

ABSTRACT

THE EFFECTS OF FRAMING AND GOAL ORIENTATION ON UPWARD GOAL REVISION

By Brandon J. Whitman

Goal setting and goal revision have a long history in both the fields of Industrial and Organizational Psychology as well as Education. Research in these unique fields has identified several relationships involving goal setting. For example, setting higher or more difficult goals tends to lead to better performance. The idiosyncratic effects of these relationships, however, have not been investigated in a single study. In order to do so, a laboratory experiment was designed. The goal for individuals in this study was to maximize the number of tickets they earned to be placed into a drawing for \$50. Participants earned tickets through a series of timed puzzles presented to them in either a positive or negatively framed situation. Larger puzzles represented a chance to either gain more tickets, or avoid losing more tickets depending on the framing of the situation. Failure to complete puzzles, however, resulted in the loss of all tickets. Results indicated a significant main effect for message framing such that individuals in a negatively framed situation made riskier decisions, and set higher goals. Participants in the positively framed situation were more risk averse and chose smaller sized puzzles.

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ON UPWARD GOAL REVISION

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A Thesis Submitted
In Partial Fulfillment of the Requirements
For the Degree of

Master of Science-Psychology


Industrial/Organizational

at


The University of Wisconsin Oshkosh
Oshkosh WI 54901-8621

May 2009


COMMITTEE APPROVAL

 Advisor

5-18-09 Date Approved

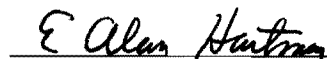
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5/18/2009 Date Approved

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5-18-09 Date Approved

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5/26/2009
Date Approved

FORMAT APPROVAL



5/5/2009
Date Approved

To my Mom and Dad for their never ending love, support, and prayers during all of my academic endeavors, I can never thank you enough.

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INTRODUCTION

The topics of goals and the process of setting goals have a long history in Industrial Organizational Psychology (Seijts & Latham, 2000; Cron, Slocum, VandeWalle & Fu, 2005; Schmidt & DeShon, 2007; VandeWalle, Cron & Slocum, 2001; Brodscholl, Kober, & Higgins, 2007). Included in this history is the established relationship between goal setting and performance. In an organizational setting difficult or “high” goals are preferred over less difficult or “low” goals because individuals either increase or decrease effort to attain them (Seijts & Latham, 2000). When individuals increase effort in order to obtain high goals they are likely to have high performance as well. Likewise, when individuals set a low or easy to obtain goal, they decrease their effort because obtaining the goal is easy. Furthermore, repeatedly increasing the difficulty of goals over time can continue to lead to increased performance as long as those goals are perceived as being attainable (Brehm 1983; Schmidt & DeShon, 2007). The attractiveness of goals continues to increase as their difficulty increases up to the point where they are perceived as being un-attainable (Brehm 1983). The process of setting increasingly difficult goals is called upward goal revision (Donovan & Hafsteinsson, 2006).

The topic of goals and goal setting has also received considerable attention in the area of education (Dweck, 1986; Dweck and Leggett, 1988). Their research involving an individual’s goal *orientation* has shown this to be particularly relevant to Industrial

Organizational Psychologists due to its influences on initial goal setting and goal revision (Dweck, 1986; VandeWalle, Cron & Slocum, 2001; Grant & Dweck, 2003; Cron, VandeWalle & Fu, 2005; VandeWalle & Cummings, 1997; Elliot, Fryer, Cury, & Huguet, 2006). Goal orientation is a stable trait characteristic an individual has that involves aspects of personal motivation as well as beliefs concerning ones own abilities (Button, Mathieu, & Zajac, 1996; Heggstad & Kanfer, 2000; VandeWalle, 1997). Research has identified 3 types of goal orientation: *learning*, *prove performance*, and *avoidance performance* (VandeWalle, 1996). Learning goal orientated individuals attempt to master new tasks or situations for the pure sake of knowledge. People with learning goal orientation are motivated from the belief that ability is malleable, and increasing effort will allow them to gain new skills. Performance goal oriented individuals seek only to validate their existing competencies. *Prove performance* individuals accomplish this by gaining favorable attention, or appearing competent to others. *Avoidance performance* individuals, on the other hand, seek to avoid looking incompetent (Dweck, 1986; VandeWalle, 1996). Since such individuals are more likely to fear failure, or the inability to attain their goals, they tend to react negatively when failing to meet those goals (Ashford & Cummings, 1983; Ashford, 1986).

Another variable that plays a significant role in decision-making theory is message framing (Rothman & Salovey, 1997; Harrison, Young, Butow, Salkeld, & Solomon, 2005; Merriman & Deckop, 2007). Message framing refers to the alteration in a description of an event that changes an individual's perception and behavior regarding

that event. For example, individuals are often more prone to take risks, or make risky decisions when situations are framed negatively as opposed to positively (Xie & Wang, 2003; Tversky & Kahneman, 2004; Benjamin & Robbins, 2006). Differences in behavior depending on either a positive or negatively framed situation are due to the irrational human nature to strongly prefer avoiding losses over acquiring gains (Kahneman & Tversky, 1984; Rothman & Salovey, 1997; Xie & Wang, 2003; Benjamin & Robbins, 2006). This phenomenon is known as loss aversion and it plays a powerful role in the lives of humans and the decisions they make on a daily basis (Kahneman & Tversky, 1984; Rothman & Salovey, 1997).

While there is research on goal revision, goal orientation, and framing individually, none examines the three of these together. Furthermore, little research has investigated how goal orientation and framing might jointly impact goal revision (Lauriola, Russo, Lucidi, Violani & Levin, 2005). The following research will examine whether individuals engage in upward goal revision on a given task framed both positively and negatively. It will explore, more specifically, whether an individual's goal orientation has a moderating effect on the relationship between framing and goal revision. Negatively framed situations or situations where individuals stand to lose something should produce the lowest levels of upward goal revision. This effect should only be amplified when the individual is also afraid of failing to meet their goals to begin with.

THEORY AND LITERATURE REVIEW

The following paragraphs will discuss bodies of literature regarding goal orientation and message framing in relation to their effects on goal revision. While the two separate fields of literature have numerous commonalities, many remain to be made apparent. Both often arrive at similar conclusions, but differ in their means of arrival, and language used. This research attempts to make their similarities evident and demonstrate how both have a synergistic effect on the goal revision process.

Goal orientation has undergone particular changes in its relatively brief existence in educational and psychological literature. Dweck's (1986) first publications regarding goal orientation only included two levels of the variable: learning and performance. Individuals with a learning goal orientation attempt to master new tasks or situations for the sake of learning itself, where individuals with a performance goal orientation seek to validate their competence by gaining favorable attention, and avoiding negative attention (Dweck, 1986). The addition of a third level of goal orientation makes an important distinction among types of performance goal orientation by identifying two separate components (VandeWalle, 1996). VandeWalle (1996) suggests that individuals either have a *prove* performance goal orientation, or an *avoidance* performance goal orientation. Both prove and avoidance goal orientations still attempt to validate competence, however, they differ in terms of how this is accomplished. Individuals high in prove performance goal orientation desire to validate their competence and ability by receiving

positive feedback. They are not as concerned with actually developing their personal ability, but rather, are satisfied if others *believe* they are proficient. Individuals high in avoidance performance goal orientation seek to validate their ability by avoiding situations that make them appear incompetent. Again, like those with a prove performance goal orientation, these individuals do not seek to develop ability. Furthermore, neither individuals high in prove performance goal orientation or avoidance performance orientation believe they can increase ability (Dweck, 1986; Dweck and Leggett, 1988; VandeWalle, 1996).

Levels of goal orientation discussed by Dweck (1986) and VandeWalle (1996) bear many similarities to those found in Higgins (1997) Regulatory Focus Theory (RFT). RFT posits that individuals assume either a promotion or prevention strategy depending on motivational purposes or needs. Promotional strategies tend to individuals' self ideals or "self-promotion" where as prevention strategies tend to an individuals safety needs, or tasks that are seen as dutiful (Higgins, 1997). Similar to prove performance goal orientation, a promotion focus centers attention on positive outcomes; and much like avoidance performance goal orientation, prevention focus centers attention on negative outcomes (Higgins & Tykocinski, 1992).

There are three key fundamental differences between the trait levels of goal orientation discussed by Dweck and Leggett (1988). These differences include (a) how goal orientation is learned, (b) how individuals view effort expenditure, and (c) reaction to task failure. The type of goal orientation an individual develops is a direct result of

their belief structure regarding ability. If an individual assumes an *incremental* theory of intelligence, they believe performance and intelligence can be improved and develop a learning goal orientation. On the other hand, if individuals believe ability is static, and uncontrollable, they develop a performance goal orientation. This belief is referred to as an *entity* theory of intelligence (Dweck & Leggett, 1988).

A second key difference in goal orientation refers to whether or not increased effort is believed to lead to success. Since individuals with a learning goal orientation view ability as malleable, increased effort is believed to lead to task mastery and success. Performance goal oriented individuals (prove and avoidance), however, do not view increased effort as something that leads to success simply because they view ability as static and uncontrollable trait (Dweck & Leggett, 1988).

The third difference focuses on individual response to failure, or negative feedback. Since individuals with a learning goal orientation seek to master tasks and situations, negative feedback elicits an *adaptive* response pattern. Increases in effort, searching for solutions, and seeking help from others are all examples of adaptive responses. Performance goal orientation (prove and avoidance) is associated with a *maladaptive* response pattern in the presence of failure. Since individuals with performance goal orientations are seeking to attain positive feedback, and avoid negative feedback, they will remove themselves from situations of failure, and often lose interest all together (Dweck & Leggett, 1988).

Goal Orientation and Goal Setting

There are several behavioral outcomes associated with goal orientation that have been documented over the years. VandeWalle, Cron and Slocum (2001) report learning goal orientation has a significant positive relationship with effort, self-efficacy, and most importantly goal setting. This in part explains the positive relationship between goals and performance on tasks. In general, people with a learning goal orientation try harder, believe they will succeed, and set more difficult goals for themselves. Individuals high in prove performance goal orientation are unlikely to have high self-efficacy or set difficult goals. Furthermore, avoidance performance goal oriented individuals have a negative relationship with effort, self-efficacy and difficult goal setting (VandeWalle, Cron & Slocum, 2001).

In addition to bodies of literature discussing outcomes of trait goal orientation, other theories on the topic of self-regulating performance are of relevance to the goal revision process as well. Both the control theory and social cognitive theory offer further explanation regarding an individual's decision to set either higher or lower goals over time (Williams, Donovan & Dodge, 2000). The control theory and social cognitive theory state that individuals track two facets of performance: actual performance and desired performance or goal level (Bandura, 1991; Klein, 1991; Powers, 1978; Williams, Donovan & Dodge, 2000). Discrepancies between the desired and actual level of performance create anxiety and stress for an individual, thus, there is motivation to reduce it. However, both actual performance and desired performance can serve as a

means of reducing the discrepancy (Williams, Donovan & Dodge, 2000). That is, an individual can either increase their actual performance to attain the desired state of performance or decrease their desired state of performance to match that of their current performance (Campion & Lord, 1982). The latter coping mechanism describes downward goal revision (Williams, Donovan & Dodge, 2000).

There are several predictors of downward goal revision for individuals performing a given task over time. For example, larger negative discrepancies between actual and desired performance predict greater likelihood of downward goal revision (Bandura & Cervone, 1986; Campion & Lord, 1982; Kernan & Lord, 1990; Lewin, Dembo, Festinger & Sears, 1944). Another predictor of downward goal revision that is of greater interest to the current study is individual belief regarding performance and ability (Donovan & Williams, 2003). When individuals believe that their performance is based on ability level, and that ability cannot be manipulated, they will deem it necessary to decrease their goal level when failing to perform at their desired state. Since individuals with a performance goal orientation view ability as a static trait they are less likely to increase effort in an attempt to increase performance. When an individual with a performance goal orientation (prove and avoidance) perceives a discrepancy between a goal and performance the only course of action they will deem feasible is to reduce the goal in order for it to be achieved. Individuals with a learning goal orientation, however, believe increased effort expenditure leads to an increase in performance and ability. Since they

believe that trying harder produces better results, they will be more likely to increase effort to attain harder goals.

Cron, Slocum, VandeWalle, and Fu (2005) demonstrated the effects of goal orientation on goal revision in a field study of 102 Junior and Senior level business students at a southwestern University. Cron et al. (2005) collected classroom examination data including the goals each student set for the exam as well as actual performance on it. A goal orientation survey was also administered to students at the beginning of the semester. After students received their grade for each exam (allowing them to compare desired and actual performance) they completed a negative emotions survey. The results indicated that individuals high in avoidance performance goal orientation were much more likely to display negative emotions after receiving their exams when they did not meet their goals. Additionally, learning goal orientation moderated the relationship between negative emotions and future goal setting. Negative emotions resulted in students setting the lowest goals for future exams when learning goal orientation was low.

Hypothesis 1. A positive relationship will exist between an individual's score in learning goal orientation and their levels of upward goal revision.

Hypothesis 2. A negative relationship will exist between an individual's score in prove performance goal orientation and their levels of upward goal revision.

Hypothesis 3. A negative relationship will exist between an individual's score in avoidance performance goal orientation and their levels of upward goal revision.

The Effects of Framing

The effects of message framing also play a key role in human behavior and decision-making processes (Kahneman & Tversky, 1979). Framing essentially refers to whether a given message, idea, or outcome is presented to an individual in terms of a gain or a loss (Kahneman & Tversky, 1979). For example, an individual can be told they are able to earn money by successfully completing a given task. The object or outcome in the previous scenario is termed positively (*gaining* money), thus, is positively framed. On the other hand, an individual could be presented with a similar situation where they are offered a sum of money and must successfully perform the same task to avoid losing what they just received. In this situation, the object or outcome is to *avoid* losing what they were given and is considered negatively framed (Benjamin & Robbins, 2006).

The idea of framing effects was first presented by Kahneman and Tversky (1979) in their Prospect Theory. One of the cornerstones of framing effects presented in the Prospect Theory exists in the tendency for individuals to stray from rational decision-making, and strongly prefer avoiding losses to acquiring gains. This irrational human tendency is referred to as loss aversion (Kahneman and Tversky, 1979). Since by definition, negatively framed situation present outcomes in terms of the possibility of

losing what has already been acquired, they elicit loss aversion in individuals. Because individuals in negatively framed situations have an intense desire to avoid losses, they are willing to make much riskier decisions than in similar situations presented positively (Kahneman & Tversky, 1979; Tversky & Kahneman 1981; Benjamin & Robbins, 2006). In a well known example Tversky and Kahneman (1981) present individuals with two similar situations where they were told to decide upon a treatment program that will decide how many people live (positively framed) or how many die (negatively framed). When the situation was present in terms of how many individuals will live (positively framed), participants tended to prefer a more insignificant but certain outcome (200 people live) to a potentially superior, but risky one (one-third probability 600 people live and two-thirds probability no people live). However, when the same situation is presented in terms of how many people will die (negative framing) participants chose the more risky outcome (one-third probability that no people will die and two-thirds probability that 600 people will die) as opposed to a risk averse one (400 people will die). Quantitatively the outcomes of both scenarios are equal, however, it is evident that participants were much more willing to engage in risk taking behavior when the situation was framed negatively (Tversky & Kahneman, 1981).

Figure 1 helps demonstrate Prospect Theories preference for avoiding losses to acquiring gains. Prospect Theory assumes every situation has a perceived or subjective value associated with it that deviates from the neutral, or reference point of 0. Tversky and Kahneman (1981) describe the subjective value associated with objective outcomes

as being S-shaped, concave above the reference point and convex below it. Because the line function is concave for positive objective outcomes, incremental increases in those outcomes are associated with smaller increases in subjective value. Thus, increasing the positivity or gains in objective outcomes is not likely to induce higher levels of motivation. If individuals are not further motivated by increases in gains, they are also less likely to make risky decisions to acquire them (Tversky & Kahneman 1981; Rothman & Salovey, 1997). A reverse trend is seen in the negative objective outcomes section of the line function. Here the line function is observed as being convex meaning that incremental increases in *negative* outcomes are similarly perceived as having increasingly smaller levels of perceived negative value. As a result, individuals are willing to risk more negative objective outcomes (Tversky & Kahneman 1981; Rothman & Salovey, 1997).

The question then remains as to why individuals are willing to perform risky behavior in terms of negative outcomes and not positive ones. The answer lies in the slope of the line function. The line function in the gains portion of the figure flattens out much sooner, and at a smaller deviation from the reference point of perceived value than in the loss portion. This essentially demonstrates loss aversion in that a similar objective deviation from the reference point in both the positive and negative outcome directions is perceived as having non equivalent values. The line function is steeper in the loss direction and is therefore perceived as being more negative than an equidistant deviation

in the gains section is perceived as positive (Tversky & Kahneman 1981; Rothman & Salovey, 1997).

In this study it is expected that risk taking and framing should also apply to goal setting. Just as in Tversky and Kahneman (1981), participants in this study will be presented with two mathematically similar situations. One group will be performing a task in order to acquire gains, while the other performs the same task to avoid losses. The individuals performing to acquire gains will be less motivated to maximize earnings at the risk of losing what they already have because they are not experiencing loss aversion, and should elicit less risky behavior. Individuals performing to avoid losses, however, should be more motivated to maintain the maximized earnings they were presented with due to loss aversion, and will partake in riskier behavior to do so.

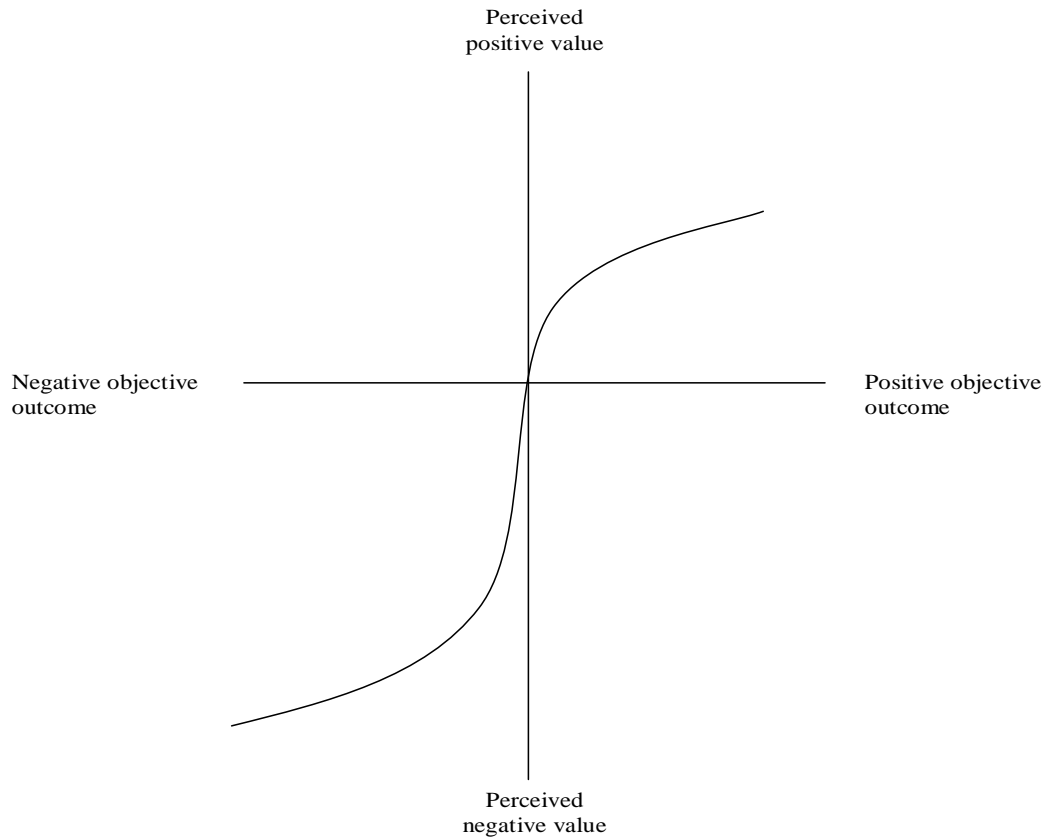


Figure 1. Visual representation of Tversky and Kahneman (1981) prospect theory value function.

Hypothesis 4. Participants in the negatively framed situation will show greater levels of upward goal revision than those in the positively framed situation.

It is expected that the effects of goal orientation and message framing will have a synergistic effect on the participants set goal levels for future tasks. Learning goal orientated individuals have a positive relationship with higher goal setting and avoidance performance goal oriented individuals have a negative relationship with higher goal

setting (VandeWalle, Cron & Slocum, 2001). Additionally, participants in the negatively framed situation will be experiencing loss aversion, promoting higher levels of risk taking behavior. In this case, risky behavior is choosing a higher piece puzzle in order to maintain five tickets at the risk of losing them all.

Hypothesis 5. The relationship between learning goal orientation and upward goal revision will be moderated by situational framing such that the relationship is stronger in the negatively framed situation than in the positively framed situation.

Hypothesis 6. The relationship between prove performance goal orientation and upward goal revision will be moderated by situational framing such that the relationship is stronger in the negatively framed situation than in the positively framed situation.

Hypothesis 7. The relationship between avoidance performance goal orientation and upward goal revision will be moderated by situational framing such that the relationship is stronger in the negatively framed situation than in the positively framed situation.

METHOD

Participants

Data were collected from 68 students at a Midwestern University. 29.9% ($n = 20$) of the participants were male, 70.1% ($n = 47$) were female. Their ages ranged from 18 to 47 ($M = 22$, $SD = 6.13$). Participants for the study included students at both the graduate and undergraduate level. There are no formal requirements from participants other than that they be 18 years of age or older and sign an informed consent sheet. While most students will be participating to earn credit toward a psychology undergraduate course, their contribution to the research is completely voluntary. An alternative assignment is available for students who do not wish to take part in a psychological experiment.

Research Design

The experiment investigates the following variables: (a) goal orientation as a continuous variable; and (b) message framing (positively framed or negatively framed) as a categorical variable. The dependant variable in the study is upward goal revision defined as the difference in number of puzzle pieces from time 1 to time 2.

Procedure

Before any part of the experiment takes place participants are given a short explanation of the study. After signing an informed consent sheet that explains they will be performing a series of puzzle tasks for a chance to win money, the study will begin. Each student will start by completing a goal orientation scale. Participants will then be presented with a 30-piece puzzle in a box and told that they will be performing for a chance to earn \$50. All participants will be told that they have 10 minutes to complete the puzzle and that if they do complete the puzzle in time they will earn a chance to win the money. All students are expected to be able to complete the 30-piece puzzle in the 10 minutes allotted. After the participants have completed the first puzzle the directions they receive will depend on whether they are in the positively or negatively framed group.

Positively Framed Group

Participants in the positively framed group will be told that due to their successful completion of the puzzle they have earned 1 ticket to be entered into a drawing for the money. They will then be told that they have an opportunity to increase their number of tickets in the drawing by up to 5 by completing another puzzle. This time, however, it is for the participant to decide how many pieces the puzzle contains. For every 5 pieces the participant increases in their puzzle above the original 30, they receive an additional ticket to win the money. If they wish only to keep their initial ticket they must simply complete the 30-piece puzzle again. For example, if they ask for a 35-piece puzzle they can win 2 tickets, they can win 3 tickets from a 40-piece puzzle, and 5 tickets from a 50-

piece puzzle. They are told that to win, however, they must complete the second puzzle in the same 10-minute time frame or they will lose all their tickets including the one they just earned.

Negatively Framed Group

Participants in the negatively framed group will mathematically have the exact same situation as those in the positively framed group. The situation, however, will be posed to them in a different manner. Upon completion of the 30-piece puzzle they will be told that they have just earned 5 tickets to be entered in a drawing to win \$50. They will then be told that they must complete a second puzzle to maintain their tickets.

Participants will be told that for every 5-piece increase in the puzzle they wish to complete they will *avoid* losing 1 ticket. If they wish to simply earn a single ticket they must again complete the 30-piece puzzle. For example, if they complete a 35 piece puzzle they will avoid losing 1 ticket (and receive 2), if they complete a 40-piece puzzle they will avoid losing 2 tickets (and receive 3), to maintain all 5 they must complete a 50 piece puzzle just as in the positively framed group.

This method of framing situational tasks as acquiring gains or avoiding losses is based on Benjamin and Robbins (2006) Balloon Analogue Risk Task (BART). In this particular study students are asked to press a button which pumps up balloons in order to either gain money per pump (positive framing) or to avoid losing money per pump (negative framing) based on an initial amount given to them. Because the computer program was not available for use at this University, the puzzle task was substituted. As

in Benjamin and Robbins (2006) study, all participants will receive a full debriefing after the completion of the study where they are told they all have an equal chance to win regardless of their performance.

Measures

Goal Orientation Scale

In the following study goal orientation was assessed using a 13-item instrument that was developed and validated by VandeWalle (1996). As opposed to measuring goal orientation as a single construct, participants receive a score for learning, prove performance and avoidance performance goal orientations. The scale has respondents answer based on a 7-point Likert-type scale. Responses range from 7 (*strongly agree*) to 1 (*strongly disagree*). Similar to VandeWalle (1996), scores for each of the three components of goal orientation are assigned by taking the mean of all its items.

An exploratory factor analysis was performed on the items of the goal orientation assessment for data obtained in this experiment. Results indicated a four factor solution as opposed to the three factors validated by VandeWalle (1996). Further analyses performed on data obtained in this experiment were done so using the VandeWalle (1996) three factor solution, however, and not the four factor solution demonstrated. Refer to the Appendix for eigenvalues, and percentage of variance explained in each of the four components.

RESULTS

Descriptive statistics and zero order correlations for all study variables are presented in Table 1. Alpha levels for each type of goal orientation were calculated to determine internal consistency. While learning goal orientation presented an acceptable alpha level ($\alpha = .85$), both avoidance performance goal orientation ($\alpha = .68$) and prove performance goal orientation ($\alpha = .67$) presented alphas that were lower than desired.

A Pearson Correlation was calculated in order to determine the relationship between all levels of goal orientation (learning, prove performance, and avoidance performance) and goal revision. Refer to Table 1 for zero order correlations between all observed variables. Results do not indicate support for Hypothesis 1 stating a positive relationship between learning goal orientation and goal revision. While the relationship was positive, it was weak in magnitude ($r = .09, p = .46$). No further support was indicated for Hypotheses 2 that stated a negative relationship existing between prove performance goal orientation and goal revision. The relationship was weak in magnitude ($r = .07, p = .55$), and not in the hypothesized direction. The relationship between avoidance performance goal orientation and goal revision was strongest in magnitude ($r = .16, p = .19$) and in the hypothesized direction, however, failed to achieve statistical significance. This indicates partial support for Hypothesis 3.

Table 1

Descriptive Statistics and Zero Order Correlations for Observed Variables

Variable	<i>M</i>	<i>SD</i>	Min	Max	α	1	2	3	4	5	6	7	8
1.APGO	4.09	1.04	1.8	5.8	.68	-							
2. PPGO	4.34	0.89	2.4	6.8	.67	.32**	-						
3. LGO	5.02	0.99	2.0	7.0	.85	-.46**	.09	-					
4. Revision	3.97	1.17	1	5	-	-.16	.07	.09	-				
5. Framing	0.51	0.50	0	1	-	-.09	-.23	.02	-.30*	-			
6. Age	22	6.13	18	47	-	-.20	-.21	.32**	.10	.03	-		
7. College	2.64	1.47	1	5	-	-.23	.04	.39**	.08	.02	.45**	-	
8. Gender	.70	.46	0	1	-	-.04	.26*	-.03	.02	-.12	-.06	.18	-

Note. $N = 68$; ** $p < .01$; * $p < .05$

A *t*-test with goal revision scores as the test variable and message framing as the grouping variable was performed in order to determine whether participants in the negatively framed situation would show greater levels of upward goal revision than those in the positively framed situation as indicated by Hypothesis 4. Results indicated support for the hypothesis such that a significant difference existed between participants in the negatively framed situation ($M = 4.33$, $SD = 1.05$) and the positively framed situation ($M = 3.63$, $SD = 1.19$) in terms of their goal revision scores $t(66) = 2.58$, $p = .01$, $d = .62$. Those individuals who were presented with a negatively framed puzzle task situation were more likely to set higher goals for themselves when trying to maximize ticket winnings than those presented with a positively framed situation.

To test whether the relationship between learning goal orientation and upward goal revision was moderated by message framing, as indicated in Hypotheses 5, a hierarchical multiple regression was performed in 2 steps. Results and individual variable B values of the test for moderation are presented in Table 2. In step 1, the centered variables learning goal orientation and message framing were entered into the regression equation. The variables account for a significant portion of the variability in participant revision score $F(2, 65) = 3.65, p = .03$. This effect is explained in large by message framing ($B = -.71, S_r^2 = .31$) with only a minor portion being due to learning goal orientation ($B = .11, S_r^2 = .10$). In step 2, the cross product of the centered variables learning goal orientation and message framing from step 1 were entered into the regression equation. The addition of the interaction term does not significantly increase the variance accounted for in revision scores $\Delta R^2 = .00, \Delta F(1, 64) = .04, p = .85$. Because the interaction term does not account for a significant portion of the variance in participant revision score, evidence of moderation is not present, and Hypothesis 5 is not supported.

Table 2

Results of Hierarchical Multiple Regression Analysis Testing for Moderation of Learning GO and Message Framing on Goal Revision

Predictor	Step 1			Step 2		
	B	R^2	ΔR^2	B	R^2	ΔR^2
Framing	-.71*	.32	.32	.71*	.32	.00
Learning GO	.11			.15		
Framing * Learning GO				-.06		

Note. $N = 68$; Regression weights are standardized; * $p < .05$

In order to test whether the relationship between prove performance goal orientation and upward goal revision was moderated by message framing, as indicated in Hypotheses 6, a similar hierarchical multiple regression was performed in 2 steps. Results and individual variable B values of the test for moderation are presented in Table 3. In step 1, the centered variables prove performance goal orientation and message framing were entered into the regression equation. The variables do not account for significant portion of the variability in participant revision score $F(2, 64) = 2.87, p = .06$. In step 2, the cross product of the centered variables prove performance goal orientation and message framing from step 1 were entered into the regression equation. The addition of the interaction term does not significantly increase the variance accounted for in revision scores $\Delta R^2 = .01, \Delta F(1, 63) = .39, p = .53$. Because the interaction term does not account

for a significant portion of the variance in participant revision score, evidence of moderation is not present, and Hypothesis 6 is not supported.

Table 3

Results of Hierarchical Multiple Regression Analysis Testing for Moderation of Prove Performance GO and Message Framing on Goal Revision

Predictor	Step 1			Step 2		
	B	R^2	ΔR^2	B	R^2	ΔR^2
Framing	-.65*	.08	.08	-.66*	.09	.01
Prove Performance GO	.01			-.10		
Framing * Prove Performance GO				.20		

Note. $N = 68$; Regression weights are standardized; * $p < .05$

Lastly, in order to test whether the relationship between avoidance performance goal orientation and upward goal revision was moderated by message framing, as indicated in Hypotheses 7, another hierarchical multiple regression was performed in 2 steps. Results and individual variable B values of the test for moderation are presented in Table 4. In step 1, the centered variables avoidance performance goal orientation and message framing were entered into the regression equation. The variables account for a significant portion of the variability in participant revision score $F(2, 64) = 4.41, p = .02$.

In step 2, the cross product of the centered variables avoidance performance goal orientation and message framing from step 1 were entered into the regression equation. The addition of the interaction term does not significantly increase the variance accounted for in revision scores $\Delta R^2 = .00$, $\Delta F(1,63) = .39$, $p = .79$. Because the interaction term does not account for a significant portion of the variance in participant revision score, evidence of moderation is not present, and Hypothesis 7 is not supported.

Table 4

Results of Hierarchical Multiple Regression Analysis Testing for Moderation of Avoidance Performance GO and Message Framing on Goal Revision

Predictor	Step 1			Step 2		
	B	R^2	ΔR^2	B	R^2	ΔR^2
Framing	-.72*	.12	.12	-.73*	.12	.00
Avoidance Performance GO	-.21			-.25		
Framing * Avoidance Performance GO				.07		

Note. $N = 68$; Regression weights are standardized; * $p < .05$

DISCUSSION

The purpose of this study was to examine the combined effects of two distinct fields of literature. The first involving a long history of research in Industrial Organizational Psychology surrounding goals and the processes individuals go through in setting them (Seijts & Latham, 2000; Cron, Slocum, VandeWalle & Fu, 2005; Schmidt & DeShon, 2007; VandeWalle, Cron & Slocum, 2001; Brodscholl, Kober, & Higgins, 2007). Perhaps one of the most fundamental reasons for studying the process of setting goals exists in the established relationship between goal setting and performance (Seijts & Latham, 2000). Individuals tend to increase effort in order to obtain higher or more difficult and thus achieve higher levels of performance. Likewise, when individuals set a low or easy to obtain goal, they decrease their effort because obtaining the goal is easy.

In educational settings, researchers have identified relationships between an individual's goal orientation and performance as well (Dweck, 1986; Dweck and Leggett, 1988). Goal orientation is defined as being a stable trait characteristic an individual has involving aspects of personal motivation as well as beliefs concerning ones own abilities (Button, Mathieu, & Zajac, 1996; Heggstad & Kanfer, 2000; VandeWalle, 1997). This research, as well as in other popular literature, investigates the effects of 3 types of goal orientation: *learning*, *prove performance*, and *avoidance performance* (VandeWalle, 1996).

Lastly, this research identified message framing as playing a significant role not only in individual performance, but decision-making and risk taking behaviors as well (Rothman & Salovey, 1997; Harrison, Young, Butow, Salkeld, & Solomon, 2005; Merriman & Deckop, 2007). Message framing, as can be seen in the experimental manipulation, refers to the alteration in a description of an event to change whether motivation is presented in terms of attaining a gain, or avoiding a loss. Prior research has identified that individuals are often more prone to take risks when situations are framed negatively as opposed to positively (Xie & Wang, 2003; Tversky & Kahneman, 2004; Benjamin & Robbins, 2006).

The effects of message framing were very clearly observed in the experiment that took place. Hypothesis 4 stated that when participants were placed in the negatively framed situation, they would be more apt to take risks, thus, select a larger puzzle in an attempt to avoid losing tickets. This effect has been demonstrated several times within literature, and is referred to as loss aversion (Tversky & Kahneman, 1981; Benjamin & Robbins, 2006). Loss aversion describes the irrational human tendency to prefer avoiding a loss as opposed to acquiring a gain. Those individuals in the positively framed condition were motivated to *increase* the number of tickets they could receive, or in other words acquire a gain. Individuals in the negatively framed group received the maximum number of tickets from the start, and were motivated to avoid a loss (Tversky & Kahneman, 1981). Support was demonstrated for this hypothesis via a significant mean difference in goal revision scores between the positively and negatively framed groups.

The effects of loss aversion was observed given that those in participants in the negatively framed group set higher puzzle size goals, to avoid losing tickets. Individuals in the positively framed group were more risk averse, and set lower and more easily attained goals.

This finding may present several managerial or workforce implications. It was demonstrated that in negatively framed situations, individuals will set higher goals for themselves. This was particularly the case in this experiment when setting those goals was linked to a risk in the environment (i.e. losing all their tickets). Perhaps when employees in a work environment are setting performance goals that will be linked to a monetary gain, creating a negatively framed situation would provide extra motivation; especially if failure to meet those goals results in a loss of that gain. For example, employees could receive some type of non-cashable check prior to any performance. They would then feel loss averse to not receiving the *actual* bonus check in the future and be motivated to perform at high levels and attain their performance goals. While this experiment demonstrated that negatively framed situations encourage individuals to set higher goals, actual performance was not measured after the goals were set. Future research might investigate whether actual performance was improved in the negatively framed situations over those in the positively framed situations.

It is unknown, however, what the some of the implications of placing employees in such a negatively framed work environment might have. Creating a sense of loss aversion within employees could potentially create an aversive situation. Parallels may be

drawn to a 'pay at risk' work setting where part of an employee's salary is directly linked to their performance. Should an employee fail to perform at a satisfactory level, they do not receive a portion of their compensation. Future research should investigate whether any negative consequences such as a reduction in employee satisfaction, and health or an increase in stress result from a loss averse work environment.

In addition to the effects of message framing on goal revision, the experiment also investigated the effects goal orientation might have. Hypotheses 1-3 in this research involve the relationships between the three levels of goal orientation, and an individual's goal revision scores. Where message framing is an environmental manipulation, goal orientation is a stable trait characteristic that individuals develop over time (Dweck, 1986; Dweck & Leggett, 1988). Research has identified the existence of three levels of goal orientation: Learning goal orientation, prove performance goal orientation, and avoidance performance goal orientation (VandeWalle, 1996). Learning goal orientated individuals attempt to master new tasks or situations for the pure sake of knowledge. Performance goal oriented individuals seek only to validate their existing competencies. *Prove performance* individuals accomplish this by gaining favorable attention, or appearing competent to others. *Avoidance performance* individuals, on the other hand, seek to avoid looking incompetent (Dweck, 1986; VandeWalle, 1996). A vital distinction between learning, and performance goal oriented individuals exists in their belief regarding ability. People with a learning goal orientation believe that ability is malleable, and increasing effort will allow them to gain new skills. Performance goal oriented

individuals, on the other hand, believe that ability is static, and cannot be improved via any means (Dweck 1986).

Hypothesis 1 indicated that a positive relationship should exist between learning goal orientation, and upward revision in goals. It would seem that individuals who desire to gain mastery of a task would set higher goals for themselves in order to do so. Previous literature suggests performance goal oriented individuals react negatively when they fail to meet goal, however, learning goal oriented individuals possess the ability to continually increase goal despite failure (Ashford & Cummings, 1983; Ashford, 1986). This logic, however, in part assumes that an individual attempting to gain such mastery knows that increasing their goals will help them to do so. It may in fact be the case that individuals who are high in learning goal orientation are less concerned with goals, and performance in general due to their desire for information and competence. This may partially explain the lack of a significant relationship between learning goal oriented individuals and goal revisions scores as indicated in hypothesis 1.

This leads to Hypothesis 2, stating that a negative relationship would exist between performance goal orientation and an individual's goal revision scores. The logic behind this hypothesis can become a bit unclear because it is difficult to predict how such goal-oriented individuals will react in terms of goal setting in general, let alone in the absence of variable performance feedback. One might expect such individuals to reduce or simply maintain their goals in the presence of competition. One might also expect these individuals to actually increase their goals in an attempt to appear more

competent those around them. The latter may present itself with some legitimacy, as the relationship in this study between prove performance goal orientation and goal revision scores was positive, however, very weak and non-significant in magnitude.

Hypothesis 3 stated that a negative relationship would exist between avoidance performance goal orientation and goal revision scores. The logic being that such individuals fear appearing less competent, or performing worse than others. The way this experiment was designed, making a higher goal revision (choosing a larger puzzle) presents with itself a greater risk of failure (not completing the puzzle in the given time frame). Thus, such individuals were motivated to attempt only mediocre sized puzzles at best, resulting in a lower goal revision score. The relationship was not significant, however, which may have been in part due to the low internal consistency of avoidance performance goal orientation observed.

In addition to the limitations stated, there are others that may have lead to the lack of significance found in goal orientation variables. The experiment that was performed did not involve giving participants direct feedback regarding their performance on the puzzle task. Individuals might have known that they succeeded in general by completing the puzzle in the given time frame, but precise times were not stated. The goal orientation assessment used in this study, developed by VandeWalle (1996), is typically used in a setting where feedback is presented to participants. Because no feedback was given to the participants here, it is possible that the scale did not as accurately assess trait levels of goal orientation. Future research might investigate the use of other goal orientation scales

such as ones developed by Button, Mathieu, and Zajac (1996) or Dweck (1986). In addition, no social comparisons were controlled or measured in this experiment. Data were collected from students over a period of several months, some of which completed the puzzle task in large groups, others in isolation. Because a large component of goal orientation involves the comparison or validation of one's set of abilities to another's, the assessment of goal orientation may again contain larger portions of error explaining the lack of significance. Future studies may wish to either control for group size, or manipulate it to examine its affects.

Because Hypotheses 1-3 dealt with the effects of goal orientation and goal revision, and Hypothesis 4 dealt with the effects of message framing on goal revision, it follows that there would be a moderating effect between the variables. Hypotheses 5-7 therefore posed that message framing and goal orientation would have a synergistic effect on an individual's goal revision. Hypotheses 5 and 6 involved learning goal orientation and prove performance goal orientation respectively. No evidence of moderation was provided via hierarchical multiple regression for either hypotheses. Because the effects of message framing were demonstrated to be significant the lack of evidence for moderation is likely due to logical fallacies with the respective goal orientation types described above.

Little support was offered for Hypothesis 7 stating moderation between avoidance performance goal orientation and goal revision by message framing. Effect sizes of cross product variables in the hierarchical multiple regression were small and non-significant.

Further research could continue to investigate the role that risk taking plays in decision-making theories that involve goal setting, as this is a less explored part of the literature.

Another possible limiting factor of the research is a potential ceiling effect experienced in participant goal revision scores. Many of the participants in the positively framed group chose the highest possible puzzle revision and almost all individuals in the negatively framed group chose the highest possible puzzle revision. The variability between the two groups existed because *more* individuals in the negatively framed group chose the max puzzle size. If participants had an option of setting higher, or more difficult goals, the spread could have been potentially greater, causing more variability, and making the identification of experimental effects easier to detect. Future research might also consider increasing the range of responses and difficulty of goals participants can set.

APPENDIX:

Study Information and Measures

Informed Consent

PURPOSE:

The purpose of this study is to investigate the effects of personality traits on risk taking and performance, as well as provide students with the experience of participating in an experimental study. During the course of this study you will fill out several questionnaires asking you questions about your beliefs regarding performance, ability, and motivation. You will then have a chance of earning tickets to be entered into a drawing by completing a series of puzzle tasks. In order to earn tickets for the drawing you must successfully complete these puzzles in a certain time frame that will be indicated to you during the experiment.

RISKS AND BENEFITS OF PARTICIPANTS IN THE STUDY:

There are no foreseeable risks or discomfort associated with participating in this study above and beyond that of normal academic examinations. Benefits expected are 1 credit on Sona-system.

CONFIDENTIALITY:

Your responses to the following questionnaires and survey items will be kept completely confidential. Other students and faculty, including your instructor will not have access to your answers. Student's response will be coded with a unique number so that it will be impossible for others to track your responses. The information that you provide in this study will be combined with that of other participants. Responses of individual participants will not be published and will be made available only to the researchers.

RIGHT TO REFUSE:

Your decision to participate in this study is completely voluntary and you may withdraw at any time without penalty. Remember, for your psychology course there is an alternative assignment that you can complete to receive credit.

PERSON TO CONTACT FOR QUESTIONS CONCERNING THIS STUDY

Brandon Whitman Phone: (920) 915-8476 E-mail: whitmb40@uwosh.edu

I have received an explanation of the study and agree to participate. I understand that my participation in this study is strictly voluntary.

PRINTED NAME

SIGNATURE

DATE

Negative Frame Part I Instructions

Instructions:

Thank you for participating in this experiment. Over the course of the next 30 minutes you will be performing a series of puzzles in order to win tickets to be entered into a drawing for \$50.

You will have 9 minutes to complete the 24-piece puzzle presented to you. Should you successfully complete the puzzle in the 9-minute time frame you will receive 5 tickets to be entered into a drawing for \$50. If you do not complete the puzzle in 9 minutes, you will not receive any tickets.

You may begin.

Negative Frame Part II Instructions

Part II Instructions

In the second part of this experiment you will be completing a second puzzle in order to avoid losing tickets. By completing larger sized puzzles you will avoid losing the most tickets. If you request a smaller puzzle you can lose up to four tickets. Regardless of the puzzle size if you do not finish in the same 9-minute time frame you will lose all of your tickets including the ones you have already earned.

Please refer to the list below to see how many tickets you can avoid losing, and choose your puzzle accordingly by placing an “X” in the space to the left.

_____ 45-piece puzzle -----> -0 tickets (5 tickets total)

_____ 40-piece puzzle -----> -1 tickets (4 tickets total)

_____ 35-piece puzzle -----> -2 tickets (3 tickets total)

_____ 30-piece puzzle -----> -3 tickets (2 tickets total)

_____ 24-piece puzzle -----> -4 ticket (1 ticket total)

Positive Frame Part I Instructions

Instructions:

Thank you for participating in this experiment. Over the course of the next 30 minutes you will be performing a series of puzzles in order to win tickets to be entered into a drawing for \$50. If you have any time keeping devices such as a watch, or cell phone with a timer, please put it somewhere that you cannot see it.

You will have 9 minutes to complete the 24-piece puzzle presented to you. Should you successfully complete the puzzle in the 9-minute time frame you will receive a ticket to be entered into a drawing for \$50. If you do not complete the puzzle in 9 minutes, you will not receive a ticket.

You may begin.

Positive Frame Part II Instructions

Part II Instructions

In the second part of this experiment you will have the opportunity to increase the number of tickets you win to be entered into the drawing up to a total of 5 tickets. This can be achieved by completing a second, larger puzzle. The larger the puzzle you choose, the more tickets you can win. If you do not finish the puzzle, however, in the same 9-minute time frame you will lose all of your tickets including the one you just earned. Please note that if you do not wish to risk losing any tickets, you can simply complete another 24-piece puzzle.

Please refer to the list below to see how many tickets you can win, and choose your puzzle accordingly by placing an “X” in the space to the left.

_____ 24-piece puzzle -----> 1 ticket

_____ 30-piece puzzle -----> 2 tickets

_____ 35-piece puzzle -----> 3 tickets

_____ 40-piece puzzle -----> 4 tickets

_____ 45-piece puzzle -----> 5 tickets

Experiment Debriefing

Puzzle Task Debriefing

The main goal of this experiment was to determine whether how information was given to you would affect future goals you set. The initial surveys you completed measured your goal orientation. As was mentioned before, goal orientation is related to beliefs regarding motivation and ability. The main manipulation of this experiment was how the puzzle task was presented to you. This task was either presented to you in a positive or a negative frame. In the positive framed condition you were completing the puzzles in order to gain tickets. The negative framed group was performing in order to avoid losing tickets. It is believed that individuals in the negatively framed group (those performing to avoid losing tickets) would choose a larger second puzzle because of something called loss aversion. You were initially told you could increase your chances of winning depending on your second goal. This was necessary to create a real motivation to perform well, however, all participants have an equal chance of winning the \$50 regardless of performance on any of the puzzles or surveys.

All the information collected in this experiment will remain 100% confidential. Please note my email address at the top of the page and let me know if you have any further questions about this experiment. Thank you for your participation and help.

Goal Orientation Scale

Directions: Please read each statement carefully and circle the one answer that best describes the extent to which you agree or disagree on the 7-point response scale.

Responses range from 1 (*strongly disagree*) to 7 (*strongly agree*)

Item	Strongly Disagree <---> Strongly Agree						
1. I prefer challenging and difficult classes so that I'll learn a great deal.	1	2	3	4	5	6	7
2. It's important that others know that I am a good student.	1	2	3	4	5	6	7
3. I would rather drop a difficult class than earn a low grade.	1	2	3	4	5	6	7
4. I truly enjoy learning for the sake of learning.	1	2	3	4	5	6	7
5. I think that it's important to get good grades to show how intelligent you are.	1	2	3	4	5	6	7
6. I would rather write a report on a familiar topic so that I can avoid doing poorly.	1	2	3	4	5	6	7
7. I like classes that really force me to think hard.	1	2	3	4	5	6	7
8. It's important for me to prove that I am better than others in the class.	1	2	3	4	5	6	7
9. I am more concerned about avoiding a low grade than I am about learning.	1	2	3	4	5	6	7
10. I'm willing to enroll in a difficult course if I can learn a lot by taking it.	1	2	3	4	5	6	7
11. To be honest, I really like to prove my ability to others.	1	2	3	4	5	6	7
12. I prefer to avoid situations in classes where I could risk performing poorly.	1	2	3	4	5	6	7
13. I enroll in courses in which I feel that I will probably do well.	1	2	3	4	5	6	7

Results of the Exploratory Factor Analysis on Goal Orientation Scale

Eigenvalues and Percent of Variance Explained by Each Component

Component	Eigenvalue	% of Variance Explained
1	3.79	29.12
2	2.63	20.25
3	1.30	10.03
4	1.03	7.90

Results of Varimax Rotated Component Matrix

Item	Component			
	1	2	3	4
7	.88	-.13	-.07	-.13
1	.86	.04	.07	-.08
10	.80	-.10	.20	-.11
4	.72	-.19	.13	.17
8	.24	.75	.27	.01
13	-.14	.66	-.13	.20
12	-.31	.65	-.05	.27
9	-.29	.63	.06	.15
2	-.00	.12	.71	.30
3	-.14	.46	-.71	.06
11	.217	.52	.70	-.13
5	.17	.19	.24	.77
6	-.35	.25	-.08	.75

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