, Minneapolis, n = 75; 2007 Speedo Junior Nationals, Indianapolis, n = 106; 2006 Speedo Junior Nationals, Irvine, n = 75; 2005 Speedo Junior Nationals, Irvine, n = 57).

The 1500-meter race requires swimmers to complete 30 (50-meter) laps, or 15 pairs of laps. Each lap-pair consists of one 50-meter lap in which the participant swims away from the finish line (difficult-to-visualize goal) and another 50-meter lap in which the participant swims toward the finish line (easy-to-visualize goal). For each of the 15 lap-pairs, we computed the differences in swim times between the lap that is 50 meters away and the lap that is 50 meters toward the finish line and used this difference score (difficult – easy) in seconds as our dependent measure. We excluded one Olympic swimmer (from 2004) because this participant's difference score was more than three standard deviations from the mean. The Olympic data include the remaining 68 swimmers. For the sectional competitions, we had data for 348 swimmers. We excluded 29 swimmers; of these, 25 swimmers had difference scores that were more than three standard deviations from the mean, and data for 4 swimmers were incomplete (indicating that they may not have completed the race). The sectional data include the remaining 319 swimmers. For a conservative test, we also excluded the first and last lap-pairs (1 and 15) from the analysis because these difference scores were more than three standard deviations from those for the remaining lap-pairs. Inclusion of these two lap-pairs leads to stronger results, which we report in the Web Appendix (see http://www.marketingpower.com/jmmarch11).

As swimmers get tired, they should take longer to complete successive laps. Thus, the (difficult – easy) difference should be negative when the lap with easy visualization follows the lap with difficult visualization. However, the effect of visualization should counter this fatigue effect; that is, swimmers should take less time to complete the lap when they can easily visualize the goal, leading to a positive (difficult – easy) difference. Consistent with H_1, we expect the beneficial effects of ease of visualization to be stronger in later parts of the race.

Results

We analyzed the difference in swim times (difficult – easy) using a mixed model regression, treating lap-pair (2–14) as a continuous within-subject variable that indicates goal distance, with larger numbers representing a closer goal. We treated competition level (Olympics, sectionals) as a between-subjects factor. The effects of competition level and the goal distance × competition level interaction were not significant ($F < 1$). Figure 1 shows the effects of visualization and goal distance on effort. Consistent with H_1, we find a significant, positive effect of goal proximity, indicating that the (difficult – easy) difference became more positive as swimmers approached the goal (b = .0084, F(1, 4642) = 22.70, $p < .0001$). A negative intercept reveals a significant effect of fatigue, with people swimming the first lap slower than the second one ($M_{difficult - easy} = -.1119$; F(1, 385) = 52.86, $p < .0001$).

We split the race into parts to test the effect of visualization on effort across three discrete stages (see Table 1). We ran a repeated measures analysis of variance (ANOVA) with the difference in swim times (difficult – easy) as the dependent variable, stage as a discrete three-level within-subject variable, and competition level as a two-level between-subjects variable. Neither competition level nor the stage × competition level interaction was significant ($F < 1$). However, the main effect of stage was significant (F(2, 770) = 11.53, $p < .0001$). The effect of visualization was significantly greater in Stage 3, when the goal was near ($M_{difficult - easy} = .009$), than in Stage 2 ($M_{difficult - easy} = -.053$; F(1, 770) = 18.32, $p < .0001$) and Stage 1 ($M_{difficult - easy} = -.053$; F(1, 770) = 16.89, $p < .001$), when the goal was far. The effect of visualization was no different across Stages 1 and 2 ($F < 1$). These categorical results provide additional support for H_1.

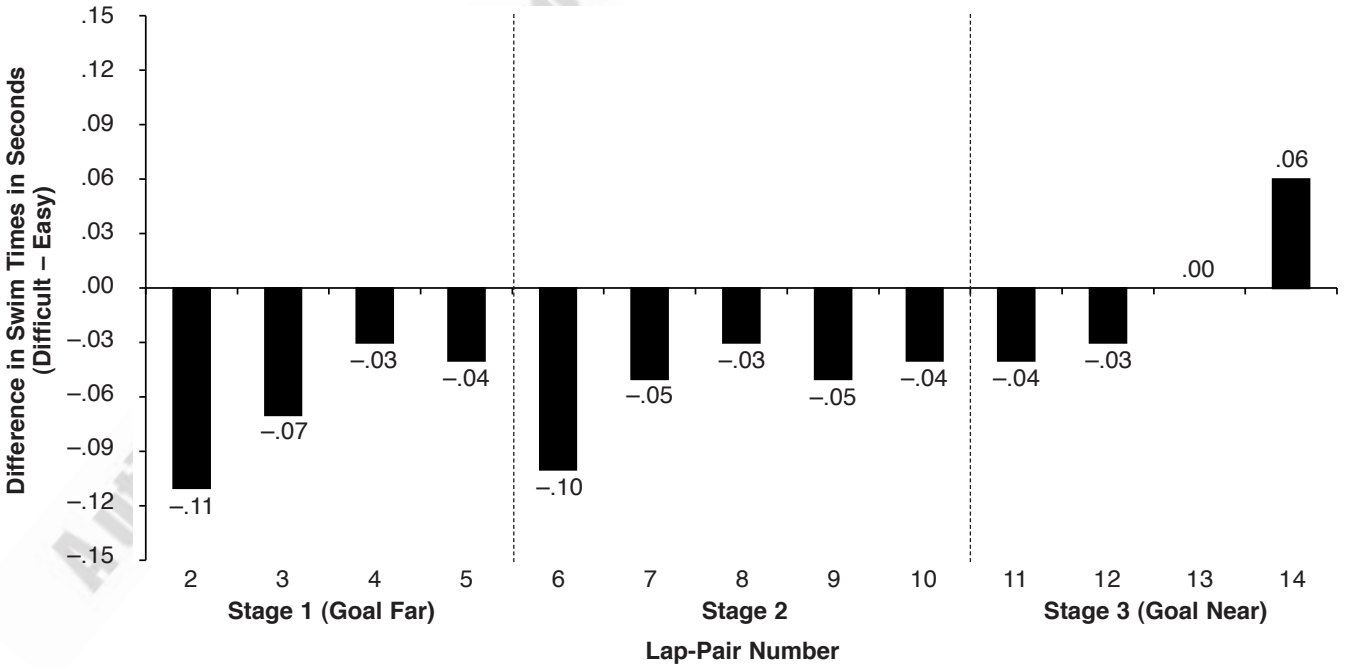
Discussion

We analyze differences in swim times to study contingent effects of goal proximity and goal visualization on effort. As we expected, participants swim the 50-meter lap away from the finish line faster than they do the 50-meter lap toward the finish line (owing to fatigue). However, the difference in times between swimming away from and swimming toward the finish line decreases as the finish line approaches. These results show that the beneficial effect of goal visualization increases effort as people approach their goal.

The analyses suggest that the results are not an outcome of swimmers exerting a consistently increasing rate of effort as they near the goal (independent of visualization). We conducted a mixed model regression with difference in times between a lap toward the finish (easy to visualize) and a *subsequent* lap away from the finish (difficult to visualize) as the dependent measure. We treated lap-pair (2–14) as a continuous within-subject variable and competition level (Olympics, sectionals) as a between-subjects factor. The intercept indicates that people take less time to swim toward the finish than away from it ($M_{easy - difficult} = -.17$ seconds; F(1, 385) = 41.87, $p < .0001$). If effort increased, participants would have taken less time to swim the latter 50-meter lap. We report additional analyses and rule out alternative explanations in the Web Appendix (see http://www.marketingpower.com/jmmarch11).

In summary, the results from the multiple-lap swimming competitions reveal the effects of effort that people

FIGURE 1
Study 1: Plot of Visualization Increasing Effort as the Goal Draws Near



Notes: Positive difference scores (difficult – easy) suggest beneficial effects of visualization.

TABLE 1
Study 1: Effect of Visualization on Effort Across Three Discrete Stages

Stage	Lap-Pair Number	Time (Difficult – Easy) Seconds	Average Per Stage (All Lap-Pairs)	Average Per Stage (Without Laps 1 and 15)
1 (goal far)	1	–2.39	–.48	–.05
	2	–.11		
	3	–.07		
	4	–.03		
	5	–.04		
2	6	–.10	–.05	–.05
	7	–.05		
	8	–.03		
	9	–.05		
	10	–.04		
3 (goal near)	11	–.04	.25	.01
	12	–.03		
	13	.00		
	14	.06		
	15	1.23		

Notes: A positive difference score (difficult – easy) indicates a beneficial effect of visualization, with relatively longer swim times away from the finish line (difficult-to-visualize goal) than toward the finish line (easy-to-visualize goal). We excluded lap-pairs 1 and 15 because the difference times are three standard deviations or more from those of the remaining lap-pairs (including these strengthens support for H_1). Analyzing swimming times after dividing the lap-pairs into three stages also supports our hypotheses. Some arithmetic averages may not exactly match the lap-pair times because of rounding errors.

exert under different levels of visualization. Although the form of representation did not vary between different sections of the laps, the ability to visualize the finish did. In Study 2, we attempt to replicate the effects of ease of visualization in a laboratory setting.

Study 2: Effect of Visualization on Effort Exerted in the Lab

Participants, Method, and Design

Seventy-nine undergraduate students participated in the study for course credit. To ensure that participants were motivated to exert effort, we told them that the objective of the study was to assess their likelihood of success in academic, social, and athletic domains. A pretest revealed that success in these domains was important to participants. Participants read that persistence influences people's likelihood of success in these domains and that the purpose of the study was to measure persistence through the ability to exert sustained effort. Participants familiarized themselves with a handgrip dynamometer (a gauge that records force exerted in newton) and were asked to exert as much force as they could at a consistent level for 130 seconds (130 seconds correspond to 4.33 rotations of the watch hand on a 30-second stopwatch).

We manipulated ease of visualization between subjects. Half the participants (easy-to-visualize condition) saw a horizontal bar on a computer screen that filled in as time elapsed (labeled "start" and "finish"; see the Appendix). We expected that this visual representation would help participants visualize the end goal. The remaining participants (difficult-to-visualize condition) saw a 30-second stopwatch that showed time progress. Given the 130-second duration of the task, visualizing the finish was difficult for participants in this condition. Although participants saw an image of the clock, the representation format did not facilitate goal visualization. Furthermore, we held progress information constant across the conditions. In the easy-to-visualize condition, the bar filled incrementally each second, and in the difficult-to-visualize condition, the stopwatch updated each second.

The average force exerted in each of the 26 five-second intervals served as our dependent measure. The study used a mixed design, in which we manipulated visualization (easy, difficult) between subjects and used the 26 five-second time intervals as measures of goal distance within subjects. All participants completed process measures after completing the task. Participants rated doing well in the task to be important (1 = "not at all," and 9 = "very important"; M = 7.04). We excluded two people who reported that the task was not important (choosing 1 or 2 on the scale, more than three standard deviations from the mean) and one participant whose effort declined at a rate that was more than three standard deviations faster than the mean rate (which suggests that the person took his or her hand off the dynamometer). Thus, all analyses include 76 participants. We excluded the first and last five seconds of the 130-second task because of excessive variability introduced by the recording procedure (in some cases, the recording timer differed by one to two seconds), consistent with Study 1's analyses. This method provided data for 24 five-second intervals.

We expected the decline in effort over time to be less steep for participants in the easy-to-visualize condition than for those in the difficult-to-visualize condition. We also expected the effect of visualization to be stronger as participants neared the goal.

Results

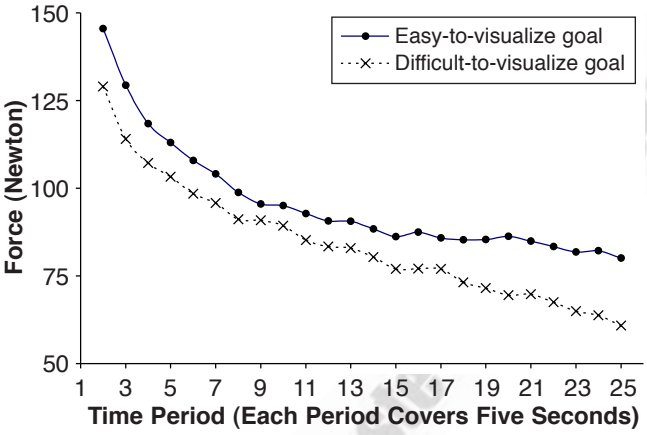
We analyzed effort expended using a mixed model regression, treating the period (2–25) as a continuous within-subject variable that indicates goal distance and goal visualization

(easy, difficult) as a two-level between-subjects factor. This analysis revealed a significant period × visualization interaction ($F(1, 1746) = 8.44$, $p < .005$), in support of H_1 (see Figure 2, Panel A). As participants approached the goal, effort declined more steeply for those in the difficult-to-visualize goal condition ($b = –.31$, $t(1746) = –2.91$, $p < .005$).

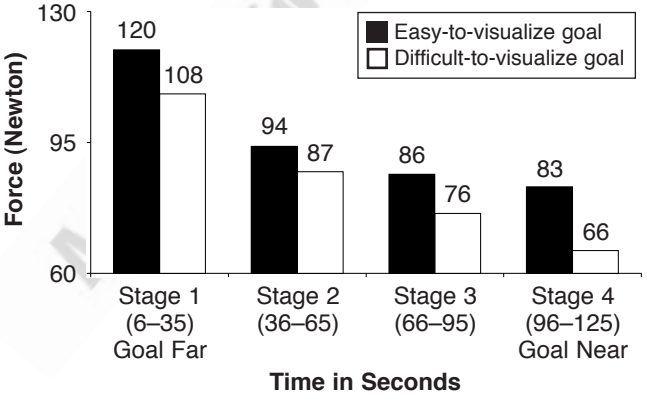
We also split the 24 five-second intervals into four 30-second stages (see Figure 2, Panel B). We measured decline in effort through the difference in average effort between successive stages. We ran three individual ANOVAs, with decline in effort from Stages 1 to 2, 2 to 3, and 3 to 4, respectively, as the dependent measures and visualization as the predictor. Visualization did not significantly affect decline in effort from Stage 1 to Stage 2 ($F(1, 74) = 1.90$, n.s.) or from Stage 2 to Stage 3 ($F(1, 74) = 2.10$, n.s.). However, effort from Stage 3 to Stage 4 declined less when the finish was easy to visualize ($M_{easy} = 3.32$ vs. $M_{difficult} = 9.94$ newton; $F(1, 74) = 6.44$, $p = .01$). A repeated measures ANOVA with decline in effort across successive stages as three repeated measures for each participant revealed a significant stage × visualization interaction ($F(2, 148) = 5.34$, $p < .01$).

FIGURE 2
Study 2: Ease of Visualization Elicits Greater Effort as the Goal Draws Near

A: Average Force Exerted in Each Five-Second Time Interval



B: Average Force Exerted in Each Stage



Discussion

In Study 2, we contrast the easy-to-visualize condition (using a bar indicating the finish) with the difficult-to-visualize condition (using a 30-second stopwatch). Given the 130-second duration of the task, visualizing the finish was difficult in the stopwatch condition (4.33 rotations). As in Study 1, progress information was available in both conditions. We find that the beneficial effect of goal visualization is enhanced when people are near the goal, in support of H_1.

Study 2's results suggest that goal proximity is an important moderator; specifically, the beneficial effects of goal visualization are enhanced when people are near the goal compared with when they are farther away. Together, Studies 1 and 2 demonstrate the effect of ease of visualization on performance when people are near the goal. Thus, managers can use this information to enhance effort expended by employees (e.g., to meet a deadline) or consumers (e.g., to complete a multiple-page online survey) by increasing the ease of goal visualization as they approach the finish. Ease of visualization could be enhanced by graphic representations of progress (progress bars that fill in) as people approach the finish. In Study 3, we use a scenario to investigate whether ease of visualization influences commitment to save money.

Study 3: Visualization and Commitment: Moderating Role of Goal Distance

Participants, Method, and Design

We asked 183 undergraduate students to participate in the study as part of a research requirement. Participants read a scenario in which they are saving for a vacation to Europe coming up in July. Participants read that after buying a plane ticket in February, they decided to save approximately $750 for hotel, food, and sightseeing expenses. It is now April, and they are evaluating their savings. We manipulated the amount of current savings to be low or high between subjects. Half the participants read that they had currently saved $225 (goal far), and the other half read that they had saved $525 (goal near). All participants read these dollar amounts, but we manipulated ease of goal visualization between subjects. Participants in the easy-to-visualize condition saw a visual representation of a bar anchored by $0 and $750 that was shaded either 30% (goal far) or 70% (goal near) (see the Appendix). Participants in the difficult-to-visualize goal condition read textual information. These participants read that they had saved either 30% (goal far) or 70% (goal near) of the required amount.

Thus, the study used a 2 (goal distance: far, near) × 2 (goal visualization: easy, difficult) between-subjects design. All participants then completed a scale that measured their saving commitment, which we adapted from Wright and Kacmar (1994): "difficult to take goal seriously" (reversed), "unrealistic to reach" (reversed), "don't care if I achieve"

(reversed), "I'm strongly committed to pursue," "won't take much to make me abandon" (reversed), and "not much to be gained by trying to achieve" (reversed) (1 = "strongly disagree," and 7 = "strongly agree"). We averaged the items to form the commitment score ($\alpha = .81$).

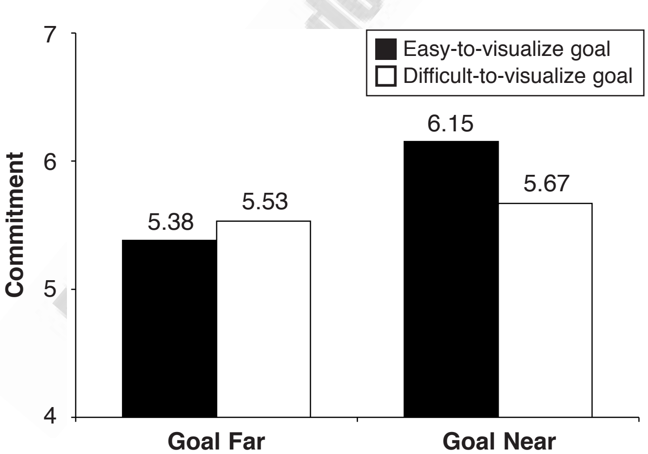
Pretest

We conducted a separate survey to check whether our manipulation of goal distance and ease of visualization influences distance perceptions. We paid 104 participants a token amount to complete a survey. Four participants did not complete the survey and were excluded; all results are for 100 participants. In the survey, participants read a scenario that manipulated goal distance (far, near) and goal visualization (easy, difficult) for the vacation savings task. Instead of the commitment scale, however, all participants reported how much more they needed to save to reach their savings goal (1 = "a small amount," and 7 = "a large amount"). A significant main effect of goal distance ($F(1, 96) = 79.90$, $p < .0001$) emerged, suggesting that those far from the goal believed that the goal was farther than those near the goal ($M_{goal\ far} = 5.17$ vs. $M_{goal\ near} = 3.40$). A significant goal distance × visualization interaction also emerged ($F(1, 96) = 12.98$, $p < .001$). For participants near their goal, those in the easy-to-visualize condition judged it to be closer (reported that they needed to save less) ($M_{easy} = 2.89$ vs. $M_{difficult} = 3.96$; $F(1, 96) = 15.68$, $p < .0005$). In contrast, visualization did not significantly affect perceived distance to the finish for those far from the goal ($M_{easy} = 5.33$ vs. $M_{difficult} = 5.00$; $F(1, 96) = 1.42$, n.s.). In the main study, we test whether visualization influences commitment.

Results

An ANOVA with savings commitment as the dependent measure and goal distance and ease of goal visualization as the independent variables reveals a significant distance × visualization interaction ($F(1, 179) = 4.90$, $p < .05$), in support of H_1 (see Figure 3). For participants near the goal, those in the easy-to-visualize condition reported significantly greater commitment than those in the difficult-to-visualize condition ($M_{easy} = 6.15$ vs. $M_{difficult} = 5.67$; $F(1, 179) = 5.71$, $p < .05$). In contrast, visualization did not affect commitment for participants far from the goal ($M_{easy} = 5.38$ vs. $M_{difficult} = 5.53$; $F(1, 179) = .56$, n.s.). The main effect of goal distance was significant; participants closer to the goal reported greater commitment ($M_{goal\ far} = 5.46$ vs. $M_{goal\ near} = 5.91$; $F(1, 179) = 10.09$, $p < .005$).

FIGURE 3
Study 3: Ease of Visualization Increases Commitment for People Near the Goal



Discussion

Prior research has shown that goal commitment is a good predictor of goal pursuit (Wright and Kacmar 1994). In Study 3, we find that goal distance moderates the effect of visualization on commitment, suggesting that for people near the goal, those in the easy-to-visualize condition exert greater effort than those in the difficult-to-visualize condition. We note that regardless of condition, all participants read textual information about the precise dollar amount saved. This provides a conservative test of the effects of visualization: Although all participants knew how much they had saved, those in the easy-to-visualize condition judged the goal to be closer and were more committed to reaching it than those in the difficult-to-visualize condition.

Bank managers and financial consultants can use these findings to influence consumer spending and savings. Savings commitment might be greater if bank managers set savings goals for consumers at the outset and then use graphic representations to enhance visualization ease (e.g., a pie chart, a piggy bank that fills up) as the goal approaches. In Study 4, we explore whether progress perceptions mediate the effect of visualization on goal pursuit.

Study 4: Progress Perceptions Mediate the Effect of Visualization

Participants, Method, and Design

We asked 140 undergraduate students to participate in this scenario-based study, either as part of a research requirement or for a token payment. Responses did not differ between the two groups despite compensation differences, so we pooled them. The scenario indicated that participants were trying to install photo-editing software on their computer. This software could help them edit pictures before printing. When purchasing the software, participants had expected the software to be compatible with their computer. However, they found that additional drivers needed to be installed for the software to work. These drivers were available on the vendor's Web site, and participants needed to contact the vendor to gain access to the drivers.

Participants read that they had intended to contact the vendor for some time but had not gotten around to doing so. The deadline for returning the software had passed, and participants did not want the purchase to be wasted. They then read that they were planning to go home soon for break, which would be a good time to give the printed pictures to their family. It is Friday evening, and they log on to the vendor's Web site to find the drivers. They click on a "chat" button to begin a text conversation with a service agent. A

message informs them that the wait to reach a representative is 13 minutes.

We manipulated the ease of visualizing the goal (of reaching an agent) and goal distance between subjects. Half the participants saw a visual representation of a shaded bar, and the remaining participants were informed about the number of minutes they had been waiting. In the goal-far conditions, participants in the easy visualization condition saw a bar that was shaded 23%, and those in the difficult visualization condition received the corresponding wait time in minutes (three minutes; see the Appendix). In the goal-near conditions, the bar was shaded 77% in the easy visualization condition, and the corresponding wait time presented in the difficult visualization condition was ten minutes. In summary, the study used a 2 (visualization: easy, difficult) × 2 (goal distance: far, near) between-subjects design.

For a persistence measure, all participants reported how likely they were to continue waiting to reach an agent (1 = "not at all," and 7 = "very likely"). On the next page, participants reported perceptions of goal progress (how much progress they had made toward reaching an agent; 1 = "very little," and 7 = "a lot of progress"). Reaching the service agent was important for participants (1 = "not at all," and 7 = "very important"; M = 5.62), as confirmed by a t-test comparing this reported value with the scale midpoint of 4 ($F(1, 139) = 262.44$, $p < .0001$).

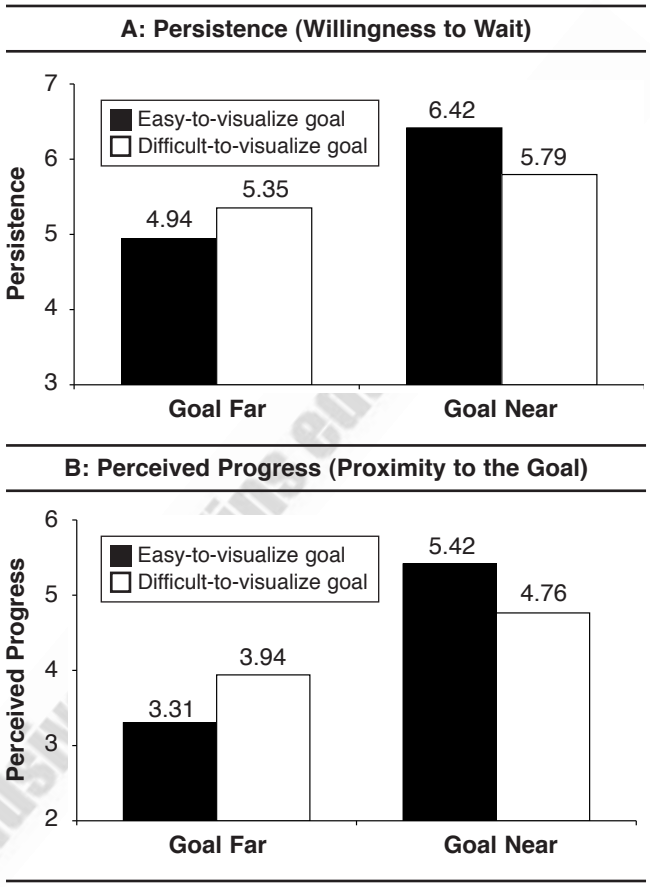
Results

Persistence. An ANOVA with likelihood of waiting (persistence) as the dependent measure and goal distance and ease of visualization as the independent variables revealed a significant distance × visualization interaction ($F(1, 136) = 5.54$, $p < .05$), in support of H_1 (see Figure 4, Panel A). For participants near the goal, those in the easy-to-visualize condition were more likely to persist than those in the difficult-to-visualize condition ($M_{easy} = 6.42$ vs. $M_{difficult} = 5.79$; $F(1, 136) = 4.04$, $p < .05$). In contrast, visualization did not affect persistence for participants far from the goal ($M_{easy} = 4.94$ vs. $M_{difficult} = 5.35$; $F(1, 136) = 1.74$, n.s.). The main effect of goal distance was significant; participants near the goal reported greater persistence ($M_{goal\ far} = 5.14$ vs. $M_{goal\ near} = 6.11$; $F(1, 136) = 19.10$, $p < .0001$).

Goal progress. An ANOVA with perceived goal progress as the dependent measure and goal distance and ease of visualization as the predictors revealed a distance × visualization interaction ($F(1, 136) = 15.35$, $p < .0005$; see Figure 4, Panel B). For participants near the goal, those in the easy-to-visualize condition believed that they had made more progress than those in the difficult-to-visualize condition ($M_{easy} = 5.42$ vs. $M_{difficult} = 4.76$; $F(1, 136) = 7.90$, $p < .01$). In contrast, ease of visualization decreased progress perceptions for people far from the goal ($M_{easy} = 3.31$ vs. $M_{difficult} = 3.94$; $F(1, 136) = 7.51$, $p < .01$). The main effect of goal distance was significant; people near the goal reported greater progress ($M_{goal\ far} = 3.61$ vs. $M_{goal\ near} = 5.10$; $F(1, 136) = 79.76$, $p < .0001$).

Mediation. We find that progress perceptions completely mediate the effect of ease of visualization on persistence (Sobel $z = 3.54$, $p < .0005$). As we discussed previously, an ANOVA with persistence as the dependent measure and goal distance and ease of visualization as the independent variables revealed a significant distance × visualization interaction ($F(1, 136) = 5.54$, $p < .05$). When we added goal progress as a predictor in this model, the distance × visualization interaction was nonsignificant ($F(1, 135) = .01$, n.s.). However, the effect of goal progress on persistence remained significant ($F(1, 135) = 68.84$, $p < .0001$).

FIGURE 4
Study 4: Ease of Visualization Increases Persistence and Progress Perceptions for People Near the Goal



Discussion

Study 4's results support H_1 and demonstrate the mediating role of goal progress. For participants far from the goal, those in the easy-to-visualize condition perceived the goal as farther (reported less progress) than those in the difficult-to-visualize condition. Because participants reported perceptions of progress, those who saw the visual representation may have judged the start as closer than those who saw the textual representation. This is consistent with distance perception effects that Lappe, Jenkin, and Harris (2007) report.

Thus, not only can managers increase persistence of people waiting online for an agent by showing a visual representation when they are close to reaching the agent, but they can also increase progress perceptions. Another application includes managing perceptions of wait times as Web

pages load in a browser, in which progress bars could increase users' persistence and decrease perceptions of loading time. Next, we investigate how framing a goal in a consolidated manner or splitting it into subgoals influences the relationship between visualization and goal pursuit. We also measure differences in levels of construal to examine whether construal presents an alternative explanation for our expected results.

Study 5: Effect of Visualization and Goal Framing on Effort

Participants, Method, and Design

One hundred fifty-four undergraduate students completed a computerized sales study as part of a research requirement. Participants were told that the study simulates a sales competition in which they need to complete 20 sales. Each sale follows a 12-step process, with every step represented by one click of the mouse button. Thus, participants require 240 clicks to complete the 20 sales. Participants were informed that their goal was to sell to 20 consumers as quickly as possible. The top three performers would win cash prizes of $50, $25, and $20, respectively. Using clicks as a proxy for effort is consistent with computerized study designs (e.g., Shin and Ariely 2004; Srivastava and Lurie 2001). We excluded 13 participants whose completion times were more than three standard deviations from the mean. Thus, all analyses are for the remaining 141 participants.

We manipulated ease of visualization between subjects. Half the participants, who were in the easy visualization condition, saw a visual representation of a bar that filled in as they completed the sales. The remaining participants, those in the difficult visualization condition, saw a numerical representation that depicted the percentage of 20 sales completed thus far. We also manipulated the framing of the goal between subjects. Half the participants, who were in the subgoal condition, read that the 20 sales were broken into four groups of 5 sales each for ease of tracking. The remaining participants, those in the consolidated goal condition, were not given this information. Note that the visual representation (bar) for participants in the subgoal condition depicted their progress for 5 sales and then reset for the next group of 5 sales (see the Appendix). To summarize, the study was a 2 (visualization: easy, difficult) × 2 (goal framing: consolidated, subgoals) between-subjects design with random assignment. The dependent measure was the time participants took to complete the 20 sales.

We used the Qualtrics survey program to unobtrusively record the time participants took to complete each of the 12 steps for a sale, repeated over 20 sales. We excluded Step 1 of the first sale because in this step, participants read study instructions. Across 141 participants, this amounted to 33,699 time measurements. Approximately 2.7% of the time measures (in other words, approximately 6 of the 239 times for each participant) were not captured by the program. We analyzed the time taken to complete 20 sales in three ways: (1) the sum of captured times (not including the missing data); (2) the sum of captured times, in which we substituted each missing time by the average time participants took to complete a step for that set of 5 sales; and (3) log-transformed times. Because the results of these analyses were identical, we report the results of the first analysis (i.e., using only the actual captured times).

Results

Moderating effect of goal framing. An ANOVA with completion time as the dependent measure and ease of visualization and goal framing as the independent variables reveals a significant main effect of goal framing (see Figure 5). Participants who had a consolidated goal completed the 20 sales faster than those whose 20 sales were split into four subgoals ($M_{consolidated}$ = 231 seconds vs. $M_{subgoals}$ = 262 seconds; $F(1, 137) = 9.31$, $p < .005$). The visualization × goal framing interaction was also marginally significant ($F(1, 137) = 2.95$, $p < .10$). The effect of goal framing was significant when the goal was easy to visualize ($M_{consolidated}$ = 215 seconds vs. $M_{subgoals}$ = 266 seconds; $F(1, 137) = 10.69$, $p < .005$) but not when the goal was difficult to visualize ($M_{consolidated}$ = 245 seconds vs. $M_{subgoals}$ = 259 seconds; $F(1, 137) = .95$, n.s.).

Planned contrasts revealed that in the consolidated goal condition, ease of visualization led to significantly faster sales (M_{easy} = 215 vs. $M_{difficult}$ = 245; $F(1, 137) = 4.12$, $p < .05$). In contrast, ease of visualization did not affect time taken to complete sales for participants with subgoals (M_{easy} = 266 seconds vs. $M_{difficult}$ = 259 seconds; $F(1, 137) = .18$, n.s.), in support of H_2. We next focus on the consolidated goals condition, which we used in the preceding studies (for results of the subgoals condition, see the Web Appendix [http://www.marketingpower.com/jmmarch11]).

Goal proximity. Figure 6, Panel A, shows the time participants in the consolidated goal condition took to complete the 20 sales. We analyzed time taken to complete the 20 sales as repeated measures for each participant, using a continuous time variable (1–20) to indicate goal proximity and a two-level indicator for goal visualization (easy, difficult). This analysis revealed a significant proximity × visualization interaction ($F(1, 1385) = 4.25$, $p < .05$), in support of H_1. As participants approached the goal, those in the easy-to-visualize condition completed sales faster than

FIGURE 5
Study 5: Ease of Visualization Speeds Goal Achievement for Consolidated Goals

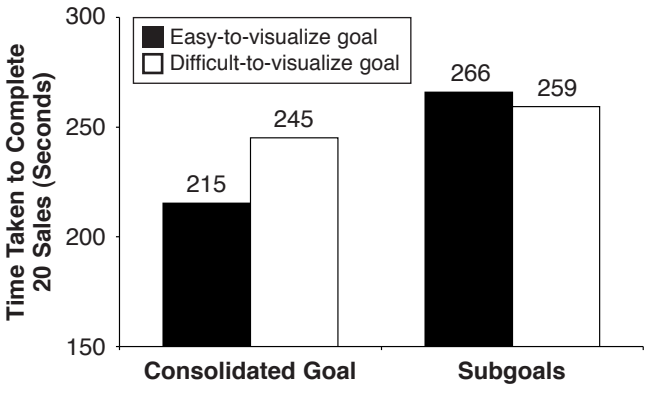
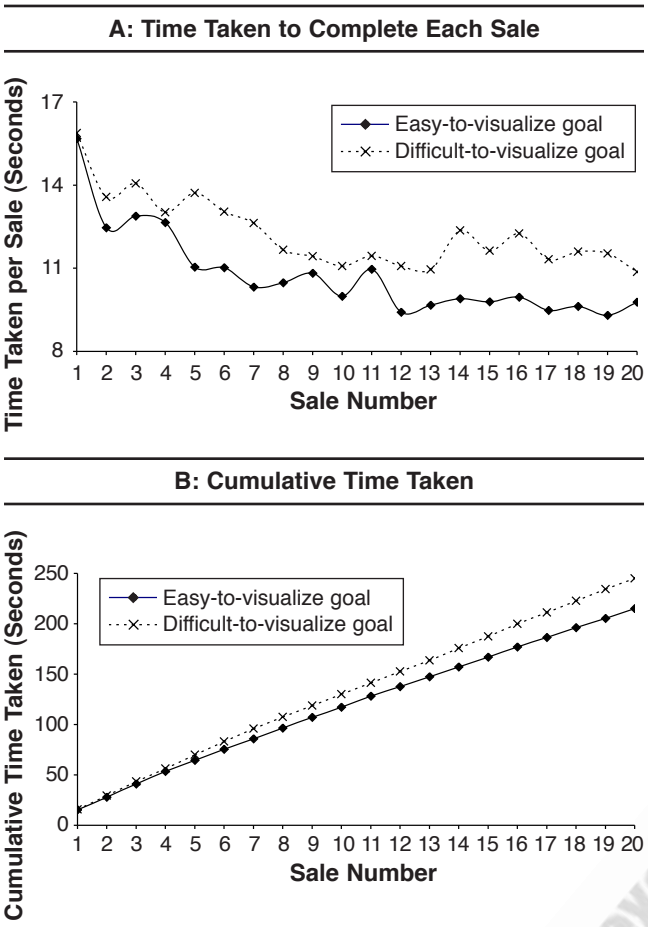


FIGURE 6
Study 5: Ease of Visualization Increases Effort for Consolidated Goals as People Approach the Goal



those in the difficult-to-visualize condition (b = –.05, t(1385) = –2.06, $p < .05$). The main effect of goal proximity was significant, with participants speeding up as they approached the end of the task (F(1, 1385) = 260.95, $p < .0001$).

In the consolidated goal condition, we also analyzed the data by dividing the 20 sales into four stages and measuring time taken to complete each stage (seconds). The results show that the strength of the effect of visualization (easy, difficult) was not significant in Stage 1 (M_{easy} = 64.74 seconds vs. $M_{difficult}$ = 70.26 seconds; F(1, 213) = 1.90, $p = .17$), was marginally significant in Stage 2 (M_{easy} = 52.65 seconds vs. $M_{difficult}$ = 59.86 seconds; F(1, 213) = 3.24, $p = .07$) and Stage 3 (M_{easy} = 49.78 seconds vs. $M_{difficult}$ = 57.48 seconds; F(1, 213) = 3.69, $p = .06$), and was strongest and significant in Stage 4 (M_{easy} = 48.16 seconds vs. $M_{difficult}$ = 57.59 seconds; F(1, 213) = 5.57, $p = .02$).

The cumulative effect of faster sales led participants in the easy-to-visualize condition to complete the task significantly faster than those in the difficult-to-visualize condition (average sale completion time: M_{easy} = 10.77 seconds vs. $M_{difficult}$ = 12.26 seconds; t(71) = –2.06, $p < .05$). Figure 6, Panel B, shows this effect.

Discussion

Study 5 extends our research in three ways. First, it demonstrates the effect of ease of visualization and goal proximity for a paid task, in which participants had a financial incentive to perform well. In such a setting, we replicate the facilitating effect of visualization as a person approaches a consolidated goal. Second, this study helps us counter an alternative explanation based on construal-level theory, as we discussed previously. That is, a concrete (easy-to-visualize) representation leads people to adopt an implemental mindset, which may enhance goal pursuit compared with when representation is abstract (McCrea et al. 2008). To test for this explanation, we used a 19-item version of the behavior identification form (BIF; Vallacher and Wegner 1989) that Liberman and Trope (1998) use, which captures people's construal level. We presented participants with 19 actions (e.g., locking a door) and asked them to choose one of two options. One option was a low-level action corresponding to a concrete construal (putting a key in a lock), and the other was a high-level action corresponding to an abstract construal (securing a house). We coded the low-level construal as 0 and the high-level construal as 1 and summed across the 19 actions to create a construal score ranging from 0 to 19, with larger scores indicating higher construal (the BIF instrument appears in the Web Appendix [http://www.marketingpower.com/jmmarch11]). An ANOVA with construal score as the dependent measure and visualization and goal framing as predictors elicited no significant effects ($F < 1$), suggesting that our manipulations did not influence the construals. Although we found no significant effect of visualization ease on the BIF, we acknowledge the limitation that changes in construal of the sales task may not have been significant enough to influence the 19-item measure.

Third, we found that the effect of visualization was significant for consolidated goals but not for subgoals, thus identifying an important boundary condition for our results. For participants in the easy-to-visualize condition, those provided with the 20 sales as a consolidated goal did better than those whose 20 sales were split into four subgoals of 5 sales. This is consistent with the resting-on-laurels phenomenon that Amir and Ariely (2008) describe.

General Discussion

In summary, this research strives to make four significant contributions. First, from a theoretical standpoint, we demonstrate that ease of visualization enhances goal pursuit when people near their goal. Second, we identify the underlying process—that is, ease of visualization enhances perceptions of proximity and goal progress, increasing effort expended. We find this phenomenon in real-world settings and replicate the effects in the laboratory. In Study 1, data from 1500-meter Olympic and sectional swimming competitions reveal that in the later part of the race, people take longer to swim away from the finish line (when the goal is difficult to visualize) than to swim toward the finish line (when the goal is easy to visualize). In Study 2, we measure people's ability to exert sustained effort in the lab. Although the force exerted declines over time (owing to fatigue), this

decline is less steep when the goal is easy to visualize than when it is difficult to visualize.

Third, we demonstrate implications of goal visualization in the marketing-relevant contexts of consumer savings, service settings, and a sales task. In Study 3, we show that ease of visualization increases commitment to save money for people near the goal but not for those far from the goal, even though all participants received precise information about the dollar amounts saved. Study 4 finds that among the people close to reaching a service agent, those who can easily visualize the finish are more likely to persist than those who find the finish difficult to visualize. Furthermore, perceptions of progress mediate the effect of visualization on persistence. Because goals are also important in managerial contexts, such as in the setting of sales goals, in Study 5 we show that these results replicate in such applied contexts.

Fourth, we identify boundary conditions for these effects. Study 5 finds beneficial effects of visualization for consolidated goals but not for subgoals. Thus, in the context of a sales competition, ease of visualization is likely to engender greater effort from salespeople when they are close to their sales goal and when the goal is presented in a consolidated manner.

Goal Representations

We draw from research on distance perceptions to predict how ease of visualization affects distance perceptions and, consequently, effort and commitment, but this relationship could be somewhat tenuous. In the context of physical distance perceptions, the destination is the real goal. Seeing the destination provides real progress information, and the influence of destination visibility on effort and commitment is transparent. However, in our contexts, participants are aware that the visually depicted end point is a mere proxy for the real goal and that a visual representation should provide little, if any, additional information compared with other forms of representation. The influence of ease of visualization on distance perception and effort in this context of goals is less obvious than that in the context of physical distance judgments. Nonetheless, research in the realm of physical distance perceptions provides a good starting point to infer how goals in general might be interpreted. Furthermore, our results suggest that people process visual representations in a manner similar to distance, influencing perceptions of proximity and effort. In Study 3, we find these influences even after all participants received textual progress information.

Boundary Conditions

We study the effect of visualization in the domain of goals that have fixed start and end points. A specific start and finish are necessary for the goal-gradient effect and for increasing focus on the finish, in contrast with ongoing goals, such as studying, saving, or improving fitness (Zhang, Fishbach, and Dhar 2007).

We find that the beneficial effects of visualization increase as people near a goal. Prior research suggests that as people approach their goal, their attention on the goal increases. In such a setting, we find that easy-to-visualize goals elicit greater effort than difficult-to-visualize goals. This conclusion is not as obvious as it might appear, because temporal construal theory suggests that psychological proximity perceptions engender a more concrete mindset and enhance performance (McCrea et al. 2008). Therefore, ease of visualization, which increases proximity perceptions, should have the strongest effect on distant goals. As people near their goals, the actual distance decreases, and therefore the beneficial effect of visualization should also be lower. However, we do not find support for this explanation in Study 5. This may be because beneficial effects of visualization occur only when people focus on the goal, and people focus on the goal only when it is proximal.

Furthermore, the beneficial effects of visualization on goal pursuit may attenuate if attention on the goal weakens. For example, when people have simultaneous competing goals, those who believe they are close to the goal may decrease effort to reach that goal and increase efforts toward a conflicting goal (Shiv and Fedorikhin 1999). Although we find the benefits of visualization when we represent goals unitarily (by showing participants a visual representation of the start and finish), dividing the intervening distance into subgoals attenuates the effect of visualization, consistent with the resting-on-laurels effect (Amir and Ariely 2008). These dimensions of goal representations (decreasing attention to the goal) may provide useful boundary conditions for the effort-enhancing effects of visualization we found herein.

Implications

Process versus outcome. Extant research reveals that mental simulation enhances goal pursuit (Pham and Taylor 1999). This stream of research suggests that mentally simulating the process (e.g., imagining studying for an upcoming exam) affects goal pursuit more favorably than when outcomes are simulated (e.g., imagining getting a good grade on the exam). In this extant research, outcomes were conceptualized differently from the process and, in a sense, abstracted away from it. That is, rather than viewing the outcome as finishing studying for the test quickly, the outcome refers to doing well on the exam. In our research, the goal involved finishing the process task. Consequently, our findings suggest that visualizing the end point of the process task likely enhances goal following. Thus, our research suggests that mentally simulating the end point of a process task, a form of outcome, also enhances goal following, extending Pham and Taylor's (1999) findings.

Athletic performance. Across five studies, we find that goal proximity increases the beneficial effects of goal visualization on commitment and effort. These results suggest that athletic performance could be improved by making the finish line visible (or easier to visualize), especially in the second half of the race. Sports officials who want to enhance performance could design facilities that allow such ease of visualization.

Individual motivation and effort. We find that when people near their goal, being able to visualize the finish increases the effort they exert to reach it. This finding has

significant implications for motivation and self-control. Specifically, people could enhance motivation by graphically tracking their progress as they approach a goal (e.g., plotting progress from start to finish on a computerized progress chart). Consequently, we expect that as people approach their goal, those who can easily visualize the outcome by using graphical tools judge the finish to be closer and exert greater effort. Visualization can also be enhanced by making the representation consistent with the consumer goal. For dieting consumers, this could be implemented with a wide bar that narrows on approach to the finish goal (suggesting a decrease in consumers' weight).

Furthermore, our findings show that ease of visualization has stronger effects on performance when goals are presented in a consolidated manner than when they are divided into multiple subgoals. Thus, in the context of dieting, ease of visualization should have a weaker effect when a goal (e.g., losing ten pounds) is separated into several subgoals (e.g., losing two pounds in five increments).

Managerial implications. Managers want to enhance both consumer evaluations and employee productivity. In the consumer domain, our findings suggest that using a visual representation (a progress bar or other forms of graphical depictions) when consumers are close to their savings goal could enhance savings, as Study 3 demonstrates. Using vivid proxies of the end goal as finish-line markers can also enhance visualization. For example, managers could use images of dollar bills stacking up in a progress bar or a piggy bank filling up as consumers successfully save. Banks may be able to use such representations to enhance consumer savings. Similarly, not-for-profit firms seeking charitable donations could increase commitment and accelerate the pace of donations by allowing donors to graphically visualize their progress toward a goal as it draws nearer (Cryder, Loewenstein, and Seltman 2010; Koo and Fishbach 2008).

Ease of visualization can also enhance persistence of waiting consumers, as Study 4 demonstrates. Adding progress bars when consumers are waiting online can enhance visualization. Satisfaction with online services that require waiting (e.g., when waiting for a browser page to load) is likely to be greater when perceptions of speed are enhanced with progress bars. These results have important implications in service settings in which wait times often influence consumer evaluations. A rich literature in service research suggests that waiting for service can lead to anger and negatively influence service quality perceptions (Taylor 1994). In instances in which the actual wait time cannot be reduced, influencing consumers' perceptions of wait times may be the only way to affect inferences (Katz, Larson, and Larson 1991). In such contexts, a visual representation can be especially helpful for consumers who have waited the longest (and so are close to reaching a service agent) and are the most infuriated (Taylor 1994). In a bricks-and-mortar context of waiting for service, allowing consumers to see the end of the line (especially when they are close to the finish) may also decrease impatience. This could be implemented by placing multiple lines in parallel.

In employee contexts, our findings suggest that using a visual representation can enhance employee productivity. Specifically, employees are more likely to internalize externally provided goals that they perceive to be attainable rather than unattainable (Naylor and Ilgen 1984). In turn, accepting a goal leads to positive effects on performance. Because easy-to-visualize goals seem more attainable when people are near the goal, firms could motivate employees by providing visual representations of progress in the form of bar or pie charts depicting progress and the amount of the target remaining.

In addition, certain goals may be easier to visualize than others. For example, asking salespeople to sell to 20 clients as quickly as possibly may be easier to visualize than asking them to sell to as many clients as possible (i.e., the goal distance is uncertain). With certain goals, ease of visualization has a stronger influence on performance when a goal is consolidated than when it is split into multiple subgoals, which leads to lower effort. These directions highlight some important consequences when consumers and employees can visualize their goals and therefore remain fruitful avenues for further research.

APPENDIX
Goal Visualization Manipulations

Study 2 (Bar Fills Up Over 130 Seconds vs. 30-Second Stopwatch)

Time	Easy to Visualize	Difficult to Visualize
5 seconds	START FINISH	
65 seconds	START FINISH	
125 seconds	START FINISH	

Study 3 (Shaded Area Shows Amount of Money Saved)

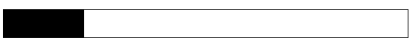
Goal Distance	Easy to Visualize	Difficult to Visualize
Far	$0 $750	30%
Near	$0 $750	70%

APPENDIX
Continued

Study 4 (Shaded Area Shows Time Spent Waiting)

Goal Distance	Easy to Visualize	Difficult to Visualize
Far	START  FINISH	3 minutes
Near	START  FINISH	10 minutes

Study 5 (Shaded Area Shows Sales Completed: Consolidated = 20 Sales, Subgoal = 5 Sales)

Goal Type, Number of Sales	Easy to Visualize	Difficult to Visualize
Consolidated, 4 sales	START  FINISH	20%
Consolidated, 16 sales	START  FINISH	80%
Subgoals, 4 sales	START  FINISH	80% of Subgoal 1
Subgoals, 16 sales	START  FINISH	20% of Subgoal 4

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