

Under review at *Journal of Behavioral Decision Making*

Running Head: GOALS AND RISK TAKING

Goal-Induced Risk Taking in Strategy Choice

Richard P. Larrick

Duke University

Chip Heath

Stanford University

George Wu

University of Chicago

### Abstract

We test whether specific, challenging goals increase risk taking. We propose that goals serve as reference points, creating a region of perceived losses for outcomes below a goal (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). According to the Prospect Theory value function, decision makers become more risk seeking in the domain of losses. In three experiments we compared a “do your best” condition with a “specific, challenging goal” condition. The goal condition increased risky behavior in a skill task, monetary gambles, and bargaining. The discussion considers additional implications of the reference point perspective as well as the relationship between goal-induced risk taking and innovation.

### Goal-Induced Risk Taking in Strategy Choice

One of the most widely-documented findings in psychology is that goals improve task performance (Locke & Latham, 1990). In general, having a specific, challenging goal increases effort and persistence compared to a vague intention, such as “doing one’s best.” Although the effectiveness of goals is undisputed, some researchers have been concerned with identifying boundary conditions and unintended consequences of goal setting. For example, researchers have found evidence that difficult goals can harm performance on complex tasks (see Wood, Mento, & Locke, 1987, for a review) and can detract from performance on other tasks or task dimensions for which goals are not set (Bavelas & Lee, 1978; Polzer & Neale, 1995; Rothkopf & Billington, 1979). In the current research, we draw from research on individual decision making to propose that specific, challenging goals have another critical consequence: They make people more willing to take risks.

Although previous researchers have speculated on the possibility that difficult goals lead to “excessive” risk taking (Locke & Latham, 1984, p. 160), there has been no systematic analysis or empirical demonstration of this claim. Recently, however, we proposed (Heath, Larrick, & Wu, 1999) a theoretical explanation of goal-setting effects that predicts changes in risk preference. Specifically, we proposed that goals change the value of outcomes according to the principles identified in the Prospect Theory value function (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). One of the main implications of the value function is that risk preferences change depending on whether decisions involve gains or losses: In choices between a sure gain and a risky gain, most people take the sure gain, but in choices between a sure loss and a risky loss, most people prefer to gamble. We proposed that goals serve as reference points that make people feel as if they are in the domain of losses (e.g., “10 units behind a goal”) rather than the domain of gains (e.g., “20 units ahead of where I started”). By changing the frame of reference, goals change risk preference (March & Shapira, 1992; Payne, Laughhunn, & Crum, 1981). Although the prediction of risk-seeking is a central prediction of the value function

approach, other theories of goals have not systematically considered the mechanisms by which goals affect risk preference.<sup>1</sup>

If goals do increase risk seeking, it may have useful theoretical and practical implications. On a theoretical level, it may shed light on some puzzling results in the traditional goal-setting literature. A small body of evidence has shown that goals lead people to make more sizeable and frequent changes in their strategies. Below, we argue that this is a form of risk-seeking and that this kind of search for new strategies can be predicted by the same theoretical mechanism we use to predict risk.

From the standpoint of organizational practice, risk-taking may be associated with positive outcomes like innovation and creativity (Longswirth, 1991), as well as negative outcomes like reckless behavior (Maremont, 1995). If goals lead people to become more willing to take risks, organizations must manage the process so that they realize the advantages of innovation and creativity while avoiding the potential damage of reckless actions.

In the next section, we provide a brief review of our prediction that goals increase risk taking. We then consider findings in the goal-setting literature on strategy selection that are consistent with goal-induced risk taking. We finish by describing three specific experiments that provide a direct test of goal-induced risk taking.

#### Goals, Reference Points, and Risk Preference

A common theme runs through literatures concerned with goals: Goals motivate because they provide a comparison for evaluating performance (Lewin, Dembo, Festinger, & Sears, 1944; Locke & Latham, 1990). Specifically, goals transform a somewhat ambiguous stimulus—a performance level such as “27 sales so far this month”—into an outcome that has a clear valence—“better” or “worse” than the goal. Fundamentally, the effect of goals on behavior depends on a cognitive process of comparative evaluation (Locke & Latham, 1990, p. 78). Because comparative judgment is central to goal-setting effects, research on the cognitive psychology of comparative evaluation can enrich our understanding of goal-related behavior.

Recently, we have proposed that a well-known theory of comparative evaluation, Prospect Theory, provides an important link between goals and motivation (Heath et al., 1999). Specifically, we predict that goals systematically transform the valuation of outcomes consistent with Prospect Theory's S-shaped value function shown in Figure 1.

The value function embodies three principles that determine how tangible outcomes  $x$  are translated into psychological experience. First, the value function assumes that people judge outcomes relative to some neutral point of comparison, or reference point, and thus encode them as gains or losses. Second, it assumes that people exhibit loss aversion; they find losses to be more painful than comparable gains are attractive. Thus, the value function is steeper below the reference point in the domain of losses than above it in the domain of gains. Finally, the value function assumes that people experience diminishing sensitivity to outcomes—they are less and less sensitive to changes as they move away from the reference point (i.e., the marginal value is less and less). Because of diminishing sensitivity, the value function is concave in the domain of gains and convex in the domain of losses.

The principle of diminishing sensitivity is the most important of the three for our analysis because it determines risk preference. Diminishing sensitivity implies that decision makers will be risk averse for choices involving gains (where the value function is concave) but risk seeking for choices involving losses (where the value function is convex). The tendency for people to shift from risk aversion in gains to risk seeking in losses has been called the “reflection” effect (Kahneman & Tversky, 1979) and it has been widely documented (Lattimore, Baker, & Witte, 1992; Payne, Laughunn, & Crum, 1980, 1981; Tversky & Kahneman, 1992).

Our argument is that goals serve as reference points, so when people evaluate performance relative to a goal, the value function predicts how they perceive their performance. Specifically, goals shift decision makers from the domain of gains to the domain of losses and change risk preference accordingly. Consider someone who is below their goal by 10 units, and is considering a risky tactic that has a 50/50 chance of advancing them 5 units towards their goal

or setting them back by 5 units. This person will tend to prefer taking the risk because an advance of 5 units brings substantial satisfaction, while a set-back of 5 units is less painful because of diminishing sensitivity. Overall, the value function makes a strong prediction that if people treat goals as reference points, they will typically behave in a risk seeking manner when they are below their goal.

### Strategy Selection and the Value Function

If our argument about the value function is true, then it may help to explain some interesting results in the traditional goal-setting literature. Research has suggested that goals may affect the way that people choose and develop strategies. However, aspects of these results on strategy development are hard to explain using traditional mediating mechanisms.

In their reviews of the literature, Locke and Latham (1990, 1991) listed a number of mediating mechanisms to explain why goals increase performance; the two most central are that goals increase effort and persistence. Another potential mediating mechanism listed by Locke and Latham is that goals may alter the way people develop their strategies.

The evidence that goals change strategy development is somewhat difficult to interpret. Some of the evidence can be interpreted as increased effort or persistence. For example, when people are given a goal, they tend to pursue their strategies more carefully and consistently (Earley & Perry, 1987), particularly when they are provided with a specific strategy that will reliably attain the goal (Earley, Connolly, & Lee, 1989). If strategy depends primarily on effort and persistence, then it can be subsumed under the first two mediators of Locke and Latham.

However, other results on strategy are difficult to explain in terms of effort and persistence. For example, people who have high goals make changes to their strategies that are more drastic and more frequent. Evidence that goals produce larger changes in strategies is provided by studies of a complex computer simulation (Bandura & Wood, 1989; Wood & Bandura, 1989; Wood, Bandura, & Bailey, 1990). In these studies, participants with high goals were more likely to change multiple factors of the simulation at once (i.e., to make larger

changes), which made it more difficult for them to interpret feedback and led them to perform worse. Evidence that goals produce more frequent changes is provided by studies of a challenging multi-cue probability learning task; when participants had high goals, they changed their strategies more often and their strategies were less consistent as measured by the fit of a linear regression to their choices (Earley, Connolly, & Ekegren, 1989; see also Earley, Connolly, & Lee, 1989). The results of this study are particularly difficult to explain with the standard mediating mechanisms of effort or persistence. Indeed, if anything, in these studies a goal made participants less persistent.

When people with high goals make larger and more frequent changes, they are accepting an element of uncertainty that has not been emphasized by previous researchers: Large, frequent changes increase both upside and downside opportunities, thereby increasing the variance in final performance. Why then, do people with high goals accept this unpredictability?

We suggest that the value function provides a plausible answer. If goals serve as reference points, then people who are below their goal will see themselves as in the domain of losses. The value function in this area is convex, so people experience a lower opportunity cost if they remain far from their goal and they receive a higher upside return if they move toward it. This analysis, which depends on the property of diminishing sensitivity, is conceptually identical to the analysis of risk-seeking that we offered above. Thus, if goals lead people to become more risk-seeking, then the value function promises to explain some heretofore puzzling results in the goal setting literature on strategy development.

In order to show that goals affect strategy development, it is important that we separate the effects that goals have on strategy choice from the effects of goals on strategy performance (e.g., effort and persistence). In the studies in this paper, we do this by (1) separating strategy choice from strategy performance (Studies 1 and 4) or (2) by selecting tasks that make performance depend primarily on strategy choice, not effort and persistence (Studies 2 and 3).

### Overview of Method

The following studies were designed to test whether goals would induce greater risk taking when actual behavior entailed actual consequences. All of the studies used the standard manipulation in the goal setting literature: Half the participants were told to “do your best” at the task; the other half were encouraged to set a “specific challenging goal.” Following Locke and Latham’s recommendation, suggested goal levels were extremely difficult, such that less than 10% of the population could achieve them (Locke & Latham, 1990, p. 349).

Our hypothesis was that the standard goal-setting manipulation would lead people to take greater risks in the goal conditions than in the do your best conditions. We assume that people often interpret a “do your best” as “gain as much as possible over your starting point.” If so, then people in the do your best condition are operating in the domain of gains and their behavior should be predominantly risk-averse.

We explored the effect of goals on risk taking in three settings: a work task (solving easy and hard anagrams for pay), a financial decision (choosing among risky gambles for actual money), and bargaining. In all studies, participants chose among strategies that varied in degree of risk and payoff, so that riskier strategies paid larger amounts if they succeeded but had a lower expected value.

In our experiments, we are interested in the effects of “mere” goals on risk preference. By a “mere” goal, we mean a specific level of performance that has no discrete payoff attached to it (Heath, Larrick, & Wu, 1999; Locke & Latham, 1990; Lopes, 1987). In contrast to mere goals, many workplace goals are tied to a discrete, discontinuous external reward (e.g., a bonus or promotion). If people take risks in situations where there is a discrete reward, then their behavior can be easily explained by basic economic calculations (“I took a risk because if I didn’t I would have had no chance to perform well enough to get the bonus”). By contrast,

responding to mere goals by becoming risk seeking is a fundamentally psychological phenomenon.

For researchers who are interested in how goals affect value, the standard experimental methodology in the goal setting literature presents two problems which we have attempted to overcome in our studies: external demand and spurious expectancies.

### External Demand

In many goal-setting studies, participants are explicitly assigned a goal by the experimenter. Because the experimenter has focused participants on a specific goal, they may associate a particular discrete reward with achieving that specific level of performance (“If I get to the goal, the experimenter will be pleased”). It is probably impossible to eliminate this problem while still manipulating goals experimentally, but we tried to reduce the problem by having the experimenter “suggest” rather than explicitly assign a goal. Thus, we removed some of the external demand and we made it more likely that participants became committed to the goal that they personally chose (Cialdini, 1993).

We also attempted to remove external demand by giving participants a reason to perform the task other than the whims of the experimenter. Each participant in all four studies could earn money based on their actual choices and performance during the experiment. Because participants faced real monetary consequences, they should think carefully about their strategy choices, and they should be less likely to take a particular action merely because it achieves a discrete goal suggested by the experimenter.

### Spurious Expectancies

We are interested in how mere goals alter how participants perceive the valence of an outcome (i.e., utility or value), so it is important for us to ensure that our manipulation of goals does not also alter how participants perceive the probability of achieving various outcomes. Unfortunately, many of the standard procedures in the goal setting literature might create spurious expectancies when people are given a specific, challenging goal. According to

recommendations on goal-setting methodology, experimenters should assign goals that can only be reached by about 10% of participants (Locke & Latham, p. 349). Because people expect others to make reasonable requests during social interactions (Grice, 1975), participants in the goal condition may improperly assume that the very challenging goal set by the experimenter is actually very reasonable. Indeed, although this problem has not been widely discussed in the goal-setting literature, some studies contain evidence that goal participants do develop spurious expectancies—participants who are assigned high goals expect to perform better than participants who are assigned more reasonable goals (Meyer & Gellatly, 1988). In our experimental methodology, we attempted to reduce spurious expectancies by giving participants specific information about the difficulty of the task they were undertaking. In Study 1, we did this by giving them specific, representative examples of the task. In Study 2, we gave them explicit probabilities of success for various choices. In Study 4, participants received on-line feedback about their performance and could modify their strategy at any point.

#### Study 1: Goals and Risk Preference in a Work Task

Study 1 was designed to test whether goals would increase risk-seeking when participants chose strategies in one of the most frequently-studied tasks in the goal setting literature: solving anagrams (e.g, Shapira, 1989; Locke & Latham, 1990, p. 42). Participants were presented with the opportunity to earn money by solving anagrams that varied in difficulty and monetary compensation. Hard anagrams were riskier than easy anagrams because they were worth more but were also harder to solve.

Because we are interested in strategy development, our main dependent variable was the riskiness of the strategy adopted by the participants. Before starting the exercise, participants had to select a mix of hard and easy anagrams that would constitute their pool of tasks for their work period. Our hypothesis was that participants with a specific, challenging goal would opt for a riskier pool of anagrams (with more hard anagrams and fewer easy ones) than participants who were told to do your best. By forcing participants to commit to a strategy up front, we could

separate the effects of initial strategy selection from the subsequent performance effects of effort and persistence (Locke & Latham, 1990). We suspected that if goal participants adopted a risky strategy, they might perform worse overall even if they exerted greater effort in pursuit of their high goal during the solution period.

Consistent with the methodological issues we discussed above, in this study we strove to reduce external demands by: (1) suggesting rather than assigning a goal and (2) paying people as a linear function of their performance. We also attempted to reduce spurious expectancies by giving participants specific examples of the problems they were going to be performing and then having them predict their probability of success before receiving the goal manipulation. Forcing participants to be honest about their chances of success should substantially reduce the ambiguity of the task and the distortions created by the goal-setting manipulation.

### Method

Participants. Participants were 69 MBA students who completed the task as part of a class exercise. They were given five minutes to read the instructions and six minutes to complete the exercise. All participants were paid based on their performance.

Materials. Participants were given a two-page booklet entitled “Anagram Exercise.” The first page contained task instructions and the second page contained the actual anagram task. The first page stated: “In this exercise, you will receive money for each anagram you solve. There are two kinds of anagrams, with examples listed below. Each anagram contains the scrambled letters of an English noun. Type A anagrams have more letters than Type B anagrams and the words are more unusual. Therefore they are more difficult to solve. If you solve a Type A anagram, you will receive 40 cents. If you solve a Type B anagram, you will receive 20 cents. You will be able to solve up to 15 anagrams and you will have 6 minutes to solve them. You will choose how many Type A and B anagrams you would like to receive.”

To provide participants with accurate expectancies about the difficulties of the two types of anagram, we gave them two examples of each type of anagram: ATSDMUR and RLERQU

for the Type A anagrams, and ETOUR and LKILS for the Type B anagrams. (These items were pre-tested and selected because they were solved at the same rate as the test items.) The complete list of anagrams is provided in the appendix. To measure expectancies, participants were then asked “Based on these examples, if you had 1 minute to solve 10 Type A (\$0.40) anagrams, how many do you think you would solve correctly?” They were asked the same question for Type B anagrams. The order in which these expectancy questions were asked was counterbalanced.

Participants then received the manipulation instructions. In the goal condition, they were told, “We encourage you to set a specific, challenging goal for the amount of money you would like to make in this exercise. We suggest a goal between \$5 and \$6. You can set any goal you would like, as long as it is specific and challenging.” They were then asked: “What specific, challenging goal are you setting for yourself?”<sup>2</sup>

In the do your best (DYB) condition, participants were told, “We encourage you to do your best at making money in this exercise.”

In the strategy selection phase of the experiment, participants were told they would be given 15 anagrams to solve, and they were asked to specify the number of Type A and B anagrams they desired. (For participants, we consistently used the “Type A/B” terminology to convey the choice in as neutral a manner as possible, but below, we will refer to these as hard and easy anagrams.) Note that by choosing their pool of hard and easy anagrams up front, participants were choosing a strategy.

After all participants selected their strategy, they were each given a page containing the anagrams they were to solve. This page was arranged in two columns, one marked “A. \$0.40 anagrams” and the other marked “B. \$0.20 anagrams.” Participants were given the number of hard and easy anagrams they requested, and they had six minutes to solve them. Afterward, the results were graded and participants were paid based on their performance.

## Results

Dependent variables. On average, Goal participants set a goal of \$4.99.

As may be seen in Table 1, Goal and DYB participants did not differ in the rate at which they expected to solve hard and easy anagrams. In both conditions, they thought that the easy anagrams offered a slightly higher expected value than the hard anagrams. In fact, hard anagrams were much more difficult to solve than easy anagrams.

As predicted, Goal participants selected significantly more hard anagrams ( $M = 5.67$ ) than participants in the Do Your Best condition ( $M = 3.51$ ) and, because of the difficulty of the hard anagrams, earned less ( $M = \$1.50$  for Goal versus  $M = \$1.81$  for DYB). Note that this difference in earnings was mainly due to the fact that participants in the goal condition selected riskier strategies than participants in the do your best condition. Participants in the two conditions did not differ in the rate at which they solved hard versus easy anagrams: Both solved roughly 10% of hard anagrams and 70% of easy ones. During the performance period, both conditions performed at the same level, indicating that the effect of goals on earnings was driven largely by strategy selection.

Regression analyses were conducted to check whether the effect of goals on risk taking was significant after controlling for initial expectancies.<sup>3</sup> As may be seen in the three equations in Table 2, the effect of goal setting is significant and remains significant after controlling for the order in which expectancies were elicited (hard first or easy first) and for a measure of subjective difficulty.

## Discussion

Study 1 used a common performance task from the goal literature to demonstrate that goals increase risk-seeking in the strategies that participants choose. When faced with choosing between hard and easy anagrams that differed in profitability, participants with a specific, challenging goal chose a riskier strategy than do your best participants, and by doing so, they

reduced the expected value of their final payment by a substantial amount. By adopting riskier strategies, goal subjects on average earned 15% less.

We took steps in this experiment to reduce the demand characteristics that have been present in previous goal setting experiments. In our design, external demand seems not to have been a major problem. We allowed participants to set their own specific, challenging goals, and the average goal of \$4.99 fell at the low end of our suggested range of \$5 to \$6. Our experimental design also attempted to reduce spurious expectancies by having participants form accurate expectancies prior to the manipulation.

Participants believed that the easy anagrams offered a small advantage over hard anagrams in expected value. Thus, goal participants were more risk-seeking than do your best participants in the classic sense: They accepted a portfolio with more low probability, high payoff options than did the do your best participants. However, participants in both conditions underestimated the difficulty of the hard anagrams. It is possible, therefore, that goal participants in the current study did not knowingly sacrifice expected value when they selected a riskier portfolio. In the next study, we make the cost of risk-seeking unambiguous to see whether goal participants will not only become more risk-seeking but also sacrifice expected value.

### Study 2: Goals and Risk Preference in Gambles

In the introduction of the paper, we argued that the value function may explain why people with high goals develop different strategies than people with do your best goals. The tasks that have been used in experiments on strategy development, however, do not clearly distinguish whether goal participants are performing differently or whether they are selecting strategies with different levels of risk. Study 1, by separating strategy selection from performance, indicated that goals affect strategy selection directly. Study 2 provides additional evidence that goals affect strategy selection by exploring whether people are willing to choose a risk-seeking strategy in a gambling task. Because the gambling task does not involve effort or

persistence, finding evidence of risk-seeking in this task would provide clear evidence that goals can affect strategy development directly.

In general, when people are given goals, the goals can alter both utility (as in the value-function approach) and expectations (as in our concerns about spurious expectancies). Because we are interested in how the value function affects risk for goal setting subjects, it is important that we control for other potential factors like expectancies. In Study 1, we went beyond the standard goal setting paradigm by explicitly measuring expectancies—people performed a sample of the task, estimated the probability of various outcomes, and we controlled for their estimates. In Study 2, we go even further by making probabilities of various outcomes explicit. By making probabilities clear and explicit, our design makes it highly implausible that differences in risk-taking are driven by difference in expectancies. Thus, any difference in risk-taking across conditions is better explained by a utility approach like the value function approach.

Finally, we made our test of risk-seeking especially stringent by designing stimuli in which gambles with higher potential outcomes had lower expected values. Thus, participants selecting a high payoff gamble not only accepted higher variance in their outcomes, they also sacrificed expected value.

### Method

Participants. One hundred thirty-six MBA students completed the exercise as part of a class demonstration. All students were paid based on their decision.

Materials. Participants were told, “In this exercise, you will have the chance to earn money by choosing one option from a set of options, each of which offers you a specific probability of achieving a cash payoff. Options with higher potential payoffs will have somewhat lower expected value.”

Participants were randomly assigned to the goal or do your best condition. The participants assigned to the goal condition were told, “We encourage you to set a specific,

challenging goal for the amount of money you would like to make in this exercise. You can set any goal you would like, as long as it is specific and challenging. We suggest a goal of \$9.” They then answered the question, “What specific, challenging goal are you setting for yourself?” The participants assigned to the do your best condition were told, “We encourage you to do your best in making money in this exercise.”

On a second page, participants were presented with 15 gambles that increased in payoff by 50 cents, ranging from a 100% chance of winning \$3 to a 21% chance of winning \$10. The expected value was shown next to each gamble. Expected value decreased by approximately 5 cents with each 50 cent increase in the absolute payoff. All gambles are displayed in Figure 2.

After all participants made their choice, they each drew a random number and were paid based on their choice.

### Results

On average, goal participants set a goal of \$8.26. (As in Study 1, the average goal level was below the level suggested by the experimenter.)

A test comparing the overall distributions confirmed that they were significantly different, Mann-Whitney’s  $U = 1554$ ,  $z = 2.63$ ,  $p < .01$  (corrected for ties). Participants selected riskier gambles in the goal condition (Median = 9) than in the do your best condition (Median = 5). The expected payoff for the median participants in the do your best and goal conditions were \$2.75 and \$2.52, respectively. The most striking difference between the conditions was preference for the safest option (Option 1 which offered \$3.00 with certainty): Thirty-seven percent of do your best participants favored this option, but only 11% of goal participants ( $\chi^2(1, n=130) = 10.84, p < .001$ ).<sup>4</sup>

### Discussion

As predicted, participants who set a specific, challenging goal chose riskier gambles than participants who were trying to do their best. The median goal participant sacrificed more than 20 cents (i.e., around 10% of the expected value) to play a gamble with greater variance.

Previous research on the relationship between goals, strategy selection, and performance has been open to alternative interpretations: Goals may affect strategy selection indirectly, by increasing effort and persistence, or directly. Because effort and persistence were irrelevant in our gambling task, Study 2 provides clear evidence that mere goals can affect strategy selection directly in the absence of other “mediating mechanisms.” Thus, change in strategy selection is conceptually and empirically distinguishable from other mediating mechanisms.

Finally, the design of Study 2 effectively eliminated the possibility that risk taking was driven by spurious expectancies. Participants were presented with complete information about the probabilities and payoffs of various strategies, including the actual expected values for each strategy. This suggests that goals induce risk taking by changing how people value outcomes, consistent with the Prospect Theory prediction.

### Study 3: Goals and Risk Preference in Distributive Bargaining

In the first two studies, we explored whether people would choose riskier strategies on individual tasks. In this study, we extend our tests by exploring how goals affect the strategies that people adopt in a competitive social task. Specifically, we used a simple distributive bargaining exercise to test whether people adopt bargaining strategies that are riskier.

Several studies using repeated dyadic negotiations suggest that specific, challenging goals lead people to engage in riskier negotiation strategies. Research has shown that difficult goals sometimes improve both integrative and distributive negotiation outcomes (Huber & Neale, 1986, 1987), but they also can decrease the chances of reaching agreement and thereby lower individual profit (Neale & Bazerman, 1985). Based on these results, we might guess that negotiators are adopting riskier tactics, such as making high demands that increase the chance of impasse. If negotiators make high demands, this is risky strategy because it increases payoffs when negotiators succeed, but it also increases the chances of receiving nothing because of impasse (White & Neale, 1994).

Although suggestive, previous research on goals in negotiation has not directly measured risky strategies but has inferred them based on final outcomes (e.g., agreement versus impasse, high versus low final outcome). Most of the previous studies have also used face-to-face bargaining tasks, which are desirable because they enhance the realism of the task, but introduce factors other than the riskiness of strategies adopted by negotiators, such as hostile interactions or biased perceptions (Morris, Larrick, & Su, 1999).<sup>5</sup>

To provide a straightforward test of how mere goals affect strategy selection in bargaining, we used a simple distributive bargaining task in which two players conduct a single, simultaneous, anonymous exchange based on strategies they choose in advance. The task is known as the ultimatum game and it has been widely studied in the economics literature (Guth, Schmittberger, & Schwarze, 1982; Kahneman, Knetsch, & Thaler, 1986; Camerer & Thaler, 1995). The ultimatum game has two participants: The Proposer, who proposes a division of a sum of money, and the Responder, who decides whether to accept or reject the proposal. If players are self-interested as postulated in rational economic theories, the Proposer should offer the smallest possible amount to the Responder, and the Responder should accept it since receiving some money is better than receiving none.

Counter to the rational prediction, previous studies have shown that it is risky to propose or demand more than an equal share (Camerer & Thaler, 1995). For example, in Larrick and Blount (1997), when Proposers requested \$3.50 from a \$7.00 their expected value was \$3.50; When Proposers requested \$4.00, their expected value fell to \$3.00. When Responders demanded more than \$3.50, they succeeded less than 5% of the time. In Study 3, we predicted that participants who set a specific, challenging goal would be less satisfied with smaller amounts and would be more likely to request an unequal share. As a result, they would decrease the probability of agreement and reduce the expected value of the deal.

## Method

Participants. Participants were 152 MBA students who took part in a class exercise. All participants were paid based on the outcome of their decisions.

Materials. All participants were told, “In this exercise, you will be randomly paired with a student in another section to divide \$7. You will play this exercise only once, and you will never know the identity of the other person. We will supply the \$7.00.” In the do your best condition, participants were encouraged to do their best to make money in the exercise. In the goal condition, participants were encouraged to set a specific, challenging goal for the amount of money they would like to make in the exercise. They were told that they could set any goal they liked, as long as it was specific and challenging.

Participants were assigned to the role of Proposer or Responder (described, for neutrality as “Player 1” and “Player 2” following Larrick & Blount, 1997). Proposers were told:

“You will be randomly paired with a student in another section to divide \$7. You will be asked to propose a division of the \$7.00 between yourself and the other person (whom we'll call Player 2), such as \$X for yourself and \$Y for Player 2. Then Player 2 will be asked whether he/she accepts or rejects this proposal. If Player 2 accepts the proposal, each player will get the amount you proposed. If Player 2 rejects the proposal, neither student will receive any money. How much do you propose for yourself and for Player 2?”

We used the strategy method to elicit proposals and responses (e.g., Camerer & Thaler, 1995). The Proposer then proposed a division from a list of options by \$0.50 increments:

\_\_\_\_\_ \$7.00 for Player 1 and \$0 for Player 2  
 \_\_\_\_\_ \$6.50 for Player 1 and \$0.50 for Player 2...

Participants in the Responder role had identical instructions, except they indicated for each possible proposal whether they would accept or reject it.

## Results

Overall, goal participants set an average goal of \$4.99.

As mentioned above, previous research has shown that requesting more than half of the pool is a risky strategy, particularly for Responders. As predicted, the goal manipulation increased the tendency to ask for more than half. The effect was not significant for Proposers, since many Proposers even in the do your best condition requested more than half. However, the effect was substantial and significant for Responders, among whom 29% (10/35) requested more than half in the goal condition compared to only 5% (2/41) in the do your best condition ( $\chi^2(1, n=76) = 6.29, p < .01$ ).

We expected that the riskier requests in the goal condition would reduce the average proportion of completed transactions compared to the do your best condition. For each condition, we took each Responder as the unit of analysis, and computed the proportion of transactions that would be completed if he or she were paired with each of the Proposers in the same condition. While the do your best condition produced completed transactions in 68% of possible pairs, the goal condition produced completed transactions in only 53% of pairs ( $t(74) = 2.13, p < .05$ ). This 15% difference translates into an expected payoff that was \$1.05 less for goal dyads than for do your best dyads.

### Discussion

Study 3 demonstrated that goal-setting leads to more risk-seeking in a simple distributive bargaining task. It is important to note that high requests have no strategic value in this game. Because there is only one, anonymous, simultaneous exchange, participants cannot influence each other with their demands. Whereas goals led players to demand more, they also significantly reduced the number of completed transactions and subsequent earnings.

### Study 4

Study 3 showed that goals led players to pursue riskier strategies. However, the ultimatum game is only played for one round, so it does not allow people to correct their strategies based on feedback. What would happen if we allowed people to play a similar game

for multiple rounds? Would the riskier strategies of the goal participants pay off? Would goal participants shift away from the riskier strategies in response to feedback?

In Study 4 we used an iterated distributive bargaining task in which two players made a series of simultaneous demands on a common pool that decreased in value over time. Similar “shrinking pie” games have been studied by Johnson et al., 2002 and Spiegel et al., 1994. The negotiation was conducted silently with each party out of sight of the other. Both players’ roles were described in the same way. Given the symmetric structure of the task, equality is a salient settlement point and, as in Study 3 and many other symmetric bargaining tasks (cf. Allison & Messick, 1991; Camerer & Thaler, 1995), it is risky to request more than half the pool. Again, however, we expected that participants who set a specific, challenging goal would pursue a riskier strategy on the first round, and perhaps on later rounds.

We compared three types of bargaining pairs: Do Your Best vs. Do Your Best (DYB/DYB), Do Your Best vs. Goal (DYB/Goal), and Goal vs. Goal (Goal/Goal). We predicted that DYB/DYB dyads would make more conservative requests and reach agreement quickly, thereby preserving most of the value in the negotiation, whereas Goal/Goal dyads would make the most extreme requests, thereby delaying or preventing agreement and destroying value in the negotiation. We predicted that the performance of mixed dyads would fall between these two extremes.

### Method

Participants. Participants were 134 MBA students who took part in a class exercise. All participants were paid based on the outcome of their decisions.

Materials. All participants were randomly matched with a partner. To highlight the role of strategic decision making and to minimize other social factors, pairs of participants interacted silently and without facing each other. Participants were told that they were playing this game for actual money provided by the professor, and that they could earn up to \$8.00. In the do your best condition, participants were encouraged to do their best to make money in the exercise. In the

goal condition, participants were encouraged to set a specific, challenging goal for the amount of money they would like to make. They were told that they could set any goal they liked, as long as it was specific and challenging. We created three conditions with roughly equal numbers of dyads: DYB/DYB ( $n = 23$ ), DYB/Goal ( $n = 21$ ), Goal/Goal ( $n = 23$ ).

Participants were told that they were going to silently bargain over the distribution of 8 chips that could be redeemed for money. Each round, they and their opponent would write down a demand for a given number of chips. If the total of the two written demands was equal to or less than 8, then they had reached agreement and would each receive the number of chips they demanded. If the total of the two demands was greater than the 8 chips available, they had not reached an agreement. They were told that they would have 5 rounds to reach agreement, but if they had not reached agreement by Round 5, neither player would receive any chips.

Finally, participants were told that the value of the chips would diminish each round. If a deal was completed in the first round, each chip was worth \$1.00. In subsequent rounds, the value of the chips diminished by 5 cents per round.

## Results

Overall, goal participants set an average goal of \$5.42.

As a first test of how goals affect strategies, we ignore the dyad-level interaction, and consider simply how many participants on the first round pursued a risky strategy by demanding more than half of the 8 chips. The results indicate that the risky strategy was chosen by 12% of subjects in the do your best condition, but 34% in the goal condition ( $\chi^2(1, n=134) = 8.23, p < .01$ ).

Thus, on average, participants with goals pursued a riskier initial offer than participants who were trying to do their best. As a result, the three different types of dyads had different outcomes in Round 1. As Table 3 shows, 78% of the DYB/DYB dyads reached agreement in the first round, compared with 57% of DYB/Goal dyads and 52% of Goal/Goal dyads. These results mirror the one-shot results of Study 3.

Recall that the value of the pool decreased with each round of no agreement. Thus, the next question is whether goal subjects responded to feedback and abandoned their risky strategy after failing on the first round. (Because the responses of dyad members were not completely independent after the first round, we report the remaining results at just the dyad level.) Figure 2 reveals that participants who set goals did not respond quickly to feedback. The cumulative percent of Goal/Goal dyads that reached agreement by Round 4 is equal to the percentage of DYB/DYB agreements in Round 1. The statistical tests in Table 3 confirm that, as the number of goal participants in a dyad increased, the round of eventual agreement was delayed and the proportion of dyads that never reached agreement increased. As a consequence, these tendencies produced lower final payoffs for dyads with more goal participants.<sup>6</sup>

It is worth noting that the lower payoffs for goal dyads were primarily driven by their unwillingness to abandon the risky strategy they initially chose in Round 1. For example, if agreement rates in Round 2 and 3 had been the same for dyads with Goal participants as for the DYB/DYB dyads (i.e., 95% in 2 and 100% in 3), then the final dyad payments in the three conditions would have been only trivially different: \$7.73, \$7.74, and \$7.52. Thus, not only did goal dyads initially adopt more risky strategies, they persisted in them in a way that proved costly.

### Discussion

Study 4 demonstrated that goal-setting leads to riskier strategies and poorer outcomes despite the fact that participants in this study had the opportunity to modify their risky strategy as they were performing the task (which was not true in Studies 1 through 3). For example, after a failed attempt to obtain 5 chips in Round 1, a bargainer might quickly concede to 4 or even 3 chips. Study 4 provides some evidence that Goal participants adjusted their strategy less quickly in the face of feedback than did DYB participants.

As in previous research, Study 4 demonstrates that there may be dangers in setting a specific, challenging goal in a bargaining situation. Other studies have noted that goals may be

dangerous in integrative bargaining situations where partners have unequal values for different issues and they can create joint gains by making trades (e.g., Huber & Neale, 1987; Polzer & Neale, 1995). Our study demonstrates that high goals can also lead to poor performance in distributive bargaining where the payoff is fixed and known to both parties and participants must merely agree on how to distribute it. Again, as in Studies 1 through 3, goal setting led people to choose riskier strategies; in addition, they stuck with their strategies despite negative feedback.

### General Discussion

We used the Prospect Theory value function to predict that people would be significantly more risk-seeking when they set a specific, challenging goal. Consistent with this prediction, we found that goal participants were more likely to choose risky strategies than participants who were trying to do their best. These results held for four tasks performed for actual money—a work task, a financial decision, and two bargaining exercises. By pursuing riskier strategies in these tasks, goal participants in all four studies accepted lower expected values for their final outcomes.

In the conclusion, we discuss some additional theoretical predictions of the Prospect Theory value function and then we consider the implications of risk-seeking for organizational decisions.

### Implications for Goal-Setting Theory: The Dynamics of Search

We have argued that goals serve as reference points and that they change the value of outcomes in a way predicted by the Prospect Theory value function. As a result, someone who is behind a goal will feel much better by moving toward their goal than they will feel bad in falling further behind. When a person is behind a goal, this simple asymmetry in value is likely to explain many of the previous results on search and the current results on risk-seeking. The convexity of value below a goal makes both risk-taking and experimentation more valuable than sure-fire strategies that yield small gains. In the case of risky decisions (as in the studies reported here), people will risk lower outcomes to try for higher outcomes. In the case of

experimentation, people will risk some dead ends and false starts to try to find a more effective approach.

At base, our analysis assumes that all of these behaviors result because goals change the perceived value of various outcomes. This argument may shed light on previous theoretical analyses of how goals and targets affect strategies. March and Simon (1958) assumed that people search for better options if they are sufficiently below their aspiration. According to them, individuals and organizations start by pursuing strategies that are readily available in their repertoires (by engaging in local search); only if they are unsatisfied with their available routines do they elaborate their pre-existing routines or invent new ones. Wood and Locke (1990) proposed a similar schema with additional psychological detail. They assumed that when individuals are behind a goal, they initially apply well-learned strategies like “work harder,” “persist longer,” or “pay more attention.” If these “universal task strategies” seem unlikely to allow them to reach the goal, individuals reassess their efforts and try to develop new strategies that are specific to the domain. Thus, previous researchers have typically agreed that people first engage in local search (through previously stored strategies) and then they expand their search if the products of local search do not suffice to reach the goal.

The value function provides additional theoretical underpinnings for these accounts. Interestingly, the value function predicts that people may be extremely conservative if their current strategy is certain to extricate them from their current “loss” position behind their goal. Because the slope of the value function is steeper right before the goal than right after (the principle of loss aversion), any strategy that is sure to reach the goal will be more attractive than a strategy that has a probabilistic chance of either exceeding the goal or falling short. This prediction of the value function is consistent with the process explanations of search which predict that people will first try to reach the goal using standard, local strategies, and then will consider riskier strategies if their old strategies are insufficient.

The intuition of the value function is illustrated by the problem below which was given to 24 MBA students:

John works in sales. With two days left, he has completed 26 sales. He is considering two strategies:

A) He knows that if he concentrates his remaining two days on the 4 clients most ready to buy, he can close those deals.

B) He can spend his time spot-calling his entire remaining base of 20 clients. On average, this strategy in the past has produced anywhere from 2 to 8 sales.

Which strategy will John prefer?

Here, John has no particular goal and participants thought he would be mildly risk averse: 54% said John would prefer the certain strategy, 46% said John would prefer the risky one.

Other participants ( $n = 27$ ) were given a version in which the first sentence was changed to “John works in sales and has set a goal of making 30 sales this month.” Here, John can reach his goal, with certainty, by using strategy A. As predicted by the value function, the goal makes John much more risk-averse. 96% of participants believed John would be risk-averse and would prefer the certain Strategy A.

Finally, another group of participants ( $n = 30$ ) was given a version where John’s safe strategy would leave him below his goal (mirroring the circumstance created in Studies 1 through 3). In this version, John had a goal of making 30 sales and had completed only 21. As predicted by the convexity of the value function in this region, 77% of participants believed John would prefer the risky Strategy B (all problems differ at  $p < .05$  by  $\chi^2$ ).

Taken together, these results suggest that the value function may explain why people are exceptionally conservative when they have a strategy that will reach their goal, and risk-seeking when they do not. This function allows us to understand why people may adopt a specific dynamic pattern of behavior that has been predicted by a number of theorists. Although the value function approach only considers how people evaluate outcomes, it provides a unified

psychological account for why people will be more conservative when one strategy allows them to reach their goal with certainty and more risky when they do not know whether a given strategy will reach their goal.

### Organizational Implications

The goal-setting literature has demonstrated many times that goals lead people to perform better in simple tasks where people can improve by exerting greater effort and persistence. However, goals may not improve performance if they make people more willing to take risks. For example, the existing literature on strategy development indicates that goals make people more willing to make sizeable and frequent changes in their strategies. Previous researchers have noted that, in doing so, performance may suffer (Early, Connolly, & Ekegren, 1989; Early, Connolly, & Lee, 1989; Hogarth, Gibbs, McKenzie & Marquis, 1991). Earley, Connolly, & Lee (1989) summarize their paper by saying that “challenging goals may not be beneficial when effective task strategies are not readily identifiable. In such settings, goals may stimulate excessive strategy search, degrading overall performance” (p. 589). In our studies, people who set goals engaged in risky strategies even though the risky strategies reduced their payoffs.

However, the observation that goals increase risk-taking should merely serve as a caution. In organizations, risk-taking may be dangerous in some contexts and valuable in others. Financial models, for example, assume risk and reward are positively correlated (Brealey & Myers, 2002). The key task for organizations is using goals to motivate people to take appropriate risks.

If organizations desire employees to take greater risks, our research suggests that goals may be helpful. Ordinarily, psychological and organizational factors may conspire to make individuals avoid risk in organizations. On their own, individuals tend to be risk averse because of loss aversion (Kahneman & Tversky, 1979; Benartzi & Thaler, 1995), concavity for gains (Kahneman & Tversky, 1979), and the absence of feedback on foregone alternatives (Guthrie, 1998; Larrick & Boles, 1995). Organizations may compound these individual tendencies by

basing performance evaluations on small samples of performance or on short-run outcomes. Although individual and organizational factors may lead individuals to avoid risk, organizations may be more successful when individuals take risks (Hammond, 1967; Swalm, 1966). If organizations encourage individuals to set goals, individuals may be more willing to take risks.

Compared to the status quo, a challenging goal can harness loss aversion and diminishing sensitivity to make it 1) extremely satisfying to approach higher levels of performance and 2) relatively painless to fail. Debbi Fields, the founder of Mrs. Fields Cookies says that, in her start-up days, goals helped encourage greater creativity. She says, “Rather than trying to do \$50,000 for the week, which to me sounded incredibly difficult, I said to the folks I worked with, ‘That’s \$50 right now this hour—can we do it?’” According to Fields, this kind of challenge led her and her employees to take creative risks. “When you say, ‘Hey, we’re behind our goal, it’s raining outside, nobody’s here, what are we going to do?’, then we are creative—we go outside with umbrellas and give people samples in the rain. That’s when we get outrageous. Sometimes the impossible happens because you’re willing to challenge it” (Longswirth, 1991, p. xi). In this situation, the asymmetry in value produced by a specific goal helped people to appreciate progress toward the goal and helped them overcome inhibitions that would otherwise prompt them to avoid seemingly “impossible” situations. Also, diminishing sensitivity took the sting out of the potential lower performance that may have resulted from “outrageous” behavior.

On the other hand, by setting a challenging goal, an organization can make moving toward the goal seem so attractive that individuals may be tempted to engage in risky or even reckless behavior to move toward their goal. In the early 1990s, the CEO of Bausch and Lomb set extremely high double-digit growth targets for his sales managers. In return, many of them responded by engaging in risky and, in some cases, unethical behaviors: According to *Business Week*, these managers responded to the challenging goals by pursuing riskier strategies, “often at the expense of sound business practice or ethical behavior. They gave customers extraordinarily long payment terms, knowingly fed gray markets, and threatened to cut off distributors unless

they took on huge quantities of unwanted products. Some also shipped goods before customers ordered them and booked the shipments as sales, a possible violation of recognized accounting practices.” Interestingly, when these practices came to light, Bausch and Lomb’s Board of Directors did not blame the specific individuals who chose the risky and sometimes unethical strategies, instead, it placed the blame on the person who set the stretch goals in the first place: they fired the CEO (Maremont, 1995). Recently, Schweitzer, Ordonez & Douma (2004) have documented using controlled experiments that challenging goals may increase many kinds of unethical behavior.

Thus, our argument and the data in this paper merely points out a psychological truth about value: Challenging goals lead people to take more risks because the value function makes decision makers sensitive to performance near the goal but less sensitive to “downsides” or “worst case scenarios.” Depending on the context and how goals are managed, challenging goals may encourage innovation and creativity or they may encourage reckless and harmful behavior.

## References

- Allision, S. T., & Messick, D. M. (1990). Social decision heuristics in the use of shared resources. Journal of Behavioral Decision Making, 3, 195-204.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice Hall International.
- Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. Journal of Personality and Social Psychology, 45, 1017-1028.
- Bandura, A. & Wood, R. E. (1989). Effects of perceived controllability and performance standards on self-regulation of complex decision making. Journal of Personality and Social Psychology, 56, 805-814.
- Bavelas, J. B. & Lee, E. S. (1978). Effect of goal level on performance: A trade-off of quantity and quality. Canadian Journal of Psychology, 32, 219-40.
- Benartzi, S., & Thaler, R. H. (1995). Myopic loss aversion and the equity premium puzzle. Quarterly Journal of Economics, 110, 73-92.
- Brealey, R. A., & Myers, S. C. (2002). Principles of corporate finance. New York: McGraw Hill.
- Camerer, C., & Thaler, R. H. (1995). Ultimatums, dictators and manners. Journal of Economic Perspectives, 9, 209-219.
- Chevalier, J. & Ellison, G. (1997). Risk taking by mutual funds as a response to incentives. Journal of Political Economy, 105, 1167-1200.
- Cialdini, R. B. (1993). Influence: The psychology of persuasion. New York: William Morrow.
- Earley, P. C., Connolly, T. & Ekegren, G. (1989). Goals, strategy development, and task performance: Some limits on the efficacy of goal setting. Journal of Applied Psychology, 74, 24-33.

Earley, P. C., Connolly, T. & Lee, C. (1989). Task strategy interventions in goal setting: The importance of search in strategy development. Journal of Management, 15, 589-602.

Earley, P. C. & Perry, B. C. (1987). Work plan availability and performance: An assessment of task strategy priming on subsequent task completion. Organizational Behavior and Human Decision Processes, 39, 279-302.

Grice, H.P. (1975). Logic and conversation. In P. Cole (ed.) Syntax and semantics: Vol. 9: Pragmatics. New York, Academic Press, p. 225-242.

Guth, W., Schmittberger, R., & Schwarze, B. (1982). An experimental analysis of ultimatum bargaining. Journal of Economic Behavior and Organization, 3, 367-388.

Guthrie, C. (1999). Better settle than sorry: The regret aversion theory of litigation behavior. University of Illinois Law Review, 43-90.

Hammond, J. S. (1967). Better decisions with preference theory. Harvard Business Review, 45, 123-141.

Heath, C., Larrick, R.P., Wu, G. (1999). Goals as reference points. Cognitive Psychology, 38, 79-109.

Hogarth, R. M., McKenzie, C. R. M., Gibbs, B. J., & Marquis, M. A. (1991). Learning from feedback: Exactingness and incentives. Journal of Experimental Psychology: Learning, Memory, and Cognition, 17, 734-752.

Huber, V. L., & Neale, M. A. (1986). Effects of cognitive heuristics and goals on negotiator performance and subsequent goal setting. Organizational Behavior and Human Decision Processes, 36, 342-365.

Huber, V. L., & Neale, M. A. (1987). Effects of self- and competitor goals on performance in an interdependent bargaining task. Journal of Applied Psychology, 72, 197-203.

Johnson, E. J., Camerer, C., Sen, S., & Rymon, T. (2002). Detecting Failures of Backward Induction: Monitoring Information Search in Sequential Bargaining. Journal of Economic Theory, 104, 16-47.

Kahneman, D., Knetsch, J., & Thaler, R. H. (1986). Fairness and the assumption of economics. Journal of Business, 59, S285-300.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. Econometrica, 47, 263-291.

Larrick, R. P., & Blount, S. (1997). The claiming effect: Why players are more generous in social dilemmas than in ultimatum games. Journal of Personality and Social Psychology, 72, 810-825.

Larrick R. P., & Boles, T. L. (1995). Avoiding regret in decisions with feedback: A negotiation example. Organizational Behavior and Human Decision Processes, 63, 87-97.

Lattimore, P. K., Baker, J. R., & Witte, A. D. (1992). The influence of probability on risky choice: A parametric investigation. Journal of Economic Behavior and Organization, 17, 377-400.

Lewin, K., Dembo, T., Festinger, L., & Sears, P. (1944). Level of aspiration. In J.M. Hunt (Ed.) Personality and the behavior disorders (Vol. 1, pp. 333-378). New York: Ronald.

Locke, E. A. & Latham, G. P. (1984). Goal setting: A motivational technique that works! Englewood Cliffs: Prentice Hall.

Locke, E. A. & Latham, G. P. (1990). A theory of goal setting and task performance. Englewood Cliffs, NJ: Prentice-Hall.

Locke, E. A. & Latham, G. P. (1991). Self-regulation through goal setting. Organizational Behavior and Human Decision Processes, 50, 212-247.

Longswirth, E. K (1991). Anatomy of a start-up. New York: Inc. Magazine Publishing.

Lopes, L. L. (1987). Between hope and fear: The psychology of risk. Advances in Experimental Social Psychology, 20, 255-295.

March, J. G. & Shapira, Z. (1992). Variable risk preferences and the focus of attention. Psychological Review, 99, 172-183.

March, J. G., & Simon, H. A. (1958). Organizations. New York: Wiley.

Maremont, M. (1995). Blind ambition: How the pursuit of results got out of hand at Bausch & Lomb. Business Week, October 23.

Meyer, J.P. & Gellatly, I.R. (1988). Perceived performance norm as a mediator in the effect of assigned goal on personal goal and task performance. Journal of Applied Psychology, 73, 410-420.

Morris, M. W., Larrick, R. P., & Su, S. K. (1999). Misperceiving negotiation counterparts: When situationally-determined bargaining behaviors are attributed to personality traits. Journal of Personality and Social Psychology, 77, 52-67.

Neale, M. A., & Bazerman, M. H. (1985). The effect of externally set goals on reaching integrative agreements in competitive markets. Journal of Occupational Behavior, 6, 19-32.

Neale, M. A., & Bazerman, M. H. (1991). Cognition and rationality in negotiation. New York: Free Press.

Payne, J. W., Laughhunn, D. J., & Crum, R. L. (1980). Translation of gambles and aspiration effects in risky choice behavior. Management Science, 26, 1039-1060.

Payne, J. W., Laughhunn, D. J., & Crum, R. L. (1981). Further tests of aspiration level effects in risky choice behavior. Management Science, 27, 953-958.

Polzer, J. T., & Neale, M. A. (1995). Constraints or catalysts? Reexamining goal setting with the context of negotiation. Human Performance, 8, 3-26.

Rothkopf, E. Z. & Billington, M. J. (1979). Goal-guided learning from text: Inferring a descriptive processing model from inspection times and eye movements. Journal of Educational Psychology, 71, 310-327.

Schweitzer, M., Ordonez, L. & Douma, B. (2004). Goal setting as a motivator of unethical behavior. Academy of Management Journal, 47, 422-432.

Shapira, Z. (1989). Task choice and assigned goals as determinants of task motivation and performance. Organizational Behavior and Human Decision Processes, 44, 141-165.

Spiegel, M., Currie, J., Sonnenschein, H., & Sen, A. (1994). Understanding When Agents Are Fairmen Or Gamesmen. Games and Economic Behavior, 7, 104-115.

Swalm, R. O. (1966). Utility theory: Insights into risk taking. Harvard Business Review, 44, 123-136.

Thaler, R. H., & Johnson, E. J. (1990). Gambling with the house money and trying to break even: The effects of prior outcomes on risky choice. Management Science, 36, 643-660.

Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representations of uncertainty. Journal of Risk and Uncertainty, 5, 297-323.

White, S. B., & Neale, M. A. (1994). The role of negotiator aspirations and settlement expectancies in bargaining outcomes. Organizational Behavior and Human Decision Processes, 57, 303-317.

Wood, R. E., & Bandura, A. (1989). Impact of conceptions of ability on self-regulatory mechanisms and complex decision making. Journal of Personality and Social Psychology, 56, 407-415.

Wood, R. E., Bandura, A., & Bailey, T. (1990). Mechanisms governing organizational performance in complex decision making environments. Organizational Behavior and Human Decision Processes, 46, 181-201.

Wood, R. E., & Locke, E.A. (1990). Goal setting and strategy effects on complex tasks. In L. Cummings & B. Staw (Eds.), Research in Organizational Behavior (pp. 73-109). Greenwich, CT: JAI Press.

Wood, R. E., Mento, A. J., & Locke, E. A. (1987). Task complexity as a moderator of goal effects: A meta-analysis. Journal of Applied Psychology, 72, 416-425.

## Appendix

The following are the anagrams used in Study 1. (No lines or labels appeared in the original materials.)

<u>A. \$0.40 anagram</u>	<u>B. \$0.20 anagrams</u>	
ATSDMUR	ETOUR	Example Set
RLERAQU	LKILS	
<hr/>		
1. GACEAPK	1. COHRP	
2. DUTRANO	2. SSIHP	
3. ACEILMT	3. HOTLC	
4. GORMAII	4. EQUNE	
5. PYTOERV	5. THCAM	
6. HIRFEFS	6. OOFRP	
7. ENOTLUI	7. AGSLO	
8. WTNARAR	8. AHESD	
9. OPDIESE	9. BDARE	
10. PENRATH	10. DSSEE	
11. SHISREE	11. OTMAS	
12. TAGYNSM	12. DMAAR	
13. VILRACHY	13. DEIRP	
14. INNPUGE	14. GERAC	
15. GETTANN	15. UETSI	

## Footnotes

<sup>1</sup> When we use the phrase “risk-seeking,” we refer to the standard technical definition in the literature on decision making: People are risk-seeking if they prefer a gamble to a sure outcome of equal or greater expected value (e.g., if they prefer a coin flip that pays either \$20 or \$0 over a sure outcome of \$10 or more). We interpret “excessive” risk taking as preferring a gamble over a sure outcome of greater expected value.

<sup>2</sup> One reader of an earlier draft was concerned that because we used the label “challenging” to describe the goal that participants could set, that this might cause participants to anticipate that they would fail the task. Indeed, the standard goal setting manipulation does not mention the word “challenging”, it merely gives subjects a goal that only 10% of participants can reach. However, since 90% will fail to reach their goal, the goal is indeed challenging, so if participants in the standard experimental procedure don’t realize that they are pursuing a challenging goal, then the standard procedure is creating spurious expectancies. We tried to design our procedure to reduce external demand and spurious expectancies while still producing an experimental condition where participants were pursuing a challenging goal.

<sup>3</sup> To create a subjective difficulty measure, expected values (EVs) for hard and easy anagrams were calculated for each participant, and then converted to a ratio of EV Hard/EV Easy. This ratio (which was .83 in the DYB condition and .92 in the Goal condition,  $t(69) = -1.18$ , ns) has a straightforward interpretation: 1 indicates equal expected value, less than 1 indicates that easy anagrams have a higher EV, and more than 1 indicates that hard anagrams have a higher EV. In the regression, we used a log transformation of the ratio because it is not linear. For example, if one participant thought that he could solve as many hard as easy, the EV Hard/EV Easy ratio would be 2; if another participant thought she could solve four times as many easy as hard, the

ratio would be .5. By taking the log, it puts these participants at the same distance from equal expected value; their logged scores would be .69 and -.69.

<sup>4</sup> It is interesting that the conditions did not differ in the frequency with which participants chose the riskiest option (option 15). This may be because some participants perceived that they were playing with “house money,” a situation that previous research has shown leads to unusual risks (Thaler & Johnson, 1990). The pattern for the other options is much clearer. When participants had no goal, more than a third of them chose the certain option (option 1); when participants had a specific, challenging goal, only 10% chose the certain option and most chose higher risk options that were more likely to approach their goal.

<sup>5</sup> Two of the principal studies that have explored the effect of goals on negotiation performance have used a goal manipulation in which participants were told that it was “against company policy” to accept an outcome worse than the assigned goal (Huber & Neale, 1987) or that they “should not under any circumstances” make a deal worse than the assigned goal (Neale & Bazerman, 1985). These instructions manipulated more than the goal—they also changed external payoffs by imposing a discrete organizational penalty for performance below the goal.

<sup>6</sup> While we expected Goal participants to do poorly when facing another Goal participant, we also expected that they might do well when facing a DYB participant. However, the final individual payments for Do Your Best and Goal participants in the DYB/Goal condition were the same ( $M_s = \$3.45$ ), largely because the “fair” division at 4 chips each was so focal in this game that goal participants were not successful in convincing DYB participants to accept less.

Table 1

Study 1 Means by Goal Manipulation.

Variable	Condition		<i>t</i> -statistic	<i>p</i> -value
	Do Your Best	Goal		
Estimated number will solve of				
Hard anagrams	2.74	3.00	-.57	
Easy anagrams	6.76	6.11	1.07	
Number of hard anagrams chosen	3.51	5.67	-3.26	.01
Hard anagrams solved	.51	.53	-.06	
Easy anagrams solved	8.03	6.44	2.66	.01
% Hard anagrams solved	.12	.10	.61	
% Easy anagrams solved	.73	.70	.62	
Earnings	\$1.81	\$1.50	2.27	.05
<i>N</i>	33	36		

Note. Estimated Number is the number of anagrams participants thought they could solve in 1 minute from a pool of 10 anagrams of the same type. It was asked prior to the goal manipulation. All d.f.s = 67 except Rate of Hard d.f.s = 58 where the DYB  $n = 25$  and the Goal  $n = 35$ .

Table 2

Regressions of Choice of Hard Anagrams on Goal Condition, Order of Judgments, and Subjective Difficulty (Scores are Unstandardized Coefficients with Standard Errors in Parentheses).

Variable	Eq 1	Eq 2	Eq 3
Constant	3.51*** (.48)	3.26*** (.55)	4.07*** (.58)
Goal	2.25*** (0.67)	2.24*** (0.67)	1.80** (0.65)
Order		.66 (0.69)	.26 (0.66)
Subjective Difficulty			2.32** (0.76)
Adj. R <sup>2</sup>	.13**	.13**	.23***
Residual df	65	64	63

Note. The Goal variable is a dummy variable, where 0 = Do Your Best instructions and 1 = Goal instructions. Order is a dummy variable for the order in which participants rated the subjective difficulty of hard and easy anagrams, where 0 = hard first and 1 = easy first. Subjective Difficulty is the log of the ratio of the participant's expected value of easy and hard anagrams, Natural log (EV Easy/EV Hard). \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

Table 3

Summary Statistics for Agreement in Round 1, No Agreement, Round of Agreement, and Payment for Dyad by Goal Condition (All Measures are Dyad Level)

Measure	Goal Condition (Dyad)			Kendall's Tau [Error]
	DYB/ DYB	DYB/ Goal	Goal/ Goal	
Proportion Agreement in Round 1	.78	.57	.52	-.21* [.11]
Proportion No Agreement	.00	.10	.17	.24* [.08]
Mean Round of Agreement	1.26	2.00	2.43	.25** [.10]
Mean Payment for Dyad	\$7.72	\$6.90	\$6.10	-.26** [.10]
Number of Dyads	23	21	23	

Note. The “Round of Agreement” variable ranges between 1 and 5; dyads that reached no agreement were coded as 5. Kendall’s Tau-b is a nonparametric measure of association for ordinal variables that takes ties into account. Dividing Tau by its asymptotic standard error provides the *t*-statistic.

\*  $p < .05$ , \*\*  $p < .01$ .

Figure 1. Prospect Theory value functions for goals of 0, 40, and 50.

