Judgment and Decision Making, Vol. 2, No. 4, August 2007, pp. 251-256

Framing the frame: How task goals determine the likelihood and direction of framing effects

Todd McElroy*
Department of Psychology
Appalachian State University

John J. Seta
Department of Psychology
University of North Carolina at Greensboro

Abstract

We examined how the goal of a decision task influences the perceived positive, negative valence of the alternatives and thereby the likelihood and direction of framing effects. In Study 1 we manipulated the goal to increase, decrease or maintain the commodity in question and found that when the goal of the task was to increase the commodity, a framing effect consistent with those typically observed in the literature was found. When the goal was to decrease, a framing effect opposite to the typical findings was observed whereas when the goal was to maintain, no framing effect was found. When we examined the decisions of the entire population, we did not observe a framing effect. In Study 2, we provided participants with a similar decision task except in this situation the goal was ambiguous, allowing us to observe participants' self-imposed goals and how they influenced choice preferences. The findings from Study 2 demonstrated individual variability in imposed goal and provided a conceptual replication of Study 1.

Keywords: goals, framing, Prospect Theory.

1 Introduction

According to economic accounts, such as the dominant discounted utility model, the way in which a problem is stated should not influence individuals' preferences. Rather, when deciding between options, the individual should choose the option with the greatest overall utility, regardless of the way in which the problem is stated (or framed). These accounts (e.g., Edwards, 1954; Von Newmann & Morgenstern, 1953) consider the value and probability of the outcome, independent of the context — independent of the way the decision is framed. Counter to economic accounts, prospect theory (Kahneman &Tversky, 1979) predicts that the way a decision problem is framed does influence individuals' preferences.

While this holds great importance for furthering the understanding of rational choice, prospect theory has failed to consider person and contextual factors in their editing or encoding rules (e.g., Lopes, 1983; McElroy & Seta, 2003; Rettinger & Hastie, 2003; Reyna & Braired, 1991; Schneider, 1992). For example, according to Rettinger and Hastie the strategies that guide decisions are an interactive product of person and contextual variables. From this view, information contained in the decision problem is encoded and represented as a mental model. The content and mental representation that it generates, in turn, determines the decoding rules that lead to a decision. Different decoding processes are ordered along a continuum from most deliberate/analytic to most automatic/intuitive. The encoding rules described by prospect theory lie in the middle of the continuum, intuitive but involving some analytical processing, as framing problems typically involve numbers. Similar research has shown that framing effects, like those predicted by prospect theory, are more likely for individuals who are induced or predisposed to process holistically, using contextual referencing (e.g., McElroy & Seta, 2003; 2004) and when more "gist like" memory retrieval is utilized (e.g., Reyna & Brainerd, 1991; Reyna, Lloyd & Brainerd, 2003). This work highlights the importance of considering both person and contextual variables in understanding how individuals encode (edit) information in a decision-problem.

Goals. The consideration of person factors, such as personal goals is important for understanding the decision-making process (e.g., Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001; Krantz & Kunreuther, 2007; Stapel & Koomen, 2006). It may not only provide insight into the encoding process and the likelihood of framing effects, but it also may provide information about the direction of framing effects. Two studies were designed to test this possibility. In the typical framing problem used in the literature it is implicitly assumed that decision-makers view an increase in the outcome or commodity as desirable and positive. For example, in risky-choice studies utilizing the classic Asian dis-

*Direct correspondence to Todd McElroy, Department of Psychology, College of Arts and Sciences, P.O. Box 32109, 265 College St., Boone NC. 28608; phone: (828) 262–2720; email: mcelroygt@appstate.edu. Special thanks to Cathy Seta for her insightful comments.

ease approach, decision-makers typically make a choice about a situation where increasing the commodity (e.g., human lives) is the goal. So whether the problem is framed positively as gains or negatively as losses, the goal of increasing lives remains constant and desirable to decision-makers. Studies, such as the Asian disease problem that have the inherent goal of increasing the commodity (lives), generally demonstrate findings consistent with prospect theory predictions; risk-aversion when the problem is framed as a gain and risk-seeking when it is framed as a loss.

All tasks, however, are not oriented in the direction of increasing the commodity in question; with some tasks, the goal is to decrease it. One example is when individuals are overweight and seek to lose undesirable body fat. In this situation, because a gain in body weight is inconsistent with a decision-maker's goal, each gained unit of body weight is undesirable; conversely, because a loss is consistent with the decision-maker's goal, each lost unit is desirable.

In a situation such as this, prospect theory (e.g., Kahneman & Tversky, 1979) would not predict individuals to be risk-averse when the decision problem is framed as a gain and risk-seeking when it is framed as a loss. Rather, because decreasing the commodity is desirable, a preference reversal would be expected; individuals should be risk-seeking (not risk-averse) when the problem is framed in terms of gains and risk-averse (not risk-seeking) when framed in terms of losses. One reason why preference reversals are rarely seen in the literature (see Levin & Chapman, 1990 for an exception) may be because the vast majority of framing studies have used problems that clearly involve the goal of increasing the supply of the commodity. Nevertheless, there are many decisions in life where individuals have the inherent goal of decreasing a commodity's supply.

Individuals, however, not only have goals of increasing or decreasing a commodity but at times the goal also may be to maintain the current status of a commodity. In this situation, either a gain or a loss in the commodity is contrary to the individual's goal. Thus, either type of change is undesirable, leading decision-makers to make equivalent responses when the problem is framed as a gain or as a loss

It may not always be the case, however, that the goal of the task is clear. For example, McCaffery and Baron (2004) examined how attribute framing influenced opinions about taxation. They found that contextual cues, such as the attribute frame, evoke internalized principles that are used for problem analysis. Further, these different principles could determine the goal, which has substantial influence on decision processing, even leading to directional shifts in preference. Although this research did not focus on risky choice, it nonetheless demonstrated that people can impose different goals onto a decision which will then affect their processing of the task.

Goal ambiguity. Framing tasks, such as the Asian disease problem that involve the loss of human lives typically generate uniform goals. Because of intergroup pressures, most if not all Americans desire to increase and not decrease the life of another American (i.e., ingroup member). Consequently, decision-makers tend to be risk-averse when the problem is framed as a gain and risk-seeking when it is framed as a loss. It is not the case, however, that all framing tasks produce uniform goals. Just as there is variability in the frame that individuals can impose on ambiguous situations (e.g., Elliot & Archibald, 1989; McElroy, Seta & Warring, 2007; Wang, 2004) the question of whether to increase, decrease or maintain the commodity in question also may be ambiguous and thus open to interpretation. In this case, there might be considerable variation among decision-makers in the goals that they impose; some might impose a goal to increase the commodity (an incremental goal), others to decrease the commodity (a decremental goal), and still others to maintain it (a maintenance goal).

Further, if an approximately equal number of individuals impose each of the three goals then it will appear as though the decision frame is having little or no effect when we consider the decisions of an entire population of decision-makers; the choices of individuals who impose a maintenance goal will not be affected by the frame whereas the choices of individuals who impose an incremental goal will be counterbalanced by those imposing a decremental goal. The gain condition for individuals imposing an incremental goal will be relatively risk-averse whereas those imposing a decremental goal will be relatively risk-seeking. Conversely, in the losses condition, individuals imposing an incremental goal will be relatively risk-seeking whereas those imposing a decremental goal will be relatively risk-averse.

Thus, it may be the case that although the frame is having a significant influence on the choices of each individual, the framing effect for the entire population of decision-makers is masked by individual differences in goal imposition. And failures to demonstrate framing effects may in fact be failures to consider the goals of the decision-makers. When person factors, such as decision-makers' goals, are not taken into consideration, it may appear as though the decision-frame is having very little or no effect on individual choice preference, when in fact it is having considerable influence.

Overview of studies. Our experiments were designed to determine whether decision-makers' goals interacted with the way in which the problem was framed. In the first experiment we made the goal of the risky-choice decision problem explicit by informing our participants that the goal was to either increase, decrease or maintain the

https://doi.org/10.1017/S1930297500000589 Published online by Cambridge University Press

commodity in question. We capitalized on an everyday observation in which some individuals are underweight and their goal is to gain weight, some are overweight and their goal is to lose weight, and some are "just right" and their goal is to maintain weight. Thus, we were able to use the same commodity (weight) but shift decision-makers' goals.

In Experiment 2 we did not manipulate the direction of the goal that participants imposed onto the task; rather, we allowed them to self-impose a goal. To accomplish this, we used the same commodity as in Experiment 1 but did not make explicit the goal of the decision problem; rather, we purposefully made the goal of the decision-maker ambiguous so that individuals would impose their own idiosyncratic goals on the decision problem; some individuals imposing an incremental goal, others a decremental goal and still others a maintenance goal. Framing effects should not be observed for those imposing a maintenance goal but should be observed for individuals who impose either an incremental or decremental goal. However, because we expected the pattern of these framing effects to be in opposite directions, if an approximately equal number of participants chose each goal, then we should not find framing effects (or find especially weak ones) when we examine the decisions of our entire population of participants.

2 Experiment 1

In this study we made explicit the goal of increasing, decreasing or maintaining weight. We expected a typical risky-choice framing effect when the goal was to gain weight; a reversal of the typical effect when the goal was to lose weight and no framing effect when the goal was to maintain weight.

2.1 Method

2.1.1 Participants and design

Participants were 150 Appalachian State University undergraduate students who received class credit for their participation. The design of our study was a 3 Task Goal (increase, decrease, maintain) X 2 Frame (gain, loss) between factors design.

Materials and Procedure. After consenting to take part in the study, participants were presented with our vignette. We created a decision scenario involving weight control where all three goals as well as the frame were reasonable. Participants were provided with a situation involving an athlete who had the goal of weight control. Each of the weight-goal conditions are presented in italicizes.

Table 1: Average choice preference as a function of problem goal and positive/negative frame.

	Positive frame		Negative frame	
Problem goal:	N	Mean	N	Mean
Increase	25	2.6	25	3.9
Decrease	25	3.9	25	2.4
Maintain	25	3.9	25	3.6

Imagine that you are an athlete with the goal of (*decreasing, increasing, maintaining*) your weight as much as possible. Because of your sport, at this juncture in the season, (*the lower your weight the better you can perform, the higher your weight the better you can perform, your current weight is where you can perform best*). You have to begin a specialized training program and you must choose between the following two programs. Assume that the following alternatives represent the exact estimates for each training program.

Participants were then presented with the following alternatives framed as either gains or losses:

If program A is adopted, 20 pounds will be gained.
If Program B is adopted, there is a one-third probability that 60 pounds will be gained and a two-thirds probability that no pounds will be gained.

Or:

If program A is adopted, 40 pounds will be lost.
If Program B is adopted, there is a one-third probability that no pounds will be lost and a two-thirds probability that 60 pounds will be lost.

Afterward, all participants were asked to rate their opinion of the two options on a 7-point scale ranging from 1 (Definitely would recommend A) to 7 (Definitely would recommend B).

3 Results

To determine whether goals influenced participants choice preferences for the different frames, we performed an analysis of variance on the data; the goal (incremental, decremental, maintain) and decision frame (gain, loss) acted as our independent variables and preferences as our dependent variables. As expected, this analysis did not reveal a decision frame main effect, $F(1, 144) = .3$, p>.5. It did, however, reveal our predicted decision frame X goal interaction, $F(2, 144) = 7.5$, $p < .01$. To explore the interaction we performed contrasts for gain/loss framing within each of our three goal conditions (See Table 1).

https://doi.org/10.1017/S1930297500000589 Published online by Cambridge University Press

In the increasing-goal condition we found a significant main effect for problem framing $F(1, 48) = 6.6$, $p < .01$. As may be seen in Table 1, this effect is consistent with typical findings in risky-choice framing tasks with participants demonstrating a relatively stronger risk-averse tendency in the gains condition than in the losses condition. In the decreasing-goal condition we also found a significant framing effect $F(1, 48) = 8.33$, $p < .01$. However, and consistent with our predictions, the typical framing effect was reversed; participants demonstrated a relatively stronger risk-seeking tendency in the gains condition than in the losses condition. Finally, in the maintaining-goal condition, we found no effect for the frame $F(1, 48) = .36$, $p > .5$. This finding fits with our proposition that when the goal is to maintain the current status, both increases (gains) and decreases (losses) are perceived as a loss. In fact, the preferences of participants in this condition did not differ from those in the increase-loss or decrease-gain conditions F's < 1.

The results of Study 1 demonstrate that the goal of the decision maker has profound effects on how individuals respond to the framing of alternatives. These findings further extend our knowledge of framing effects, providing a fuller understanding of how goals influence the likelihood and direction of framing effects.

4 Experiment 2

The purpose of Experiment 2 was twofold. First, we sought to determine whether participants would impose different goals on an ambiguous decision problem. Specifically, would there be individual differences in the goal (increase, decrease, maintain) that participants set for the task? Second, did participants' "imposed goal" influence their decision in the same way as it did in Experiment 1? Although we expected a framing effect for individuals who imposed an incremental or decremental goal, we expected these effects to be in opposite directions. Further, we did not expect to observe framing effects for individuals who imposed a maintenance goal. Thus, if roughly equal numbers of individuals imposed each goal we should either not find a framing effect or find a weak one for our entire population of participants.

We provided participants with a weight control situation similar to Study 1. Different from Study 1 however, we did not include an explicit "weight-control" goal for the hypothetical decision task. Rather, we constructed the task so that the goal of the actor was purposefully ambiguous; allowing participants to impose their own weight-control goal for the task. After assessing the goal that individuals imposed, we next observed how the self-imposed goal influenced the framing effect by measuring participants' risky-choice preferences.

4.1 Method

4.1.1 Participants and design

Two hundred twenty-eight[1] undergraduates participated in this study. The design of our study included the between factors of participants' self-imposed goal for the decision task (increase, decrease, maintain) and the problem frame (gain, loss).

4.1.2 Materials and Procedure

Participants were run in groups of approximately 10 individuals. After providing informed consent, they were provided with a weight management task similar to Study 1 except the task did not contain a defined goal.[2] The situation read as follows:

Imagine that you are an athlete and you have to begin a specialized weight training program and you must choose between the following two programs. Assume that the following alternatives represent the exact estimates for each training program.

Directly afterward, participants were asked to indicate what they believed the goal of the athlete in the task was (increase, decrease or maintain weight). After determining the goal that they had imposed onto the task, we then provided participants with the risk-seeking and risk-averse alternatives framed either positively or negatively (the same as in Study 1). Finally, participants were asked to rate their preference for the two alternatives on a 7-point scale ranging from 1, definitely would recommend A to 7, definitely would recommend B.

4.2 Results and discussion

As expected, participants imposed different goals for the athlete in the decision problem. To determine whether the imposed goal influenced participants choice preference for the different decision frames, we performed an analysis of variance on the data with imposed goal (incremental, decremental, maintenance) and decision frame (gain, loss) acting as our independent variables and risky choice preferences as our dependent variable. The analysis revealed a main effect for imposed goal $F(2, 220) = 3.71$, $p < .03$, as well as the expected overall interaction between frame and imposed goal $F(2, 220) = 12.09$, $p < .0001$. As may be seen in Table 2, contrasts revealed that when participants imposed an incremental goal, they demonstrated framing effects consistent with

[1] Two participants were not included in our analysis because they failed to indicate a goal for the decision task.

[2] It is reasonable for individuals to impose different goals onto this task. For example, many athletes such as football players need to either gain w eight or loose weight for their optimal performance. Further, if they are already at the desirable weight, maintenance of weight is crucial for best performance.

https://doi.org/10.1017/S1930297500000589 Published online by Cambridge University Press

Table 2: Average choice preference as a function of self-imposed goal and positive/negative frame.

	Positive frame		Negative frame	
Problem goal:	N	Mean	N	Mean
Increase	47	2.8	25	3.9
Decrease	29	4.4	58	2.9
Maintain	37	4.2	30	3.9

those typically found in risky-choice type framing tasks $F(1, 70) = 8.3$, $p < .005$. However, when participants imposed a decremental goal, the results revealed framing effects that were opposite to those of participants who imposed an incremental goal and opposite to those typically found in the literature $F(1, 85) = 17.1$, $p < .00006$. Finally, when participants imposed a maintenance goal, a framing effect was not obtained $F(1, 65) = .84$, $p > .35$.

An additional point of interest for us was to examine whether a framing effect would be found across the imposed goal conditions. Because there was an approximately equal division of the goals that participants imposed: increase (72), decrease (87) and maintain (67), we did not observe a decision frame main effect, $F(2, 220) = 1.19$, $p > .27$. The direction of the framing effect obtained by those imposing an incremental goal was counterbalanced by the reverse direction of the framing effect obtained by those imposing a decremental goal. The results of this study are conceptually consistent with those obtained in Experiment 1 and demonstrate how goals can influence the likelihood and direction of framing effects.

5 General discussion

In typical risky-choice decision tasks, the goal is to increase the commodity at stake (e.g., lives, grades, health). Our findings reveal that, when the goal is different, so too is the perception of gains and losses. In short, the goal of the decision task can determine whether a relative gain or loss is perceived as a psychological gain or loss. We propose that when the task goal is to increase the commodity at stake, gains are consistent with decision-makers goals and desirable whereas losses are inconsistent and undesirable. The opposite is true when the task goal is to decrease the commodity; gains are inconsistent and undesirable whereas losses are consistent and desirable. When the goal is to maintain the current status of a commodity, either a gain or a loss is counter to the individual's goal and this makes either type of change undesirable and leads to equivalent responses when the problem is framed as a gain or as a loss.

Several reasons have been offered for when and why framing effects are not always obtained. For example, research has shown that processing style (e.g., Igou & Bless, 2007; McElroy & Seta, 2003; Reyna & Brainerd, 1991) elaboration (e.g., Sieck & Yates, 1997; Simon, Fagley & Halleran 2004) and numeric predisposition (e.g., Peters, Vastfjall, Slovic, Mertz, Mazzocco, & Dickert 2006) can all influence the strength of framing. The results of the current study provide an additional reason. When the goal of the decision-maker is not to increase or decrease supply of the outcome in question, then framing effects would not be expected from prospect theory. In this situation, either a gain or a loss in the supply of the outcome would be undesirable from the perspective of the decision-maker. For example, a decision-maker who has a personal goal of maintaining the supply of an outcome such as weight, may project this goal onto a decision problem involving a gain or loss in weight. If so, from the decision-makers own perspective, a gain or loss would be equivalently undesirable. In this case, both would be perceived as losses and framing effects would not be expected. Situations like this highlight the importance of decision-makers' goals in determining the valence of an outcome and thereby the likelihood and direction of framing effects.

We believe that in most situations where risk is involved individuals are considering taking a chance because they desire to increase some commodity. Although this goal may be common, it is not inherent in all situations. A variety of circumstances exist where decreasing or maintaining a commodity is desirable. Thus, it is important to consider decision-makers' goals in predicting the likelihood and direction of framing.

References

Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Trötschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, *81*, 1014–1027.

Elliott, C. S., & Archibald. (1989). Subjective framing and attitudes towards risk. *Journal of Economic Psychology, 10,* 321–328.

Igou, E. R., & Bless, H. (2007). On undesirable consequences of thinking: framing effects as a function of substantive processing. *Journal of Behavioral Decision Making, 20*, 125–142.

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

Krantz, D. H. & Kunreuther H. C. (2007). Goals and plans in decision making. *Judgment and Decision*

https://doi.org/10.1017/S1930297500000589 Published online by Cambridge University Press

Making, 2, 137–168.

Levin, I. P., & Chapman, D. P. (1990). Risk taking, frame of reference, and characterization of victim groups in AIDS treatment decisions. *Journal of Experimental Social Psychology, 26*, 421–434.

Lopes, L. L. (1983). Some thoughts on the psychological concept of risk. *Journal of Experimental Psychology: Human Perception and Performance, 9*, 137–144.

McCaffery, E. J., & Baron, J. (2004). Framing and taxation: Evaluation of tax policies involving household composition. *Journal of Economic Psychology, 25*, 679–705.

McElroy, T., & Seta, J. J. (2003). Framing effects: An analytic-holistic perspective. *Journal of Experimental Social Psychology, 39,* 610–617.

McElroy, T., & Seta, J. J. (2004). On the other hand am I rational? Hemispheric activation and the framing effect. *Brain and Cognition, 55*, 572–580.

McElroy, T., Seta, J., & Warring, D. (2007). Reflections of the Self: How self-esteem determines decision framing and increases risk taking. *Journal of Behavioral Decision Making, 20,* 223–240.

Peters, E., Vastfjall, D., Slovic, P., Mertz, C. K., Mazzocco, K., & Dickert, S. (2006). Numeracy and decision making. *Psychological Science, 17,* 407–413.

Rettinger, D. A. & Hastie, R. (2003). Comprehension and decision making. In S. L. Schneider & J. Shanteau (Eds.). *Emerging perspectives on judgment and decision research* (pp. 165–200). New York, NY: Cambridge University Press.

Reyna, V. F., & Brainerd, C. J. (1991). Fuzzy-trace theory and framing effects in choice: Gist extraction, truncation, and conversion. *Journal of Behavioral Decision Making, 4*, 249–262.

Reyna, V. F., Lloyd, F. J., & Brainerd, C. J. (2003). Memory, development, and rationality: An integrative theory of judgment and decision making. In S. L. Schneider & J. Shanteau (Eds.), *Emerging perspectives on judgment and decision research* (pp. 201–245). New York, NY: Cambridge University Press.

Schneider, S. L. (1992). Framing and conflict: aspiration level contingency, the status quo, and current theories of risky choice. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 18*, 1040–1057.

Sieck, W., & Yates, J. F. (1997). Exposition effects on decision making: choice and confidence in choice. *Organizational Behavior and Human Decision Processes, 70*, 207–219.

Simon, A. F., Fagley, N. S. & Halleran, J. G. (2004). Decision framing: Moderating effects of individual differences and cognitive processing. *Journal of Behavioral Decision Making, 17*, 77–93.

Stapel, D. A. & Koomen, W. (2006). The flexible unconscious: Investigating the judgmental impact of varieties of unaware perception. *Journal of Experimental Social Psychology, 42*, 112–119.

Wang, X. T. (2004). Self-framing of risky choice. *Journal of Behavioral Decision Making, 17*, 1–16.