THE IMPACT OF ANCHORING ON GOAL SELECTION, TASK VALUE, SELF-EFFICACY AND PERFORMANCE IN A BRAINSTORMING ACTIVITY

by

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Table of Contents

List of Figures and Tables

Jack Wilson Dr. Dennis Hocevar

ABSTRACT

THE IMPACT OF ANCHORING ON GOAL SELECTION, TASK VALUE, SELF-EFFICACY AND PERFORMANCE IN A BRAINSTORMING ACTIVITY

This study is designed to investigate the impact of an anchoring manipulation on performance in a managerial brainstorming context. Anchoring, by definition, is the use of arbitrary, often unreachable, goals to enhance performance toward a desired outcome. Previous research has utilized student subjects in non-organizational settings. The goal of this study is to measure performance in an anchored condition as compared to a "do your best" condition (control group). Specifically, the study will provide high anchor, medium anchor, and low anchor conditions as compared to a control group.

Outcomes in this controlled experiment are goal selection, performance, or ideational fluency, task value, and self-efficacy of managerial participants. The first hypothesis was that participants in the high anchor condition would select higher performance goals than in the "do your best" condition. Secondly, performance will increase through each of the anchored conditions when compared to the control group. Performance will be highest in the high anchor condition. Thirdly, there will

be no loss of task value, a measure of commitment, in the anchored conditions. And finally, self-efficacy will not decrease in the high anchor condition.

Subjects in the high anchor conditions did not select significantly higher goals than the control group. Performance in the high anchor condition was significantly higher when compared to the other measured conditions in partial support of the stated hypothesis. Moreover, performance, self-efficacy, and the goal set displayed a significant and strong correlation to each other. The increase in performance was not accompanied by significant decreases in self-efficacy or task value as hypothesized.

Chapter 1: Introduction

Importance of Study

Volumes have been written about how goal setting can be used to focus the choice and effort of individuals in pursuit of some worthwhile outcome. Goal setting research has consistently verified that goals that are specific and challenging will enhance task performance if the performers have appropriate levels of self-efficacy and are committed to the task. Further, the goal setting literature has also supported the proposition that challenging assigned goals often predict higher levels of performance than self-set goals (Locke, Latham & Erez, 1988).

In an organizational environment that is most often defined by the need for collaboration and teamwork, self-set or "do your best" goals with an anchoring element, if properly understood and implemented, have the potential for tremendous incremental productivity improvement. Moreover, if this feat can be accomplished within the context of a cooperative workplace, there is the potential for individuals and teams to begin selecting goals that will exceed organizational expectations.

Mento's meta-analytic study of the effects of goal setting on task performance 1966-1984 documents approximately that 80% of goal setting research during that period utilized undergraduate subjects, rather than field studies. Additionally, much

of the organizational research in the area of goal setting was performed with line workers and not managers in leadership positions. It is clear that a very small percentage of the goal setting research has studied the enormous potential of anchored goal setting as a performance improvement tool in a business context with managers. In addition, a laboratory study, when compared to a field study, offers data that is often related to a unique task, without the frame of reference of performance norms or false norms. Conversely, a field setting provides information that is more normative relative to individuals (Garland, 1983). Hypothetically, if a thorough understanding of managerial goal setting leads to even a slight increase in productivity, five percent or less in many business contexts, anchoring as a managerial tool would become a widely utilized performance enhancing mechanism. Moreover, anchoring has the potential to be generalized into a myriad of organizational situations in support of enhanced performance.

Purpose of Study

This replication research study is based upon the work of Hinsz et al. (1997) and proposes to examine how organizations can utilize "anchoring" to encourage managers to reach and surpass stretch goals, a subject that has not yet been thoroughly researched. Anchoring, by definition, refers to the practice of setting arbitrary, often unreachable, goals in order to enhance performance toward a desired outcome. Prior research suggests (Plous, 1993) that arbitrary values introduced

before goal decision-making may influence the goal choice, even if the numerical goal value is not relevant to the judgment being made.

The primary objective of this study will be assessing whether, in individual brainstorming sessions, "high anchored" goal subjects will outperform "medium anchor" and "low anchor" conditions when compared to the "do your best" condition (control group). Hinsz, Kalnbach and Lorentz (1997), the foundation of this replication study, confirmed that performance will increase in group brainstorming tasks in response to an anchoring manipulation, without a loss of self-efficacy or task value.

The individual goal setting process can be considered to be a form of decision-making (Hinsz, 1991). Cervone and Peak (1986) demonstrated that arbitrary anchors, number values picked at random, enhanced the self-efficacy perceptions relative to performance on problem-solving tasks. Therefore, it is reasonable to expect that judgmental anchors can increase the expected performance after the assignment or selection of an individual target or goal, while continuing to positively influence the self-efficacy an individual holds for the task.

There is some evidence to suggest that anchored goals may generalize to an organizational setting. A brainstorming activity, an approach used in prior studies with student subjects (Hinsz, Kalanbach, & Lorentz, 1997), provides an opportunity to assess whether or not anchoring will transfer and, hopefully, generalize to an

organizational context in a similar task configuration. The work of Hinsz et al. (1997) supports the hypothesis that anchoring can positively influence performance in an organizational setting, without a loss of task value, a more precise commitment construct, and/or self-efficacy.

"Do Your Best" Condition (Control Group)

A variety of studies have affirmed that assigned and participative goals may lead to enhanced performance when compared to the "do your best" condition (Latham, Mitchell & Dosett, 1978). In an idea brainstorming study similar to this research methodology, it was once again validated that both assigned and participative goal setting led to higher performance levels than the "do your best" condition. Moreover, this result was realized despite the fact the subjects in the "do your best" condition received "knowledge of results" data and the other conditions did not. From a design perspective, the "do your best" condition is a well-established middle ground between the assigned and participative goal setting methodologies.

Most important, it should be noted that much of the "do your best" condition literature is in conflict with itself. For example, prior laboratory and field studies have supported the belief that objective goal attainability need not be a requirement for the implementation of effective goal setting programs. In fact, a number of studies have affirmed that a "do your best" instruction may result in better

performance than specific and difficult goals. Moreover, these findings predict that performance may be impaired by specific and difficult goals when performance is a function of strategy, rather than task effort, and there are multiple strategies available to the performer (Early, Connolly & Ekegen, 1989; Huber, 1986). Consequently, by measuring anchored goals to a "do your best" condition, we are assessing anchoring by comparing it to what some researchers believe may be the most appropriate and demanding goal setting standard.

Anchoring Conditions

In contrast to the "do your best condition", study participants in the anchored conditions (low, medium, and high) will self-set goals before performing the brainstorming activity. The "do your best" condition (control group) will measure performance only. Control group subjects will not complete the goal setting, commitment, and self-efficacy instruments.

This experimental research study is intended to explore whether or not the use of anchors (low, medium and high) will enhance ideational fluency, the number of ideas generated, when compared to the control group. Anchoring, by definition, refers to the practice of setting arbitrary and often unreasonable goals to enhance performance toward a desired outcome. In order to clearly delineate the research findings, I have taken the editorial license of merging the literature relative to self-set and participatively set goals into one category and compared this genre to the

assigned and "do your best" goal setting conditions. In self-set and participatively set goals, the performers have a significant measure of control in setting the target for measurable performance. Whereas, assigned goals are by definition given to the performers without any input into the goal setting process.

From a historical research perspective, it is interesting to note that during the foundational years of goal setting research, Locke and Latham (Locke & Latham, 1984) cautioned that goals should be challenging but reachable, even though their own research did not support such a conclusion (Mento, 1980). Similarly, judgmental anchors appear to defy common sense logic and, therefore, could hold great promise for the future.

The rationale behind the goal setting hypothesis is founded on the belief that anchors, even if they are arbitrary and unreasonable, will subliminally influence goal selection upward. Moreover, the power of the anchoring to have an effect because the decision-maker or performer considers reasons why the value for the target performance is similar to the anchor (Tversky, 1977). However, the decision-maker or performer neglects reasons why the value for the item is unlike the anchor. Therefore, it is reasonable to expect the high anchor condition to cause more aggressive goal selection.

The performance hypothesis is supported by the assertion that the power of anchoring is such that it will enhance the level of performance significantly (Hinsz,

Kalnbach, & Lorentz, 1997). Research has demonstrated a goal mentioned at a possible goal level, even at an unreasonably high level, should predict higher levels of performance in support of the power of anchoring to enhance worthy performance (Hinsz, 1995). Most of the relevant studies have not been done in an organizational setting using managerial subjects. Therefore, it is important to validate that anchoring effectively enhances performance in an organizational context.

Anchoring in this study is manipulated to raise performance expectation beyond reasonable expectations in the high anchor condition. Consequently, it is important to assess whether or not task value is maintained as the anchor increases. Research has consistently validated that difficult goals lead to higher performance (Locke, Shaw, Sarri & Latham, 1981) and that goals that are not committed to or valued will not result in the desired performance outcome (Hollenbeck and Klein, 1987; Locke et al., 1988). The anchoring construct test the limits of goal commitment due to the fact that the anchor is, by definition, unreasonable and able to dramatically influence performance.

Finally, self-efficacy is our assessment as to how well we can perform a particular task in a specified setting. Bandura's research heightened self-efficacy judgements are predictive of greater effort and persistence (Bandura, 1986). As our hypothesis suggests, prior studies have affirmed that high anchor subjects often demonstrate higher levels of self-efficacy (Cervone & Peake, 1986). Therefore, it is

reasonable to expect no loss of self-efficacy in the high anchor condition as our hypothesis suggests, and as been found in Hinsz et al., 1997.

Quality of the ideas generated is an integral dependent variable measure to any performance study. For example, if a managerial subject generated eighty (80) ideas that did not motivate or enhance individual or organizational performance, the number of ideas generated would have no value. Therefore, the quality rating tells us whether or not high quantity of performance is worthy performance.

Design

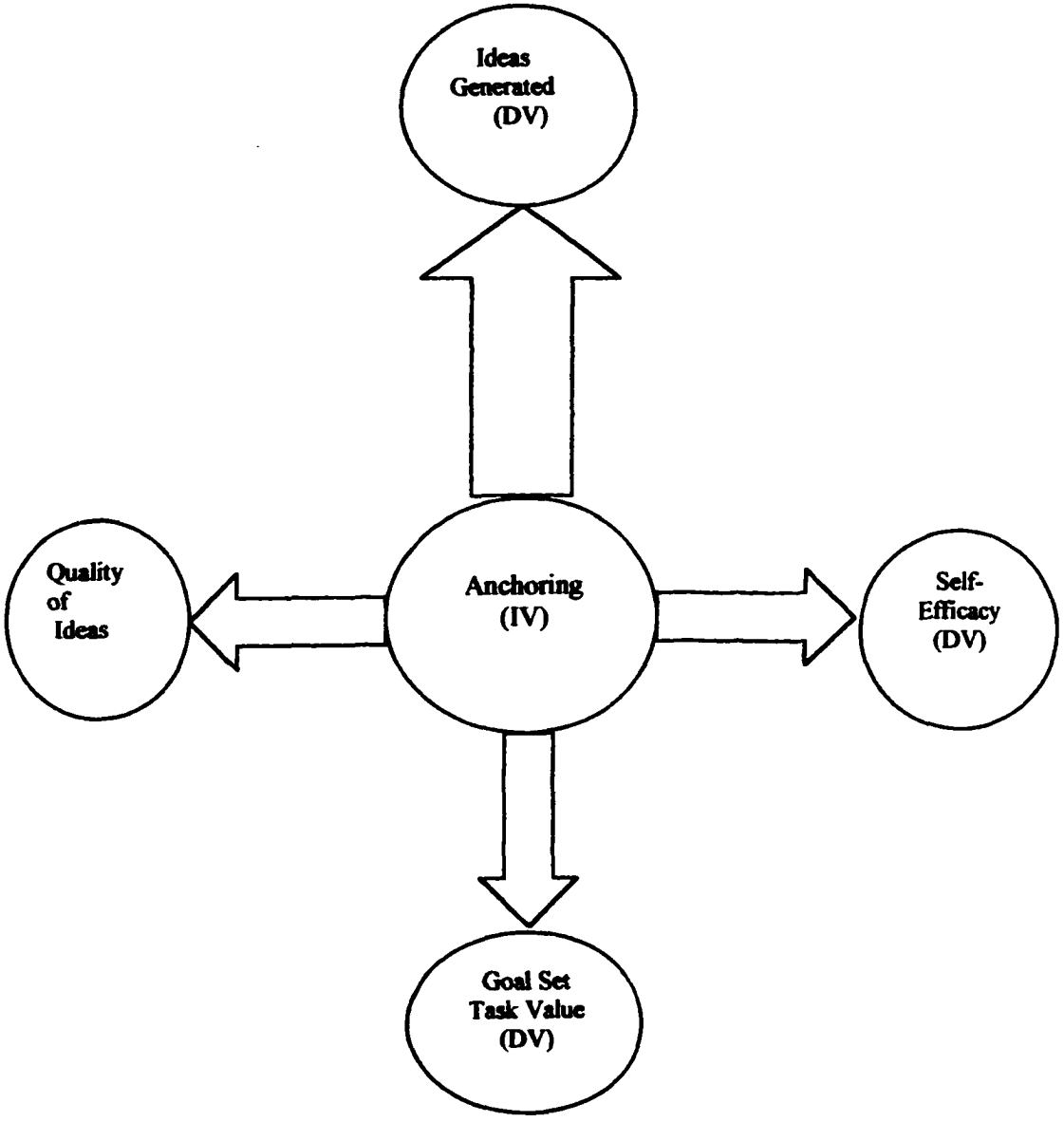
We will utilize randomly assigned managers as participants for this experimentally designed research study. The dependent variables are goal selection, individual performance, task value, self-efficacy, and the quality of ideas generated. Performance, or ideational fluency, a numerical indicator of creativity, will be measured quantitatively by the number of ideas generated and qualitatively by independent raters. A high anchor subliminal message will serve as the manipulation, and the "do your best" condition will serve as the control. Task value will be measured by utilizing a pre-brainstorming questionnaire similar to Hinsz et al. (1997). Self-efficacy is measured by predicting the percentage chance of generating a predetermined number of ideas to motivate employee performance.

The control group was given a "do your best" prompt prior to the brainstorming activity. The instructions for the low (20 ideas), medium (40 ideas),

and the high (80 ideas) anchored conditions included an example stating the specific the number stated above. These subliminal prompts served as the anchoring manipulation.

Each of the four conditions were comprised of a minimum of twenty-five (25) randomly selected managerial participants, or a total of one hundred (100) subjects overall. In order to study anchored goal setting from a managerial viewpoint, all of the subjects were practicing managers in a private sector business environment. Care was taken to balance the study between male and female participants.

Figure 1
Design Framework



Chapter 2: Literature Review

Definition and Application of Anchoring

Anchoring, by definition, refers to the practice of setting arbitrary, often unreasonable, goals in order to enhance performance toward a desired outcome. Arbitrary values have been studied in the context of setting house prices, nuclear war scenarios, and mock jury trials to name a few. It is clear that anchors can serve as a placeholder capable of influencing the goal setting process and subsequent performance. A variation on this definitional theme is that anchoring is a "pervasive judgment" in which decision-makers are influenced by random and uninformed starting points (Plous, 1993). Further, this heuristic suggests that anchors affect judgments by cognitively making more judgments available than are common to the anchor. Both definitions support a clear conceptual understanding of the anchoring construct. However, my research study focuses more specifically on the former definition of anchoring as a tool to enhance performance.

Regardless of the definitional context, it is clear that the underlying causes and potential utility of anchoring in a variety of settings are only now beginning to be explored by researchers. This fact is proven by the plethora of research done in the area of anchoring in the past decade.

Anchoring is a robust construct that has been studied in many environments and under a variety of task formats. For example, anchoring has been utilized in assessing probabilities (Edwards, Lindman, & Phillips, 1965), goal setting, making motivation-related judgments (Cervone & Peake, 1986), and determining listing prices of houses (Northcraft & Neale, 1987), to name a few. Northcraft and Neal randomly assigned real estate agents to four separate conditions by providing them with different listing prices. The agents' responses provided empirical evidence that the anchor significantly influenced the agents. This simple example illustrates clearly the potential power of anchors in a variety of settings.

The design of my study entitled: the impact of anchoring on goal selection, task value, self-efficacy, and performance in an organizational setting targets the potential of the anchoring construct to influence performance in an organizational context. First, a clear understanding of the anchoring construct requires an analysis of the key finding researchers have discovered in their varied application of the anchoring construct. Second, I will summarize the results of several recent studies that have examined this provocative construct.

Theoretical Foundation of the Anchoring Construct

Cervone and Peak (1986) demonstrated that arbitrary anchors, numbered values picked at random, change the self-efficacy perceptions relative to performance on problem-solving tasks. Therefore, it is reasonable to expect that

judgmental anchors can increase the expected goals, while continuing to positively influence the self-efficacy the individual holds for the task. In addition, there is some evidence to support the hypothesis that anchored goal setting may generalize to organizational settings. Recent research affirms the assertion that anchoring is a robust and versatile phenomenon that may be applied in multiple environments such as education, business, complex decision making tasks to name a few research applications. Moreover, for purposes of enhancing business performance, the proper use of anchors may provide the fuel necessary to forge a linkage between choice and the goal setting and performance methodology in an organizational environment.

As described at the outset, anchoring, for purposes of our study, is by definition the setting of arbitrary and often unreasonable goals to increase performance (Quattrone, Lawrence, Warren, Souza-Silva, Finkel, & Andrus, 1985). Quattrone, Lawrence et al. tested the hypothesis that high anchor values achieved goals just as well as more plausible anchors. However, they concluded that anchoring is a "robust phenomenon" in which the size and magnitude of the effect increases with the discrepancy between the anchor and the "preanchor estimate" (the average estimate subjects make before being exposed to an explicit anchor). It is interesting to note that negotiators, politicians and other persuasion specialists arguably should be encouraged by these findings to take extreme initial positions in order to reach the desired outcome and beyond. From a theoretical viewpoint,

anchoring has also been studied from a judgmental perspective, rather than as a placebo, to encourage higher levels of performance. This research focuses on a more cognitive assessment of anchoring relative to judgments. Under this heading, several key findings such as "anchoring as activation", attentional prompts, confirmation bias, randomness and elaboration are reviewed.

Some researchers have theorized that by increasing the number of factors that the anchor and target or goal have in common, and reducing the factors that differ from the anchor, you can affect the judgment made by individuals and groups (Arkes, 1991). This process is called activation. "Anchoring as activation" describes the belief that anchors can alter the availability, construction, and/or retrieval of the object to be judged. As decision-makers we have the ability to make judgments relative to the subject to be judged. We often make such judgment based upon memory of a particular standard, or relative to factors in the external environment. Even in the best of circumstances, activation predicts that we may retrieve factors that can bias the judgment. However, in the best case, activation suggests that the presence of an anchor will increase the activation of factors that the anchor and the target goal hold in common, while reducing the number of features that differ from the anchor (Johnson & Chapman, 1999).

Activation is a primary theory in support of the use of anchoring to manipulate and predict the performance of individuals and groups. One such

manipulation is the attentional prompt. This interesting subset of the anchoring construct suggests that the decision-maker or performer will be directly influenced by a bias toward information that supports their hypothesis. Conversely, some researchers theorize, by calling the subjects' attention to data that is different from the anchor, the influence of all features will neutralize the anchoring effect (Johnson & Chapman, 1999). Another factor in assessing the application and power of anchors is randomness. Specifically, one can argue that subjects attend to the anchor because they perceive a demand to do so. It is significant to note the power of the activation construct suggests that individuals will attend to the anchor even when the information is not relevant. We must recognize that activation toward the anchor is not intentional, but rather a more automatic cognitive process (Jacowitz & Kahneman, 1995). Therefore, regardless of the randomness of the attentional prompt, the activation prediction should be true even when subjects consider anchors that are truly random and uninformative.

A corollary to the concept of activation is the bias toward focusing on similarities and is often referred to as confirmation bias (Klayman, 1995). This bias is one that is very familiar to the researcher. Regardless of the task at hand, decision-makers often seek, and place greater weight on, information that confirms the hypothesis in question. Although research has confirmed the effectiveness of this strategy in a variety of settings, this bias occurs when the information retrieved is

diagnostically consistent with many guesses (Lord, Lepper, & Preston, 1984). Conversely, a hypothesis tester will not seek information that is inconsistent with his theory, even when that information is diagnostically sound. Confirmation bias is similar to the activation theory of anchoring in that decision-makers examine information that confirms their hypothesis and reject data to the contrary. As a consequence of the aforementioned theories, anchors affect the way decision-makers evaluate data relative to the relationship between the anchor and the target item. On the other hand, they consistently reject information that is inconsistent with the anchor. Elaboration, another subset of the activation construct, occurs because the anchor encourages retrieval of target schema that are similar to the anchor. Therefore, any manipulation that encourages this selectivity is likely to strengthen the anchoring effect. Elaboration, by definition, seeks to list reasons or features associated with the target.

My study utilizes anchoring as an activation to influence individual performance toward the anchor. Other anchoring concepts, such as attentional prompts and confirmatory bias, will not be the focus of this study. Given this conceptual backdrop, the second major area of analysis is the recent applicable research in the area of anchoring to support significantly greater levels of performance.

Recent Research – Anchoring Construct

The research studies relative to use of anchors, both as a judgmental heuristic and to enhance and motivate performance, cover the gamut of settings and applications. For example, anchoring has been utilized effectively in a myriad of performance contexts, from self-efficacy judgments in nuclear war scenarios to increasing student learning in education.

It has been demonstrated, through the use of student subjects, that anchoring manipulations can significantly aid the performance of student subjects, without decreasing self-efficacy and commitment to the goal. In this inquiry, which serves as the basis for this replication study, Hinz et al.(1997) studied groups who were randomly assigned to one of three conditions: do-your-best, self-set goal, or anchored goal. The participants, organized in-groups of between two and seven students, set goals and performed two separate nonsense-brainstorming activities such as "come up with as many uses as you can for a brick." Participants in the self-set condition were asked to "set a challenging and specific goal for the number of uses you will generate during the next period." Participants in the anchored condition were asked to "set a challenging and specific goal for the number of uses you will generate during the next period—for example 320 uses."

As predicted, students in the anchored condition set higher goals, and performed at significantly higher levels, than the comparative conditions. Moreover, the increase in performance was accompanied by a similar increase in self-efficacy,

without a decrease in commitment that is often associated with any form of self-set outcomes (Hinsz, Kalnbach, Lorentz, 1997). In the discussion section of this study, the authors suggested the following (1997):

> At this time there is no reason to suspect that the anchoring of goals would not have similar effects in a variety of other goal setting situations (e.g., group goal setting). Future research should examine how different goal setting and task performance situations influence the effectiveness of different kinds of goals: anchored, assigned, self-set, participatively set. (p. 305)

The potential of anchoring as a tool to augment performance makes the study of anchoring in an organizational context a viable addition to this growing body of literature.

The imposition of artificial anchors has been demonstrated to impact motivation, especially through the medium of self-efficacy judgments. In an important foundational study, subjects were asked to rate their self-efficacy for specific tasks in three specific conditions—low anchor, no anchor, and high anchor. The primary hypothesis of this study was to assess whether or not "anchoring bias" would impact judgments of self-efficacy. Results showed that the anchoring bias significantly impacted self-efficacy judgments. High anchor subjects exhibited the highest judgment of their capabilities; low anchor subjects demonstrated the lowest

self-efficacy score. As predicted, differences in task persistence paralleled the change in self-efficacy judgment. In both subsets of this study, predicted self-efficacy and performance levels affirmed the stated hypothesis that performance and self-efficacy would increase in the high anchor conditions (Cervone & Peake, 1986).

Departing from the more traditional applications of anchoring, anchoring has been applied to estimates relative to the prediction of nuclear war. Six sets of surveys were designed to assess the effects of anchoring on potential estimates of nuclear war. Based upon the responses of a sampling of 1,600 students, the finding confirmed the significant influence of anchoring. Once again, this study employed the low anchor, high anchor and no anchor methodology. The respondents were queried as to what percentage they thought should be applied the likelihood of nuclear war. In all subsets of the survey, anchoring exerted a strong influence on assessment of a potential nuclear war (Plous, 1989). Specifically, Plous' work is noteworthy in that it demonstrates the dynamic potential of anchoring when people care deeply about the subject matter. How do children react to the use of an anchoring and adjustment heuristic in an educational environment?

Smith's (1999) study was derived from a classic multiplication design utilized by Kahneman and Tversky (1974). The subjects came from fourth, sixth, and eighth grade classes. In solving addition problems, the subjects were given choice estimates in ascending and descending order. While the correct answer to the

problem was forty-five (45), those students who were provided an ascending sequence provided a mean estimate of 40.88, while the descending sequence provide a mean estimate of 48.37. The results provide clear evidence that students utilized an anchoring and adjustment heuristic in the formulation of their mathematical estimates in an attempt to resolve the stated problem. Additionally, the difference between responses for each condition studied was almost identical, providing further support for the anchoring hypothesis in an educational context (Smith, 1999). Our final set of studies assesses the effects of situation familiarity and incentives on the use of the anchoring and adjustment heuristic.

Three experiments tested whether anchoring will occur during discussion of subjective probabilities and if familiarity with a situation and incentives will reduce the anchoring effect. Earlier research has suggested that situation familiarity could change the results of the cognitive heuristic (Joyce & Biddle, 1981). Therefore, the primary hypothesis predicted less anchoring in relation to the level of situation familiarity. Secondly, incentives were theorized to cause the subject to assess the anchor more analytically and, consequently, reduce the power of the anchor. The actual results were significantly supportive of a strong anchoring effect. Once again, proof of the dominance of anchoring was established because situational familiarity did not result in decreased anchoring. However, monetary incentive did result in

significantly less anchoring. The application of incentives, the authors suggest, is an area for further study.

It is clear that anchoring is powerful subliminal construct that may be generalized to many environments. More importantly, anchoring is worthy of investigation as a dynamic tool that may offer promise as researchers seek to expand the limits of human and organizational performance. It is this enormous potential that suggests further research on the impact of anchoring on goal commitment, self-efficacy and performance in an organizational setting is needed.

Goal Setting Methodologies

Goal setting theory has been the subject of extensive research during the past thirty years. Motivation, a key component in the goal setting process, assumes an anticipatory self-regulation in that the performer must choose the task and expend the necessary effort to achieve the desired outcome. In this framework, the behavior is motivated and directed by cognized goals rather than being pulled by an unrealized future state. It is the casual, and often subliminal, forethought that is translated through self-regulated action into personal incentives and guides for purposeful action (Bandura, 1997). Locke and Latham's (1990) definition of goals represents a social cognitive perspective that defines a goal as something the worker is consciously trying to define, but the outcome being sought after is "outside" the individual. They make an important distinction between goal-related constructs that

are internal to the individual and conscious as opposed to goal-related constructs that are external to the individual and non-conscious (Pintrich and Schunk, 1996).

An assigned goal is given to an individual or group in order to define clearly the precise target, or outcome, of a specific task. The performer, in the assigned goal setting condition, has no say or input into the process of defining the target of their activity. We often use a variety of methods to conceptualize goals, but our specific aspirations are usually operationalized in these studies in terms of experimental manipulations rather than through direct cognitive assessment. Further, it has been empirically demonstrated that such manipulations do have a measurable effect on personal goals (Garland and Adkinson, 1987). This is arguably the case because "assigned" goals are usually communicated to subjects by legitimate authority figures in environments and in contexts which make the goal worthy of our interest and attention (Locke & Latham, 1990).

In today's workplace, managers are constantly challenged to find ways to increase productivity through goal setting processes. From an organizational perspective, the emphasis on work project teams has renewed managerial interest in the participative goal setting process. Participative goal setting is defined by the employee's involvement in setting the target or goal and, in many cases, selecting appropriate resources and measuring standards to evaluate the desired outcomes. Modern organizational theorists argue that employee goal acceptance is greater when

the performer and the manager jointly determine the employee's goal. Therefore, they argue for participatively set goals as a means to enhance performance. From a managerial performance perspective, it is crystal clear that goal methodology is only significant if it enhances performance. Moreover, the literature does not support usage of self-set or participatively designed goals as more predictive of the desired outcome when compared to assigned goals in many organizational contexts.

Goal Setting Research

Even today after three decades of substantive research, goal setting methodology continues to be a subject of much controversy in organizational settings. In an experiment with uneducated loggers, it was found that crew participation in setting weekly production goals resulted in the goals being attained significantly more often than was the case when the goal was assigned to the crew by the supervisor (Latham and Yukul, 1975). However, it was also determined that goal difficulty was significantly higher in the participatively set condition and served as a mediator to goal method.

In a second field experiment no significant difference was found in the productivity of randomly chosen typists working in assigned and participative goal conditions. In the experiment, there was no significant difference between the groups as it relates to the difficulty level of the goals or the frequency with which the goals were attained. Additionally, goal acceptance revealed no significant difference between the groups.

Moreover, productivity increased significantly in both groups (Latham and Yukl, 1976). These studies provide clear evidence consistent with Locke's theory of goal setting (Latham and Sarri, 1979), high goals lead to high performance (Locke, 1968). This study suggests that the methodology of goal setting, assigned versus participatively set, did not impact the performance or commitment of the studied subjects.

The two studies referenced above led researchers to the conclusion that participation in goal setting is important to the extent that it portends higher goals being set by the individual performer than a manager would set unilaterally. In a third experiment (Latham and Sarri, 1979), a brainstorming task was chosen because of the ability to seamlessly run a laboratory experiment that is similar to actual business brainstorming activities. Subjects were asked to come up with as many ideas as they could for a piece of wood within a twenty-minute time span. In the participative goal setting condition, the subject was asked to set a specific goal and to keep working the entire twenty minutes, regardless of whether or not they realized the goal. The experimenter coached the subjects by saying that "the goal should be difficult but attainable" and by asking question such as, "Are you sure the goal is attainable?" when told of the performer's goal.

The aforementioned research studies, consistent with Locke's theory, confirm the hypothesis that specific goals lead to higher performance in brainstorming

activities. More importantly, holding goal difficulty constant will result in significant differences between assigned and participative goal setting conditions as it relates to ideational fluency, by definition the number of ideas generated, a measure of performance and creativity. The results of this study support the belief that setting specific goals leads to higher performance than urging people to do their best. Moreover, the assumption that allowing employees to participate in setting their goals leads to higher performance, more frequent goal attainment, and increased goal acceptance than simply assigning it to them, was not supported. Said in another way, participation may not be a critical component of a high performance goal setting model (Latham & Saari, 1979).

The external validity of Latham and Sarri's study has been challenged because of questionable industry applicability and, in part, due to factors such as knowledge of results not being systematically manipulated. Moreover, none of these studies examined the effect of individual differences. The goal setting literature consistently finds that a variety of factors may influence performance in any setting. Keeping the critical fact in mind, let us examine an interesting two-part study.

Our fourth study is broken down into two separate manipulations. First, the researchers examined the effects of assigned versus participative goal setting relative to knowledge of results. Second, they examined the individual differences in an organizational setting in which goal difficulty could be held constant. This study

focuses on two dependent variables of interest, performance and goal attainment (Dossette, Latham & Mitchell, 1979).

The first experiment studied sixty female clerical personnel subjects involved in a concurrent validity study to select word processing operators. The goal setting study was imbedded in the validity study. A simple math test was randomly assigned to the participative group. Each individual was then asked to suggest a "difficult but attainable goal", and the test administrator discussed the goal by reiterating the quoted phrase. In the assigned group, the test administrator told the subjects that setting difficult goals helps people attain high scores. The assigned goal was randomly selected from one chosen by the participative group. Further, there were employees randomly assigned to the "do your best condition" as part of the experiment.

A repeated measures ANOVA yielded a marginally significant effect for goal setting on the resulting performance. Paired comparisons suggested that performance in the combined assigned and participative goal setting conditions was significantly higher than the "do your best" condition. From a pure performance perspective, only 10% of the individuals in the participative condition reached their goal compared to 45% in the assigned condition. It is interesting to note that, even given these results, individuals with high self-esteem, who had participatively set goals and received knowledge of results, attained their goals more often than

individuals with low self esteem who received knowledge of results and participated in setting goals. It is clear that people who possess a higher degree of self-efficacy will perform at higher levels, regardless of the goal setting methodology (assigned, self-set, "do your best").

Once again, Locke's axiom of hard goals lead to higher performance levels than do general goals is affirmed. Second, there is a linear relationship between difficult goals and high performance levels. Third, knowledge of results does not appear to affect performance independently of the goals set (Latham, Dossett, & Mitchell, 1978).

One of the clear limitations of this study was its generalizability due to its short duration. For that reason, the study was replicated with employees from the same sample in a performance appraisal context over an eight-month period. Numerous field and laboratory experiments (Latham et al., 1978) have confirmed that unless performance feedback is given, and unless the feedback is done in concert with specific goals, there is little or no change in performance (Locke, 1968).

In the second part of the same study, twenty-eight clerical staff subjects were randomly assigned to a participative or an assigned goal condition. On the basis of previous findings, the specific hypothesis was designed to determine if a significant difference existed when comparing these two goal setting conditions in the areas of performance and goal attainment. If so, the researchers hypothesized the finding

would favor the assigned mode. No significant difference was found when comparing performance and goal attainment as measured at three separate times during this eight-month period performance evaluation period. The study affirms the importance of recognizing that human, organizational and situational factors can mitigate and render useless findings that otherwise have strong empirical support. Once again in laboratory studies, the ability to generalize research outcomes into a variety of business situations and environments is called in question.

Recent Research Findings

A recent study (Gordon, 1992; Osterman, 1994) asked the question as to whether assigned goals and competition are similar in their effect in a group goal setting environment. As we move forward in an environment that fosters project work and teams, groups are accountable for an ever-increasing portion of work performed in organizations. Locke and Latham have hypothesized that assigned goal setting and competition will have similar effects on goal processes and, ultimately, on performance. However, several contradictory studies have supported the proposition that competition arises spontaneously among groups and individuals in other goal setting studies in business settings (Zander, 1994). One explanation offered for these conflicting findings is that, while these constructs may be similar, the uncontrolled nature of competition may cause it to occur randomly in goal setting studies. Specifically, the Zander study hypothesizes that assigned goals will have

positive effects on group performance, and intergroup competition will have a positive effect on group performance. Additionally, assigned group goals and intergroup competition will have a positive effect on chosen group goals. In the assigned goal condition, a challenging goal for group performance was assigned. The intergroup competition groups were instructed that they were, in fact, competing with the other groups. The measured variables were group performance, group goal setting, group efficacy, and group goal commitment. First, the assigned group goal condition did positively affect group performance as predicted. Secondly, the assigned group goals, and the inter-group competition, did positively affect group goal competition. Conversely, groups that were assigned goals did not demonstrate more efficacy than groups in the control condition, while the competition condition groups did demonstrate greater efficacy. This study attempted to clarify the confounding effects of competition on the assigned goal setting process. These conflicting findings affirmed by these results suggest that the interrelationship between goal setting and competition require further research.

The Self-efficacy Construct- a Dynamic Predictor of Performance

The power of self-efficacy to influence performance is a construct that is a consistent thread throughout the goal setting literature. A complete understanding of the goal setting literature is incomplete without a clear understanding of self-efficacy as a predictor of worthy performance.

The Organismic School of Motivational Theory flourished during the 1930 to 1950 timeframe. These motivational psychologists were primarily concerned with organisms that moved from a resting state to an activity state (Weiner, 1990). Under the organismic model constructs such as volition/will, instincts and traits were studied. The mechanistic model, the successor to the organismic model, suggested that complex behaviors could be simplified and man could be conditioned to perform as if he were a machine. Drive theories are reflective of the mechanistic school. Hull, for example, saw drive as a motivational construct that propels the organism toward its goal (Pintrinch & Schunk, 1996).

Weiner reported a "dramatic" shift in research when he wrote: "For the field of motivation, this ultimately signaled that the "winner" in the Hull vs. Tollman debate was Tollman, the cognitivist, rather than Hull, the mechanist." (Weiner, 1990, p. 618). Today some of the primary motivation topics include self-efficacy, goal structure, casual attributions and locus of control, to name a few.

Self-efficacy, a construct derived from Social Cognitive Theory, suggests a triadic reciprocal causation model in which behavior, cognitions, and the environment all influence each other in a dynamic fashion (Bandura, 1986). The impact of Bandura's work on the development of the self-efficacy construct is clearly demonstrated in this quote (1986):

> Theories that contend that striving for personal control is an expression of innate drive discourage interest in how human efficacy is developed, because

> people always come fully equipped with it. Instead, such theories dwell heavily on how the drive is socially thwarted or weakened. The fact that virtually all people try to bring at least some influence to bear on some of the things that affect them does not necessarily indicate the presence of innate motivator. Nor is control sought as end in itself. (p. 2)

Self-efficacy, as defined by Bandura and others, is often the spark that can, in many situational contexts, predict desired outcomes in the goal setting process. Self-efficacy, as a construct, is founded on the belief that the individual's ability to control events is fundamental to our well being. Simply put, unpredictability is very unsettling. If we are able to bring about and, more importantly, influence significant outcomes, then we are in a better position to predict them. According to Bandura (1989):

> Predictability fosters adaptive preparedness. The inability to exert influence over things that adversely affect one's life breeds apprehension, apathy, or despair. The ability to secure desired outcomes and to prevent undesired ones, therefore, provides a powerful incentive for the development and the exercise of personal control. (p. 408)

Self-efficacy provides the energy that urges us to make difficult choices and to persist in our efforts to achieve apparently unobtainable goals. Woods and Bandura expanded the definition by adding that self-efficacy "refers to beliefs on one's capabilities to mobilize motivation, cognitive resources, and courses of action to meet situational demands." (Woods & Bandura, 1989, p. 408).

Self-Efficacy-A Powerful Predictor of Goal Attainment

Bandura defines the self-efficacy construct as: " Perceived self-efficacy refers to the belief in one's capabilities to reorganize and execute the courses of action required to produce given attainments." (Bandura, 1986, p. 11). The constant in any definition of self-efficacy is whether or not the individual believes they are able to perform the task. Self-efficacy constructs can be viewed from an individual and a collective context.

From a definitional perspective, it is important to note the difference between self-efficacy and self-esteem. Much of the literature uses these terms interchangeably. Perceived self-efficacy focuses on personal judgments about individual capabilities to perform a task or achieve a goal. Self-esteem is concerned about judgments relative to our self-worth. For example, an adult might view himself as totally inefficacious in terms of their ability to hit a golf ball. Because he recognizes and accepts his inadequacy in this sports skill, his self-worth is not devalued by this fact. However, it is also true that to engage in activities which increase our self worth (Bandura, 1997), we need to be confident in our ability to increase and sustain the level of effort necessary to succeed. Therefore, perceived self-efficacy is a predictor of goals people set for themselves and the resulting performance attainments. Conversely, self-esteem does not impact the achievement

of personal goals or performance. One of the primary indicators of choice is self-efficacy. Self-efficacy, not self-esteem, will serve as a predictor of goal attainment (Monte, Baker & Jeffieries, 1995).

Harter, contrary to Bandura's view, believes that judgments of self-worth and personal competence are subsets of the same phenomenon. In short, Harter asserts that self-worth is a macrocosmic or global construct, while perceived competence is domain specific (Harter, 1990). Bandura argues that measurements of self-worth, without context and perceived competence in specific terms, results in the integration of a unidimensional perspective into a hierarchical model of self-evaluation (Bandura, 1997).

In summary, the difference between "self-efficacy" and "self-esteem" constructs are clearly distinctions that do make a difference in gaining insight into state of the art thinking relative to motivational theory and its application to goal setting processes.

From a theoretical perspective, other related constructs, such as expectancy theory, can be considered analogous to self-efficacy in situational contexts that are "outcome-outcome" contingencies such as performance to reward. Conversely, an effort-to-performance model ("behavior to outcome"), is viewed to compare less favorably to the self-efficacy construct. However, both constructs emanate from

similar theoretical notions that expected outcomes depend heavily on the types of behaviors the individual chooses to execute (Gist & Mitchell, 1992).

Two Important Studies

While the consistency of the goal setting model has been established through voluminous research, it is also clear that there are limitations to the goal setting model. For example, it is clear that most self-efficacy studies have been performed in laboratory settings and, therefore, are not generalizable to an organizational setting. In addition, most subjects were students rather than employees in a business setting. Finally, many of the tasks studied do not relate to the most important organizational issue--performance.

One study examined the relationship of how a specific level of performance is influenced by the individual's self-efficacy (Bandura, 1993). The hypothesis was that individuals with higher levels of performance on computer-related tasks would demonstrate higher self-efficacy perceptions.

Seven hundred sixty seven salaried personnel in a large university responded to a self-efficacy questionnaire. A 32-item Computer Self-efficacy Scale (CSE) was selected to measure computer-related knowledge and skills. The results confirmed a strong relationship between performance measures of computer usage and categories of high and low self-efficacy. Specifically, the respondents with high self-efficacy reported greater use of both hardware and software applications than did individuals

with low self-efficacy. Conversely, decreased performance with computer-related tasks was found to be significantly related to low self-efficacy. In short, the hypothesis was supported.

It is significant to note that the discussion section of this research underscored the need for further study relative to the antecedents of self-efficacy in an organizational environment. Bandura defined these four informational cues as enactive master, vicarious experience, verbal persuasion, and emotional arousal. Researchers agree that the self-efficacy construct is central to the behavioral research in any organization (Harrison, Ranier & Kelley, 1997).

A second study ((Gist, Schwoerer & Rosen, 1989) examined the use of alternative training methods on self-efficacy, and mastery of a computer software program was compared in the context of a field experiment involving 108 university managers. A behavioral modeling approach was compared to a tutorial approach. The behavioral approach yielded higher and higher self-efficacy scores and higher performance on an objective measure of computer software mastery. The primary objective of the study was to determine the relative effectiveness of modeling and tutorial performance methods for enhancing training performance. Secondly, and, more importantly, the purpose of the study was to attempt to ascertain the relationship between self-efficacy and training performance. The objective of this inquiry was to determine how initial perceptions of self-efficacy impact subsequent

mastery of the task. Finally, this study examined alternative training methods from a social learning perspective.

Self-efficacy and emotion-focused coping have mediated the relationship between perceptions of past performance and subsequent behaviors in job interviews (Strumpf, Brief, & Hartman, 1987). By extrapolating such findings, it was hypothesized that trainees with high self-efficacy may experience more success in training when compared to subjects with low self-efficacy. Self-efficacy was operationalized in this study by asking subjects to assess their performance on the task in each condition. Subsequently, their answers were compared to the actual performance on the assigned task.

Conclusion

In the first study, the findings established a significant relationship between self-efficacy and performance that was consistent with earlier studies (Barling & Beattie, 1983; Stumpf, Brief, & Hartman, 1987). In the second study, pre-training computer self-efficacy mean scores were significantly higher in the modeling condition than the tutorial condition. In addition to supporting earlier self-efficacy research, it is clear that modeling is an effective method because it operates through the vehicle of self-efficacy to influence performance.

The utility of self-efficacy as a construct worthy of field study in a business context has been validated through numerous studies. Unfortunately, the majority of

past empirical research has examined the relationship of self-efficacy perceptions to performance in a laboratory setting, absent of task specific activities related to individual or group work performance. For example, the self-efficacy construct has seldom been tested in job settings that contain work-related performance outcomes despite Bandura's (1997a) suggestion.. As a result of this fact, many of these findings do not generalize to the work environment. Consequently, a primary goal of the present study is to enhance the body of work designed to increase our ability to assess self-efficacy situationally in an organizational setting. In referencing this body of work, Bandura concluded that when precise and detailed measures of self-efficacy are proposed, a high correlation between efficacy and performance can be demonstrated. Therefore, there is empirical support for the relationship between actual behavior and individual assessments of self-efficacy (Lindsley et al., 1995; Wood & Bandura, 1989).

Finally, it is important to reemphasize the potential utility of the self-efficacy construct to practical human resource and business issues such as: job design, performance management systems, employee selection, leadership, rewards, incentive and teams. It is this macrocosmic applicability, coupled with a potential high level of predictability, that should encourage others to add the self-efficacy construct to their management problem solving toolbox.

Goal Commitment and Task Value

Locke first recognized that goal commitment was an important variable when he stated that people who "stop trying when confronted with a hard task (i.e., those uncommitted to a goal) are people who have decided that the goal is impossible to reach and who no longer are trying for that goal." (Locke, 1968, p.164) This primary tenet of the goal setting is the goal difficulty effect on which goal setting literature is based. The relationship between the principle that difficult and specific goals lead to higher levels of performance has been, and continues to be, a primary area of interest for researchers.

According to Locke, goal commitment is defined as the determination to try for a goal (Locke, Shaw, Saari, & Latham, 1981). Commitment as a construct suggests that the individual or group is willing to expend the necessary effort over time toward the accomplishment of a specific outcome. Further, there is emphasis added upon the realization of the original goal and an unwillingness to alter, lower or abandon the original goal (Campion & Lord, 1982). This history of the research in the area of commitment highlights the central importance of goal difficulty and its linkage to performance outcomes, rather than goals in a general sense. As was the case in defining self-efficacy above, it is important fully understand this nuances of this complex variable. For example, goal acceptance does not necessarily imply that the individual has embraced the standard. Said another way, we can demonstrate

initial commitment to the goal and over time demonstrate a lack of desire to accomplish that same goal. As we review the literature, it is important to be cognizant that although these concepts are distinguishable (commitment versus acceptance of a goal), the difference is not clearly defined by much of the research. For example, most studies use commitment and acceptance of the goal interchangeably and, more importantly, there is still debate over the separateness of these constructs. However, commitment as a significant predictor of performance is best understood by honing in on research literature that has shaped the evolution of this noteworthy construct. After providing this foundation as basis for benchmarking its development, we will review several recent studies focusing on commitment, will be reviewed.

Foundational Research in the Area of Commitment to Goals

While the research supports the theory that difficult and specific goals lead to higher performance, there is also evidence supporting the belief that one or more variables serve as moderators of the relationship between goal difficulty and task performance. A number of studies have pointed toward the conclusion that the goal difficulty effect may not occur at all (Motowidlo, Loehr, & Dunnette, 1978; Oldham, 1975). When the goal difficulty effect does occur, the size and statistical significance of the effect varies widely (Dossette, Latham, & Sarri, 1980). A second significant trend in the earlier literature is the effect of goal difficulty, especially in

field settings, tends to be conditioned upon the presence and existence of other variables. Finally, the research finding is inconsistent as it relates to the role played by other key variables such as monetary incentives.

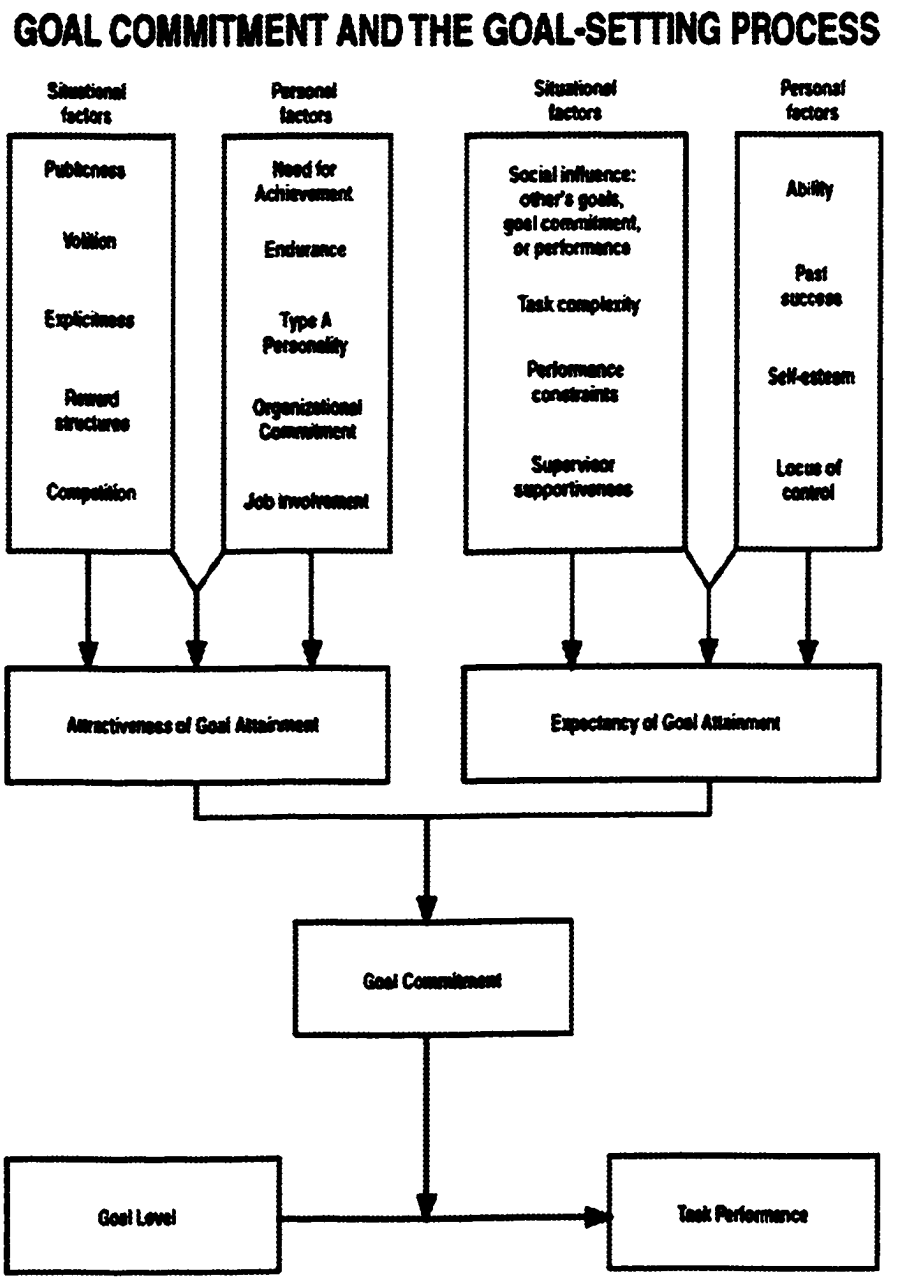
Goal commitment research, to date, can be broken down into three clearly definable categories. They are as follows: studies treating goal commitment as a moderator variable; studies treating goal commitment as a dependent variable; and studies focusing on the Expectancy Theory Model of the goal commitment process.

Three key studies tested whether or not goal commitment acted as a moderator of the goal-difficulty-task-performance-relationship. Erez and Zidon found a moderating effect on the aforementioned relationship (Erez & Zidon, 1984), while Latham and Yukl found no relationship (Latham & Yukl, 1976). Each of the studies utilized a single measure of commitment, therefore, reliability effects cannot be measured. Because the assessment instruments differed, the validity of these early studies has been called into question. Lastly, restriction of range issues could also explain such inconsistent results. The failure of these investigations to shed clear light on Lock's original concept led to subsequent studies that treat goal commitment as the dependent variable. The literature on goal commitment as a dependent variable in voluminous and it will not be reviewed here.

Another segment of the commitment research has focused on assessing the possible connection between participation and commitment to the desired outcome.

This genre of goal setting research has not supported the hypothesized relationship between participation and commitment (Latham & Marshall, 1992; Latham, Michell .& Dossett, 1978). However, other researchers have utilized an expectancy theory framework to study the goal setting process (Vroom, 1968). The expectancy theory model of the antecedents and consequences of goal commitment is useful in visualizing and understanding the matrix of factors that can influence goal commitment as depicted in Figure 2 (Hollenbeck & Klein, 1987, P.215).

Figure 2 (Hollebeck & Klein, 1987, P. 215)



Expectancy theory model of the antecedents and consequences of goal commitment.

A primary purpose of the model is to demonstrate how expectancy theory has broadened earlier research studies by including additional variables. Specifically, by providing a model that can differentiate between situational and personal factors of attractiveness and expectancy (Endler & Magnusson, 1976) we get a clear visual perspective of the potential variables that may influence commitment to a specific outcome. The two main sub-sets of the model are intended to depict whether that factor impacts attractiveness or expectancy of goal attainment. Further, this model attempts to delineate as to whether they are situational or personal factors. Moreover, the model also portends the primary consequence of goal commitment – the moderation of the relationship between goal difficulty and task performance (Locke, 1968).

Situational factors affecting the attractiveness of a particular goal such as publicness, volition, and explicitness, must be taken into account by managers before assigning tasks in an organizational setting. Publicness is defined as the degree to which others are aware of the goal that one has committed to accomplishing. For example, Alcoholics Anonymous requires members to publicly announce that they are alcoholics at each meeting. Researchers have affirmed the positive relationship between publicness and realizing the desired outcome. Volition is defined as the individual's belief that he/she is able to engage in the required behavior to accomplish the goal. Self-set goals are closely associated with volition, while

assigned goals are not. Salancik's provides a clear rationale to counter that interpretation by suggesting that vague goals that offer "innumerable outcomes" could be closely associated with an unclear goal (Salancik, 1977).

The factors influencing goal commitment and the goal setting process offer insight into how to properly design anchoring interventions that increase performance. For example, a failure to understand issues such as publicness of the target goal and organizational commitment to the desired outcome will not lead to resulting worthy performance. In a broader sense, attractiveness of goal attainment and expectancy of goal attainment may directly conflict with the application of the anchoring construct. Therefore, the organizational manipulation of anchors must be done thoughtfully after serious consideration of the antecedents to commitment.

While situational factors must be given serious consideration in assessing goal commitment, personal factors relate more specifically to individual differences and focus on powerful constructs such as needs, beliefs, attitudes, and personality traits. For example, research supports the finding that individuals with a high need for achievement will display more commitment to difficult goals. A corollary to this finding is that Type A individuals facing difficult goals demonstrate far greater effort than Type B personalities (Taylor, Locke, Lee & Gist, 1984). Job involvement, an indictor of organizational commitment, suggests a significant connection between job performance and personal self-esteem. In addition, two other personal variables

potentially impacting commitment are perceived ability and past success, a strong indicator of self-efficacy. Lastly, locus of control can also be a factor that influences individual and group commitment to the goal. Prior research supports the hypothesis that individuals with an internal locus of control believe they can overcome seemingly insurmountable obstacles in pursuit of the objective. Conversely, people with an external locus of control appear unable to muster the strength to overcome these hurdles.

The work of Eccles and Wigfield has provided researchers with a more precise measure of commitment in the development of the "task value" construct (Wigfield &Eccles, 1992). Based upon research done in educational settings, researchers have investigated competence beliefs and values that often predict achievement behavior and task choice. Eccles et al. proposed four major components of achievement values: attainment value or importance, intrinsic value, utility or usefulness of the task, and cost (Wigfield & Eccles, 1992). In an organizational setting factors such as utility, usefulness of the activity to the individual's future plans, and cost, negative aspects of task, are key indicators in assessing task value. Therefore, "task value" has been selected as the more appropriate construct to assess how participants valued this brainstorming task. Hinsz et al. (1997), foundation for this replication study, utilized the commitment construct.

Relevant Studies

Two key constructs influencing the ability to reach stretch goals are expectancy (defined as the subjective probability of success) and valence (anticipated satisfaction). In fact, the literature further suggests that the motivation force construct (the force on a person to enact behavior) may comprise expectancy and valence components (Hollenbeck, Klein, 1987; Locke & Latham, 1990, Vroom, 1964).

In a study of predictors of commitment (Tubbs & Dahl, 1992) the authors hypothesized that expectancy and valence information could predict commitment responses. Second, the authors hypothesized that there are reliable individual differences in commitment, expectancy, and valence. Finally, the aforementioned differences can be explained by prospects weighing theory, a within person method of judging expectancy and valence at various level of performance. All three hypotheses were supported. In short, the results seem to support an expectancy-valence or motivational force model of commitment. Unfortunately, as is often the case, these findings did not clarify the issue as to whether or not motivational force and commitment are a single construct. For example, Tubbs, one of the authors of this study, suggested that motivational force might be a motivational collage including several constructs (Tubbs & Dahl, 1991; Tubbs & Ekeberg, 1991).

A second study investigated the validity of Meyer and Allen (Meyer & Allen, 1991) three component models of organizational commitment (Hollenbeck & Klein, 1987). The study assessed the factors of commitment by performing a confirmatory factor analysis on over 2,300 nurses. Primarily, this study attempts to fill the void by further refinement of the measures of commitment and seeks to determine their relationship with unrelated measures of work outcome.

The three factors examined by this study are affective commitment, continuance commitment, and normative commitment. Simply put, affective commitment is defined as the employee's emotional attachment to, and involvement in, the organization. Continuance commitment focuses on the individual's perception of the cost of leaving the organization. Lastly, normative commitment addresses obligations employees feel to stay with the organization. Consistent with the hypothesis age and organizational tenure were positively related to continuous commitment, but did not relate to with affective commitment. Contrary to the researcher's expectations, age and tenure were unrelated to affective commitment. The motivational scale for nurses demonstrated the strongest positive correlation with affective commitment when compared to each remaining variable. This substantiated the belief that, of the three variables, affective commitment is the most affected by individual work experience. In the final analysis, with some minor exceptions, the results supported by other confirmatory factor analysis suggest that

Myer and Allen's instrument is valid. The substantial future challenge is to show how these components may be tied to specific work outcomes. Further research in better defining the attitude/behavior relationship was advocated by this study.

These findings support the present studies hypothesis that the ability to measure commitment as a major part of any anchored manipulation is essential. Moreover, the absence of commitment is likely to decrease the power of the anchor.

Wigfield and Eccles (1992) have affirmed the connection between usefulness and importance of tasks and the interest junior high student's display for the activity. Moreover, these changes are often the result of evaluative feedback and changes in school environment. These findings support the utility of the task value construct as appropriate fit for research in an organizational setting.

Summary

In an organizational context the situational factors affecting the attractiveness of the goal may hold a key to engaging the performer in the desired outcome. Specifically, situational factors such as publicness, volition, and explicitness of the goal must be studied in the future. The linkage of these situational factors, although not the primary focus of this study, with live may provide further clarity as to how to properly utilize anchors in organizational settings.

Hypotheses

The four specific hypotheses for the present study are as follows:

1. Subjects in the high anchor condition will select higher performance goals than the do your best condition.

2. Performance will increase as the anchored manipulation increases upward to the low, medium, and high anchor conditions. The high anchor condition will result in the highest individual performance (number of ideas generated) when compared to each of the other measured conditions.

3. Self-efficacy will not decrease significantly in the high anchor condition.

4. There will be no significant loss of task value for the goal when comparing the high anchor condition to each of the other anchoring conditions

The rationale behind the goal setting hypothesis is founded on the belief that anchors, even if they are arbitrary and unreasonable, will subliminally influence goal selection upward. Moreover, earlier studies have to have suggested that decision-makers or performers first consider reasons why the value for the target performance is similar to the anchor (Tversky, 1977). Conversely, the decision-maker or performer neglects reasons why the value for the item is unlike the anchor. Therefore, it is reasonable to expect the high anchor condition to select more aggressive goals.

The performance hypothesis is supported by research that demonstrates that anchoring will enhance performance significantly (Hinsz, Kalnbach, & Lorentz,

1997). Research has demonstrated a goal stated, even at an unreasonably high level, should lead to higher levels of performance (Hinsz, 1995). Most of the relevant studies have not been done in an organizational setting using managerial subjects. Therefore, it is important to validate that the anchoring construct effectively enhances performance in an organizational context.

The anchoring design applied in this study is manipulated to raise performance expectation beyond reasonable expectations in the high anchor condition. Consequently, it is important to assess whether or not task value is maintained as the anchor increases. Research has consistently validated that difficult goals lead to higher performance (Locke, Shaw, Sarri & Latham, 1981) and that goals that are not committed to or valued will not result in the desired performance outcome (Hollenbeck and Klein, 1987; Locke et al., 1988). Anchoring tests the limits of task value due to the fact that the anchor is, by definition, unreasonable and able to dramatically influence performance.

Finally, self-efficacy is an assessment as to how well one can perform a particular task in a specified setting. Bandura's research suggests heightened self-efficacy judgements are predictive of greater effort and persistence (Bandura, 1986). As our hypothesis suggests, prior studies have affirmed that high anchor subjects demonstrate higher levels of self-efficacy (Cervone & Peake, 1986). Therefore, it is reasonable to expect no loss of self-efficacy in the high anchor condition.

Quality of the ideas generated is an integral dependent variable measure to any performance study. For example, if a managerial subject generated eighty (80) ideas that did not motivate or enhance individual or organizational performance, the number of ideas generated would not reflect worthy performance. Therefore, a subjective quality rating tells us whether or not high quantity of performance is worthy performance.

Chapter 3: Methods and Procedures

Organizational Environment

The proposed study was conducted within a Fortune 500 company in the communications industry. While the target organization acquires most of its revenue from the newspaper advertising, the corporate entity also owns television, radio and internet interests that support the overall strategic goal of being the key source of information in the markets they serve.

Consequently, the proposed study came to fruition at two newspaper locations focused geographically in the northeastern part of the United States. The primary target location was The Baltimore Sun, a top ten newspaper, located in Baltimore, Maryland. The study also included randomly selected managers from Patuxent Publishing, the Sun's weekly newspaper operation.

As we complete this study, it is interesting to note that Tribune Company, the corporate entity, is fully engaged in an enormous merger, that was completed one

year ago on June 11, 2001. This hostile takeover of the former Times-Mirror, Inc., owner of the Los Angeles Times and other significant newspaper and magazine interests including The Baltimore Sun, cost Tribune eight billion dollars. Moreover, Tribune is noted for strict adherence to performance standards as opposed to Times-Mirror's penchant for allowing individual subsidiaries to operate independently.

In this environment of rapid change, it is clear that the recently merged organization has placed a priority on setting and reaching incremental goals. Therefore, anchoring, as a potential performance-enhancing tool, is of great interest organizationally.

Organizational Application of the Construct

Anchoring has been studied in a variety of settings. However, it is also true that researchers have inadequately researched the potential of anchoring as a tool to enhance performance in an organizational environment. This research study examined how organizations can utilize "anchoring" to encourage managers to reach and surpass stretch goals. The primary objective in this study will be assessing whether managerial subjects, in business individual brainstorming sessions, can increase performance under different anchoring manipulations. Four conditions are compared. They are: "do your best" (control group) low anchor, medium anchor, and high anchor conditions. Further, subject responses and performance will be measured to assess whether or not the subliminal anchored manipulation lead them

to greater ideational fluency, an indicator of creativity and performance, without reducing goal commitment or negatively impacting self-efficacy.

Specifically, subjects will be asked to "brainstorm" ideas relative to enhancing and motivating performance in their work unit and throughout the company. The instructions given to subjects were designed to encourage them to think of the question in the broadest terms including, but not limited to pay, incentives, benefits, work environment, general job satisfaction to name a few idea-generating categories. The "low anchor" condition will be instructed to "set a challenging goal " for example, such as twenty (20) performance enhancing ideas" for the exercise. Subjects in the medium anchor condition will be instructed to "set a challenging goal such as forty (40) performance enhancing ideas" for the brainstorming session. "High anchor" subjects will be given the same message except the anchor will be eighty (80) ideas that have the potential to increase organizational performance. The inclusion of the statement "for example, such as eighty (80) performance enhancing ideas" serves as the manipulation of the anchor. Previous experimental studies have suggested that individual brainstorming will produce a range of between fifteen (15) and twenty-five (25) brainstorming ideas on average during a twenty-minute (20) brainstorming exercise (Diehl & Stroebe, 1989).

Methodology and Procedures

The proposed study was implemented, consistent with the procedures, to experimentally test the four stated hypotheses. Further, the appropriate controls were utilized to protect the integrity of this experimental research design project. Conversely, it should be noted that this study is being conducted during a rapid change in organizational culture. Given the human resource context of the task, brainstorming performance-enhancing solutions to organizational and motivational issues, the rapid rate of organizational change may intuitively support a higher general level of ideational fluency in the subject population.

The remainder of the procedure section will consist of the following major topics:

1. Selection of Participants
2. Experimental Design
3. General Instructions to All Subjects
4. Manipulations
5. Research Presentation and Subject Debriefing
6. Dependent Variable Measures
   - Performance or Ideational Fluency
   - Choice of Goal Level and Task Value
   - Self-efficacy

- Quality

7. Statistical Analysis

Selection of Participants

The participants in this study included approximately 100 experienced managerial employees working for The Baltimore Sun and Patuxent Publishing, the company's weekly newspaper operation. Managerial employees were selected to participate based upon a random computer selection. Care was taken to ensure that male, female and minority representation is reflective of the Standard Metropolitan Statistical Area.

The four participant groupings were comprised of approximately 25 managers in each subset of the study. The 25 managers selected to participate in the "do your best" subset of the study served as the control group. The control group did not receive the anchoring manipulation during the instruction phase of the brainstorming activity.

The remaining 75 participants received the low, medium and high anchor manipulation in sets of approximately 25 for each anchored instruction. Each subset of twenty-five (25) participants was realized by inviting two groups of between fifteen (15) and eighteen (18) managers to ensure the target number of subjects was achieved.

Experimental Design

Anchoring is, by definition, the use or imposition of arbitrary and unreasonable goals to enhance performance. Anchoring, the manipulated independent variable, is hypothesized to enhance the performance of managerial subjects. The anchored subjects will be chosen by random selection and studied in the four distinct groups: low, medium, and high anchor interventions and the "do your best" control group. Performance, or ideational fluency, the value of self-set goal(s), self-efficacy, task value and quality of ideas act as the measured dependent variables. The control group will be differentiated from the anchored subsets in that it will not receive an anchored instruction. Rather, the control group will be given a "do your best" instruction prior to performing the assigned brainstorming task. Each studied group will receive the same general directions prior to performing the brainstorming activity to protect against extraneous variables impacting this experimentally designed research project. This study will utilize the "do your best" condition to serve as the control group in assessing the impact of the anchoring in managerial brainstorming sessions. This approach is designed to neutralize the impact of the goal setting methodology on the anchoring manipulation.

General Instructions to All Subjects

The experimental environment is a conference room primarily utilized for training activities and presentations. Each participant was separated and given four

sheets of paper with a sufficient number of blank spaces provided for the ideas generated during this brainstorming activity. Answer sheets asked for name and department of each subject on the top of the document. Participants were asked to put one idea in each blank space. No numbers will be provided next to the blank so as not to influence participating subjects in any way. Participants will complete this paper and pencil brainstorming exercise individually, without input from other managerial subjects.

The randomly selected subjects were asked to brainstorm ideas that are designed to increase human motivation and performance in an organizational context. Specifically, the managerial participants were encouraged to "view this question organizationally, as well as in their specific work unit. For example, issues such as work environment, benefits (medical, dental, 401k, stock purchase, sick pay, holidays, long term disability), compensation, scheduling, performance management, work process improvement, accountability, to name a few potentially fertile areas for idea generation. Remember, this question is to be viewed in the broadest possible context so that it is fair to say that there are no bad ideas. You will have twenty (20) minutes to generate as many ideas as you can for this brainstorming exercise."

Each twenty minute organizational performance enhancing brainstorming was divided into four separate conditions: do your best (control group), low, medium, and high anchor conditions. There were three levels of the independent

variable anchors suggested prior to the brainstorming activity: 20 brainstorming ideas, 40 brainstorming ideas, and 80 brainstorming ideas. Subjects who received the anchored message were asked complete two pre-test instruments. First, anchored subjects were asked to select a goal level and asked a series of self-report questions to assess to what degree they value the task. Second, the level of self-efficacy of anchored subjects was measured. Self-efficacy was as the " % chance of generating10 ideas if you try". The same question was asked from ten to eighty ideas in five idea increments. There were five dependent variables measured by the study: performance, goal setting level, self-efficacy, task value and quality. Quality was measured by two independent judges on a scale of one (low quality), two (average quality), and three (high quality). Quality of ideas generated was defined in terms of clarity, creativity, and the potential of the idea to improve performance.

Control group subjects were asked to "do you best" during the 20 minute ideas generation period. Performance and the quality of responses were the only variables measured for the control group.

Manipulations

Brainstorming research has demonstrated that individual brainstorming activities can produce quantities of ideas in a range from the low teens to approximately twenty ideas in similarly structured individual brainstorming research studies. Group brainstorming activities produce substantially greater numbers than

do individually designed brainstorming research studies (Hinsz, Klanbach, & Lorentz, 1997; Paulus & Dzindolet, 1993). Therefore, it is significant to note that the anchored manipulations described below are based upon prior research findings utilizing individually designed studies.

Next, after being given the general directions for the idea generation task, the three-anchored conditions (low, medium and high anchors) received the following additional instruction. "When completing the Pre-Brainstorming Questionnaire (Setting challenging goals and task value measures), set a challenging and specific goal for the number of motivational and human performance ideas that you will generate. For example, twenty-five (25) ideas (low anchor condition), forty (40) ideas (medium anchor condition), and eighty (80) ideas (high anchor condition)." These three measured, individually anchored, manipulations represent the low, medium, and high anchor conditions. The anchored manipulation is treated as an off hand remark or as a subliminal message. Subjects are then instructed how to complete a self-report self-efficacy measure before setting the goal and performing the task. This instrument is designed to measure the individual's belief in their ability to perform task at or above ten brainstorming ideas up to eighty ideas, the subliminal message in the high anchor condition.

The "do your best" condition control group received the same general instructions described above. In place of the anchored manipulation, the control

group was instructed "to do your best" during the brainstorming exercise. The control group completed the pre-brainstorming questionnaires in the same manner as the three anchored manipulations. By so doing, we will be able to compare performance, goal setting levels, task value and self-efficacy in the four defined conditions.

Research Presentation and Subject Debriefing

After the managerial subjects completed the brainstorming study, managers participated in a Power Point presentation on the current state of goal setting literature. The goal of this presentation was to support managerial reexamination of existing organizational goal setting processes and programs. Specifically, managers participated in a discussion focusing on key learning points acquired from cited research that have proven effective as human performance enhancing tools. Participants were offered a summary of the findings of the study after the research was completed.

Dependent Variable Measures

The independent variable, or manipulation, is the hypothesized impact of the anchoring (low, medium, and high) on the managerial subjects. A "do your best" condition is the control group. Dependent variable measures include performance, or ideational fluency, quality of ideas generated, difficulty level of goal set, self-

efficacy, and commitment. In the following section, the measurement of variables in this study is described.

Performance

The anchored manipulations are designed to assess the impact the low, medium, and high anchor prompts have on the performance. A widely accepted measure of ideational fluency is the number of non-redundant ideas generated in a brainstorming activity. For example, subjects in the high anchor condition (80 ideas prompt) may list 40 performance ideas in the twenty minutes time-frame allotted for the task. In the event the participant provided two redundant scores, the final performance score would be 38 for this participant.

Quality of Responses

The present study of the impact of anchoring on performance of established goals must include a measure of quality. Increasing productivity without quality is not worthy performance. Therefore, to effectively measure the potential applicability of anchoring it is essential to measure the quality of the responses generated in the brainstorming activity. Quality was measured by two independent raters who assessed subject work products based upon originality, a subset of creativity, clarity, and, most importantly the potential for these ideas to positively influence performance, either in the company or an individual work unit. The judges were instructed to evaluate the quality of responses by rating each response as low,

medium and high quality. The responses on the quality measure were compared to the quantity of performance responses in the "do your best" (control group), low, medium, and high anchors. Therefore, the quality measure results provide an opportunity to determine how high anchor prompts influence the quality of performance and quantity of performance in concert. For example, the subject who scored 38 generated ideas is now measured for quality based upon clarity of the ideas, creativity, and the potential of the ideas to improve performance. One judge gave this subject a point for clarity and creativity, but did give this subject a point for the practical value of the ideas. However, the second judge gave this subject's ideas a perfect score of 3 on all the criteria described above. In short, irrespective of the number of ideas generated, this participant received 5 of possible 6 points on the quality measure. The independent judges inter-rater reliability coefficient (Alpha) was 83.

Choice of Goal Level and Task Value

In this study, I compared the individual's choice of goal level, and task value in the anchored groups, in contrast to the "do your best" control group, arguably the purest form of a self-set target. The "do your best" condition did not receive the task value instrument provided below. In general, our hypothesis suggests that a high anchor manipulation will support challenging self-set goals, without a loss of commitment. Specifically, this instrument is designed on a 9-point Likert scale.

Moreover, its purpose is to measure determination of commitment or, more precisely, an individual evaluation of task value as it relates to the setting and achievement of difficult goals (Hinz & Indahl, 1992) and is based upon the design of Hollenbeck, Klein, O'Leary and Wright (1989).

As outlined below, the Pre-Brainstorming Questionnaire is designed to ask participants to set a goal and to estimate their percentage chance of achieving the goal. Further, task value was measured by assessing the responses on questions seven through thirteen to determine if task value of the goal was maintained in the high anchor condition.

Table 1

Goal Setting and Task Value Questionnaire

You have just completed a twenty minute period of performance on this idea generation task in which you were to generate as many motivational and performance enhancing ideas for your staff, in particular, and employees of your company in general. Before starting that exercise you were asked to establish a goal for the number of ideas generated during that 20-minute period. The goal should be specific and challenging, but still attainable.

1 Generating _____ motivational ideas in 20 minutes would be a challenging but still attainable goal for my performance on this brainstorming task

2 What are your chances of attaining this goal (as a percentage) if you try? Please make an estimate that is realistic, not based on hopes and desires._____% chance of attaining this goal if I try.

3 How personally important is it for you to attain this goal?

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

4 How determined are you to attain this goal?

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

5 How much do you care about attaining or not attaining this goal?

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

(Table 1 cont.)

(Table 1 cont.)

6 How committed are you to attaining this goal?

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

7 It's hard to take this goal seriously.

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

8 It's unrealistic for me to expect to reach this goal.

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

9 It is quite likely that this goal may need to be revised, depending on how things go.

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

10 Quite frankly, I don't care if I achieve this goal or not.

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

11 I am strongly committed to pursuing this goal.

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

12 It wouldn't take much to make me abandon this goal.

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

13 I think that this is a good goal to shoot for.

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

14 I am willing to put forth a great deal more effort beyond what I would normally do to achieve this goal.

NOT AT ALL IMPORTANT								EXTREMELY IMPORTANT
1	2	3	4	5	6	7	8	9

The self-report instrument detailed above (items 8-13) resulted in following reliability coefficient (Alpha): .6445. While this level is slightly below .7 level acceptability, I expected a slightly lower level of reliability due to the inherent skepticism of newspaper managers working on a theoretical brainstorming project.

Self-Efficacy Measure

The primary motivational model emphasizes the issues of choice and effort as the key ingredients that enhance the possibility of achieving individual and organizational goals (Clark, 1998). My focus is to analyze the self-efficacy construct as it relates to the goal setting process. My study seeks to analyze how anchoring (independent variable) impacts self-efficacy and performance. I also expect to gain insight into how self-efficacy influences task value and ideational fluency in pursuit of a desired performance outcome.

The self-efficacy measure is designed to have the subjects predict their belief that they can perform at specified levels of performance and was designed by Locke, Motowidlo and Bobko (1986). It is listed below. By assessing the impact of the manipulated independent variable on self-efficacy in each of the four stated conditions, we will be able to compare the "do your best" condition (control group) to the low, medium, and high anchors. If we have hypothesized correctly, self-efficacy should not decrease in the high anchor condition. Self-efficacy is measured

by adding the total score, in percentage terms, for each level (ten ideas through eighty ideas) as listed in the instrument below. Scores range from zero to 1500.

Table 2

Self-Efficacy Questionnaire

On the following lines, please respond with a percentage to indicate your chance of generating motivational and performance enhancing ideas at the following levels of performance during the upcoming idea generation task. *Please make realistic* estimates.

____% chance you generate 10 ideas in 20 minutes if you try

____% chance you generate 15 ideas in 20 minutes if you try

____% chance you generate 20 ideas in 20 minutes if you try

____% chance you generate 25 ideas in 20 minutes if you try-

____% chance you generate 30 ideas in 20 minutes if you try

____% chance you generate 35 ideas in 20 minutes if you try

____% chance you generate 40 ideas in 20 minutes if you try

____% chance you generate 45 ideas in 20 minutes if you try

____% chance you generate 50 ideas in 20 minutes if you try

____% chance you generate 55 ideas in 20 minutes if you try

____% chance you generate 60 ideas in 20 minutes if you try

____% chance you generate 65 ideas in 20 minutes if you try

____% chance you generate 70 ideas in 20 minutes if you try

____% chance you generate 75 ideas in 20 minutes if you try

____% chance you generate 80 ideas in 20 minutes if you try

Statistical Analysis

The mean scores for each condition (low, medium, and high anchor) were compared to the "do your best" control group condition. The mean number of ideas generated were compared in each of the measured conditions of the study. In

addition, the mean scores for performance, goal set, task value, self-efficacy and quality were derived for the research data. One-way ANOVA analysis was used to indicate whether or not there were significant differences with appropriate post hoc comparisons being made after the ANOVA. Finally, these objective data were analyzed to determine the viability of the stated hypotheses. All dependent variables will also be intercorrelated. Significance testing will be done at the .05 level.

Chapter 4: Results

Subjects and Design

Ninety-nine managerial subjects participated in the study (47 Male and 52 Females). Groups of approximately 25 managerial subjects were randomly assigned to the do-your-best, low anchor, medium anchor, and high anchor conditions. Prior to the brainstorming activity, participants completed self-report instruments that measured the goal set, self-efficacy, and task value. The primary dependent variable was the number of responses generated. Two judges also rated the quality of responses wholistically based upon clarity, creativity, and the ability to motivate staff members to improve performance.

In each condition (do your best, low anchor, medium anchor and high anchor) participants were asked to individually brainstorm as many written performance ideas as they could in twenty minutes. Performance, goal level, self-

efficacy and task value mean scores were statistically measured and the data are summarized in seven tables described below.

Descriptive Data

Table 3 provides the mean scores for performance and specified goal level for each independent condition as compared to the "do your best" control group. Performance and goal level were higher in the high anchor condition. The low anchor produced a greater performance level that the medium anchored condition. Goal level was also higher in the low anchor condition when compared to the medium anchor condition in opposition to the stated hypothesis. The performance of the "do your best" group was lower than each of the anchored conditions studied.

Table 3
Means for Performance and Chosen Goal Level for Each Condition

Do-Your-Best	20 Ideas Low Anchor	40 Ideas Med. Anchor	80 Ideas High Anchor	N
Performance 17.66	27.66	21.81	32.07	99
Goal Level -----	24.54	20.33	25.18	78

Table 4 summarizes the results of the one-way ANOVA for the dependent variable of performance. The resulting ANOVA indicated a significant difference between the anchored conditions and the control group $F(3,96)=4.676$ $p=.004$. This

result supports the primary hypothesis that the use of anchoring can portend higher levels of performance. Statistically, it can be said that sampling error alone in not the reason for the differences of the mean scores between groups. However, performance did not increase as the anchor progressed upward as hypothesized.

Table 4

ANOVA -Performance

PERFORMANCE	SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Between Groups	2969.22	3	989.74	4.67	.004
Within Groups	20319.93	96	211.66		
Total	23289.16	99			

Table 5 outlines the results of the one-way ANOVA as it relates to the goals set by the anchored subjects only. Although goal level was highest in the high anchor group, the statistical outcome between groups, $F(2,75)=.552$, $p=.596$, did not demonstrate a significant difference between groups. The goal setting levels set by anchored subjects were not significantly influenced by the manipulated independent variable. Therefore, subjects did not significantly alter their goal setting levels upward in support of the hypothesis.

Table 5

ANOVA Goal Setting

GOAL SETTING LEVEL	SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Between Groups	370.583	2	185.291	.522	.596
Within Groups	26632.032	75	355.094		
Total	27002.615	77			

Table 6 provides the mean self-efficacy scores for each anchored condition. The similarity of self-efficacy scores in each of the anchored conditions suggest that the subjects believed they could perform the task at the self selected goal setting level, regardless of the specific level of the anchor. Further, the self-efficacy of subjects was relatively constant regardless of the level anchored imposed as the independent variable was manipulated throughout the study. However, self-efficacy was highest in the low anchor condition. But, even given the high anchor prompt, subjects remained confident in their ability to perform equal to or above individual goals. Therefore, the imposition of the anchor did not significantly decrease the level of self-efficacy throughout the study in support of the stated hypothesis.

Table 6

Average Self-Efficacy Mean Scores for Each Anchored Condition

Anchoring Condition	Mean	N	Std. Deviation
20.00	645.7083	24	403.7722
40.00	586.7037	27	330.9440
80.00	626.5926	27	394.0095
Total	618.6667	78	372.4353

The ANOVA Self-efficacy results demonstrate no significant difference within and between anchored conditions. Self-efficacy remained relatively constant and did not decrease significantly as hypothesized.

Table 6a
ANOVA –Self-Efficacy

Self-Efficacy	SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Between Groups	46830.22	2	23415.11	.165	.848
Within Groups	1.1E+07	75	141782.5		
Total	1.1E+07	77			

Table 7a scores the variable nature of the responses based upon the nine point Likert scale measuring task value. Overall, the results demonstrate that the self-

report measure resulted in a task value level that was approximately six on the nine-point scale. It appears that, commitment, like self-efficacy, was maintained or increased in the face of a rising anchor as hypothesized.

Table 7a
Mean Score on Seven Task Value Questions

Anchoring Level	#7	#8	#9	#10	#11	#12	#13
20.00							
M	5.79	4.87	5.58	4.20	7.12	4.62	7.45
N	24	24	24	24	24	24	24
SD	2.35	2.59	2.55	2.63	1.80	2.56	1.50
40.00							
M	6.29	5.62	6.11	5.96	6.22	5.88	6.81
N	27	27	27	27	27	27	27
SD	1.53	2.18	2.06	2.24	2.30	2.02	1.90
80.00							
M	5.67	4.96	6.53	4.62	7.28	5.03	7.82
N	28	28	28	28	28	28	28
SD	2.82	2.80	2.45	3.01	2.03	2.58	1.24
Total							
M	5.92	5.16	6.10	4.96	6.87	5.20	7.36
N	79	79	79	79	79	79	79
SD	2.29	2.53	2.36	2.72	2.09	2.43	1.61

Table 7b shows the task value scale means across the three conditions, and Table 7c shows the ANOVA results. Because the task value level did not vary much throughout the studied conditions, the ANOVA statistical outcome between groups, $F(2,76)=.883$, $p= .436$ did not demonstrate a significant difference between groups as it relates to the level of task value.

Table 7b

Average Task Value Mean Scores for Each Anchored Condition

Anchoring Condition	Mean	N	Std. Deviation
20.00	39.66	24	7.46
40.00	42.93	27	8.26
80.00	41.96	27	11.11
Total	41.59	79	9.15

Table 7c

ANOVA Task Value

TASK VALUE LEVEL	SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Between Groups	140.88	2	70.44	.838	.436
Within Groups	6388.14	76	84.05		
Total	6529.03	78			

Table 8 summarizes the summed quality rating of two independent judges who assessed the quality of the brainstorming responses. First, the consistency of the responses of judges affirms the reliability of their assessment. Second, quality of responses improved in the anchored conditions when compared to the control group.

Table 8
Means For Total Quality Measure Of Two Independent Raters

Anchoring Condition	Total Quality Mean	N	Std. Deviation
.00	3.67	21	1.24
20.00	4.45	24	1.28
40.00	4.04	26	1.31
80.00	4.36	28	1.37
Total	4.15	99	1.31

The consistency of scores in table 6 support the fact that the ANOVA results do not display significant differences in the quality measure. These results are shown in Table 8a.

Table 8a

Anova –Total Quality

Total Quality	SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Between Groups	8.71	3	2.90	1.70	.172
Within Groups	162.02	95	1.70		
Total	170.73	98			

Table 9 provides a correlation matrix outlining the correlations among the dependent variables utilized in this study. There are strong and significant relationships between performance, the goal set, self-efficacy, and quality, key areas of measured inquiry of this research study. However, the commitment measure displays a consistent negative correlation, with all other variables although this correlation is not significant.

Table 9

Correlations

Pearson Correlations	Quality	Commit.	Self-efficacy	Goal Set	Performance
Quality	1.00				
Task Value	-.083	1.00			
Self-efficacy	.283*	-.099	1.00		
Goal Set	.449*	-.201	.610*	1.00	
Performance	.550*	-.238*	.553*	.734*	1.00

*Correlation is significant at the .05 level.

Chapter 5: Discussion

Findings

I hypothesized that subjects in the high anchor condition will select higher performance goals than the do you best condition (control group). Further, performance will increase as the anchor increases when compared to the other measured conditions. Moreover, performance will be highest in the high anchor condition (do your best, low and medium anchors). Finally, there will be no significant loss of task value or self-efficacy when you compare the high anchor group to each of the other measured conditions. I tested these hypotheses in a brainstorming experiment in which managerial subjects were asked to generate performance-enhancing ideas for the work unit or the company as a whole.

The specific dependent variable results were as follows:

- Subjects in the high anchor condition did not select significantly higher goals than the control group..

- Performance in the highest anchor condition was significantly higher as compared to other levels of anchoring. However, performance did not increase as the anchor progressed upwards.
- Measured levels of task value remained consistent within each level of anchoring. A counterintuitive significant negative correlation between performance and task value was found. Therefore, my hypothesis that commitment would not decrease in the high anchor condition was affirmed.

The quality correlational measure confirmed a significant relationship relative to performance, goal set, and self-efficacy. Quality did not diminish in each of the measured conditions as the anchor was increased. This experiment provided evidence that anchoring can significantly influence the level of performance in a brainstorming exercise. Strong significant correlations were found among the dependent variables performance, the goal set, and self-efficacy. However, although goal setting was higher in the anchored conditions, the results of the ANOVA affirmed that the results were not significant. In addition, a significant negative correlation was established between task value and performance. Self-efficacy scores remained relatively constant across anchoring levels and were significantly correlated to performance, the goal set, and quality. The quality of ideas did not suffer as the anchor increased. Quality was significantly correlated to performance, the goal set, and self-efficacy. The mean scores in performance were higher in the twenty ideas (low anchor condition) subliminal prompt than the forty idea (medium anchor condition) manipulation. In analyzing this aberration in the anchoring construct, several sales managers told me that they ignored the verbal manipulation. Rather, their performance was focused on the self-efficacy instrument, which asked them to assess performance from ten to eighty ideas. In short, they replaced the verbal anchor of twenty with the written self-efficacy self-report of eighty ideas at the top. These three sales managers who switched anchors scored among the top five

scores of the ninety-nine subjects assessed. While this information is largely anecdotal, it supports the power of the anchoring construct in general. Further, it serves as a reminder that anchoring must be properly manipulated to enhance the level of the goal set and the resulting performance.

In Hinsz et al. (1997) the power of anchoring to significantly influence performance and the level of goal setting, without negatively impacting self-efficacy and commitment or task value was established. Further, the power of anchoring was tested and affirmed in an organizational context and setting in this study. Hinsz et al. (1997) was limited to college students and the task was not a real world problem. Furthermore, the quality of anchored responses, a dependent variable not tested in Hinsz, remained constant in each of the measured conditions in the present study.

Contrary to Hinsz et al., goal setting was not higher in the anchored conditions. Unlike college students, seasoned managers a trained to negotiate attainable goals by setting lower expectations at the outset of the process. This is particularly true when you consider managerial annual bonuses are determined based upon reaching stretch goals. Given this reality, I am not surprised that the participants in this study set lower goals than student participants.

Implication of Findings

First, the results of this anchoring study support the use of anchoring in a managerial setting to enhance individual performance. Moreover, this study

supports the anchoring literature because even though the anchor did not influence the brainstorming task in the linear way that was originally predicted, high anchor subjects performed at substantially higher levels than the control group.

Second, the present findings are consistent with previous research that affirms the belief that the imposition of arbitrary and unreasonable anchors influences individual judgements, especially when little or no useful information is provided (Whyte & Sebenius, 1997). However, the manipulated anchor as demonstrated in the ANOVA did not significantly influence the level of goal set, although higher goals were set in anchored conditions. There was a significant correlation established in relation to the goal set, performance, and quality. In general, this study affirms the belief that anchors are a fertile area for further management study in areas such as sales, setting of performance standards, finance, incentives, and hiring to name a few.

Thirdly, self-efficacy and task value did not differ significantly for each level of anchoring. This confirmatory finding of Hinsz et al. (1997) supports further analysis of appropriate application of anchors in managerial settings to enhance worthy performance. For example, if we can set higher revenue expectations without losing motivation, our chances of achieving stretch sales goals are greater. Moreover, psychologically we will be more focused on setting higher achievable targets because self-efficacy and task value, the precursors to motivation, will not

decrease as a result of high anchors. In assessing these opportunities for further study and performance improvement, we must be mindful of two important factors. First, although anchoring is a powerful effect, this study and our review of the anchoring literature consistently support analysis and application to each unique managerial situation. Second, groups, unlike individuals, appear to reject the opportunity to select an anchor. Rather, groups use a majority/averaging heuristic of the members of the group (Kameda, & Davis, 1990). Therefore, they are less impacted by the application of an arbitrary anchor. This finding has important implications for the use of anchors in team or group organizational settings.

Finally, the large correlations among performance, goal set, and self-efficacy suggest a strong relationship among these variables in an anchoring context. Further, the existence of such powerful correlations suggest the need for further research to probe whether or not these correlations transfer to other appropriate organizational situations. Moreover, validation of these correlations may lead to a clearer understanding about how to most effectively utilize anchoring to increase organizational productivity.

In summary, the practical opportunities for further study and enhanced performance through the use of applicable anchors continues to show great promise. In order to maximize this tool, we must design valid studies that show the utility of anchors in a variety of organizational situations.

Organizational and Managerial Learning

From a management perspective, this brainstorming application of anchoring provided support for the use of anchors in a variety of settings. For example, during the administration of this study anchoring was tested in a real collective bargaining context. In short, verbal anchors were used to provide management a foundation for strategizing how the wanted the new Teamster collective bargaining agreement to read and, more importantly, how it would improve performance in a newspaper production environment.

Senior managers met to design their view of new packaging department (production area in which the entire newspaper product is packaged into one product for distribution) without utilizing the actual collective bargaining agreement or discussing any details of the contract. In these strategy sessions, several verbal cues such as "we need to remake the mailroom as if we were a new company" served as the anchor. The outcome of these meetings provided a list of five objectives that The Baltimore Sun sought to negotiate and implement. During a thirty-five meeting negotiating process production managers added one significant goal to the list of their operational objectives, as opposed to the more normative practice of reducing you primary goals in the face of strike.

On June 11, 2001, the Union voted decisively to approve a contract that included all six of The Baltimore Sun's brainstormed objectives. Moreover, this

contract is viewed to be a model for the newspaper industry as a whole going forward. While this anecdote is not the focus of this study, it lends support for proposition that anchoring can be effectively initiated in a variety of organizational contexts. As stated earlier, anchoring appears to have enormous potential as a tool to enhance organizational performance.

Limitations of the Study

The design of this study focused on an independent brainstorming activity in which participants are asked to think of motivational and performance improvement ideas applicable to their work unit or the organization as a whole. While this study replicated other similar brainstorming studies, it was not a live test in a real organizational sense. My observations and the answers to the self-report commitment and self-efficacy instrument are less reliable due, in part, to this factor. For example, commitment and task value are often linked to "publicness" or the extent to which others are aware of the goal (Salancik, 1979). Due to the quasi-reality design of the study, the self-report task value measure (Hollenbeck, Klein & Williams, 1988) may not have been a valid measure of this construct. Similarly, the factors described above impact the reliability of the self-report self-efficacy measure. This study did not support the research of Hinsz et al. (1997) in that performance did not increase as the anchored was raised. Clearly, some of results were skewed because several sales manager, who were among the top idea generators, replaced

the verbal prompt with the higher written prompt described in the self-efficacy measure. This finding at least partially explains why the low anchor outperformed the medium anchor condition.

The results of the goal setting hypothesis affirm that subjects did not set significantly higher goals in the high anchor condition. This finding is in direct contradiction to a similar study that found significant differences when comparing the "do your best" and a self-set condition with a low, medium, and high anchor (Hinsz, Kalnbach, & Lorentz, 1997). However, the results of this study support the Hinsz et al. hypotheses that the high anchor condition led to higher performance, without the loss of self-efficacy and/or task value. The addition of a quality measure, absent in the Hinsz et al. study, affirms the proposition that quality can be maintained in the face of a manipulated anchor. Moreover, this study lends support for the belief that the "do your best condition" does not lead to increased goal setting and performance, and that unrealistic anchors do not lead to suppressed goals.

The self-efficacy self-report measure used in this study, while less prevalent in the recent literature, demonstrated a significantly higher correlation than most published studies. This significantly high self-efficacy correlation may suggest that other more utilized self-efficacy measures are limited by the tendency of participants to accurately rate their ability to perform a given task.

Suggestions for Future Research

The overall findings of this research confirm that anchoring can significantly influence the performance of managerial subjects. Recent research in the area of anchoring focuses attention on the knowledge base of the subject. One study demonstrates that anchor plausibility effects how the anchor is processed. Specifically, subjects with less knowledge about the subject will be more impacted by the anchor than judges who are more knowledgeable about the subject (Mussweiler & Strack, 1999). This finding is further demonstrated by the theory that the more uncertain subjects are about the judgement, the more likely estimates move in the direction of the anchor (Jacowitz & Kahneman, 1995). Given these findings, the issue of knowledge base of the rater or performer is a fertile area for further study, particularly in a real world organizational context.

Another recent study shows that extreme anchors can have less impact on judgements than more moderate anchors (Wegner, Petty, Detweiler-Bedell & Jarvis, 2001). In short, the Wegner et al.study challenges the traditional "anchor and adjust" construct (Strack & Mussweiler, 1997). For example, an expert in mathematics is less influenced by high anchor estimates that conflict with his expert knowledge of the subject. These findings conflict with the "anchor and adjust" heuristic that was the foundation to this study. Further, Strack et al. (1997) hypothesized that attitude-change theory suggests that anchoring should occur if the

anchors are connected with sources that are knowledgeable and trustworthy. Recently, anchoring has been affirmed to be dependent on the expertise of the source of the anchor (Jarvis, Wegener, & Petty, 1995b), knowledge of the anchor recipient (Mussweiler & Strack, 2000; Wegener, Bedell, Petty, & Jarvis, 1997), and, in some cases, whether responses to the anchor are self-generated (Mussweiler & Strack, 1999). These suggested connections would further the body of work relative to the effective use of anchoring in a variety of work and educational settings with a variety of participants.

Another area of future research is cognition as it relates to effort pertaining to higher levels of thinking. The belief of some researchers suggests that perception of the target might be likely to persist or change in higher level thinking activities compared with anchoring from less effortful thought (Petty, Wegener & White, 1998). Finally, the use of methods such as "anchor revocation" should be studied in further detail. Anchor revocation, by definition, is the introduction of an anchor to the decision or performance task and then revoking that same anchor. Prior studies indicate that anchor revocation process will neutralize the influence of the anchor in the goal selection process. Moreover, an anchor that is not stated but merely appears in the context of the decision task may fail to alter the goal setting process (Bussman & Hinsz, 1998).

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