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# ESCALATION OF COMMITMENT IN INFORMATION TECHNOLOGY PROJECTS: A GOAL SETTING THEORY PERSPECTIVE

BY

VIJAY KASI

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree

Of

Doctor of Philosophy

In the Robinson College of Business

Of

Georgia State University

GEORGIA STATE UNIVERSITY
ROBINSON COLLEGE OF BUSINESS
2007

**ACCEPTANCE**

This dissertation was prepared under the direction of the *Vijay Kasi* Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Doctoral of Philosophy in Business Administration in the Robinson College of Business of Georgia State University.

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**ACKNOWLEDGEMENTS**

This dissertation would be incomplete without acknowledging the support of many people. First and foremost, I would like to thank my advisor Mark Keil for his help in completing my dissertation. Words are not enough to express his encouragement, support and guidance and without which this would not have been possible.

I would like to thank my dissertation committee for valuable guidance and feedback thought out the whole process.

I would like to thank the entire CEPRIN including Richard Welke, Arun Rai and Lars Mathiassen for help, guidance and support.

I would like to thank Naveen Donthu for enlightening me with the existence of this PhD program.

Last but not the least, I would like to thank my mom and dad for the nurturing me into who I am and without whom this would not be possible. Lastly I would like to thank my dear wife, Savitha who helped me immensely to complete my dissertation in its final stages.

ABSTRACT

ESCALATION OF COMMITMENT IN INFORMATION TECHNOLOGY PROJECTS: A GOAL SETTING THEORY PERSPECTIVE

BY

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Aug 30, 2007

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Information technology (IT) projects are prone to failure. One explanation for the high failure rate among IT projects is that managers overly commit to a failing course of action, a phenomenon referred as escalation of commitment. While the notion of goals and commitment are central to the phenomenon of escalation, very few prior studies have investigated their impact on escalation. In this study, a research model rooted in goal setting theory is advanced to better understand escalation of commitment of IT project managers. A role-playing experiment with 350 IT managers was used to test the proposed research model. The results of the study suggest that IT managers are more willing to escalate their commitment under the influence of easy and vague goals compared to difficult and specific goals. Initial goal commitment of IT managers and the level of project completion were found to have a significant effect on IT manager's willingness to continue. Initial goal commitment of IT managers was also found to moderate the relationship between goal difficulty and willingness to continue. In other words, when there is a higher level of goal commitment, an easy goal will have a greater effect in terms of promoting an individual's willingness to continue.

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# Chapter 1. Introduction

This research examines the phenomenon of escalation of commitment to a failing course of action in IT projects. The escalation phenomenon is examined in the context of goals and goal related attributes using goal setting theory. This chapter provides a basic introduction to the problem in addition to its importance and relevance.

## *1.1. The Problem*

The growth of software and information systems in the last decade is unprecedented. Software and information systems are becoming an integral part in the day to day activities of individuals and organizations. In the U.S., information technology (IT) capital spending has reached an estimated 50 percent of nominal business capital spending (Benko and McFarlan 2003). Yet, evidence suggests that 40 percent of information technology (IT) investments fail to deliver their expected returns (Benko and McFarlan 2003). The IT projects that fail cost U.S. businesses an estimated $75 billion each year (Johnson 1999). The high failure rate associated with IT projects is not new. Rather, it is something that we have known about and lived with for decades (Jones and McLean 1970).

A recent study by Standish Group International, Inc., of over 50,000 completed IT projects over a decade, suggests that only 29% of all IT projects succeed (delivered on-time, within budget and with all the required features), while 51% were challenged (delivered late, over budget and/or with less than required features) and 21% were cancelled (Standish-Group 2004). In many cases, IT projects go wildly over budget or

drag on long past their originally scheduled completion date. Such projects are labeled "runaway systems" in the trade press (Keil, et al. 2003, Mehler 1991, Willbern 1989).

The behavior that underlies such runaway systems involves "escalation of commitment to a failing course of action", a phenomenon that has been documented in the management literature (Brockner 1992) and has been extended to IT projects (Keil, et al. 2000, Keil 1995, Keil, et al. 2003). Keil et. al (2003), surveyed 2,231 IS audit and control professionals and found that 30-40% of IT projects involved some degree of escalation. Escalation in common language is often referred to as "too much invested to quit", "throwing good money after bad", or "flying in the face of defeat". In the management and psychology literature, this phenomenon has been studied under the rubrics of escalation of conflict (Teger 1980), entrapment (Brockner and Rubin 1985), escalation of commitment (Staw 1981, Staw and Ross 1978), and the sunk cost effect (Arkes and Blumer 1985). The prominent theories used in the past to study escalation of commitment include self-justification theory, prospect theory, agency theory and approach avoidance theory. While these theories have provided considerable insight into the phenomenon, there is still much that is unknown about what motivates escalation behavior.

Brockner (1992) in his seminal review on escalation literature explains that escalation involves instances in which decision makers become overly committed and continue to invest resources in the hope of attaining some goal (p39). Yet, very little future work has elaborated on this by explicitly examining goals to understand and explain how they

motivate an individual towards escalation. Fox and Hoffman (2002) in their conceptual work, appear to be closest in establishing a relationship between goals and escalation. They identify goal valence (the extent of attractiveness or desirability of the goal), from motivational theories (Lewin and Atkinson theories of motivation) as one of the reasons why individuals persist in their actions. Kernan and Lord (1989) empirically examined the relationship between explicitness of a goal and escalation behavior. They found that vague goals result in escalation behavior. With the exception of these two articles, there has not been any work that uses goals to explain or understand escalation. Each of these two articles relates one attribute of goals to escalation, but fails to consider multiple attributes of goals. This is understandable as goals are not central to their work. Given the possible association of goals with escalation, it is natural to examine goal setting theory, where goals are viewed as central to explaining human behavior. Goal setting theory explains the nature of goals that make an individual (1) increase effort (2) persist with actions and (3) direct effort and attention towards achieving the goal (Locke 1968, Locke and Latham 1990, Locke and Latham 2002). These three facets of goals are recognized in the escalation literature as factors that may lead one to escalate. Thus, goal setting theory is not only relevant in this context, but also is one of the most prominent theories in management and psychology. Goal setting theory's prominence is highlighted by Miner (2003)'s analysis. Miner analyzed 73 established organizational behavior theories in organizations on the basis of their scientific validity and practical usefulness. He classified goal setting theory as one of the top eight theories that was high on both dimensions (Miner 1984, Miner 2003).

In this research, I use goal setting theory to gain deeper understanding of the escalation phenomenon. I intend to identify the causal factors from goal setting that may cause an individual to escalate his commitment. Based on the other factors discussed in goal setting theory, I identify variables that may moderate the relationship between goals and escalation. A research model is developed that relates the constructs of goal setting to escalation and helps to answer the following research questions that guide the dissertation research:

1. Do goals and other goal setting attributes impact an individual's escalation of commitment?
2. How can goal setting theory be used to understand escalation of commitment?
3. What are the variables that moderate the relationship between attributes suggested by goal setting theory and escalation?

The remainder of this proposal is structured as follows: Chapter II titled "Literature Review" provides the necessary background on escalation and goal setting theory. In the case of escalation, prominent theories that have been used in the past are reviewed. In the case of goal setting theory, a review of the various findings are summarized, and the variables that are posited to moderate the relationship between goals and performance are reviewed. Chapter III on "Research Model and Hypotheses" presents the proposed research model based on goal setting and escalation theories. This chapter provides the background for the hypotheses that are posited in this research. Chapter IV on "Research Methodology" provides the research setting, research design, research analysis and the results. Chapter V, "Results and Discussion" presents the results and discusses the implications, limitations, and directions for future research.

# Chapter 2. Literature Review

This chapter provides the theoretical and conceptual background for the key research questions and includes a review of literature in the fields of escalation of commitment and goal setting. The chapter is organized as follows: First, escalation literature is reviewed which includes a brief introduction to the topic and a review of some prominent theories that have been used in the past to understand and explain escalation. Second, the rationale for examining goal setting theory is explained. Third, goal setting theory is reviewed, including a summary of discussion and findings from past research on the major constructs of the theory and moderators of the relationship between goal content and performance. Finally, a brief summary of the chapter is presented along with the key research questions that drive this research.

## *2.1. Escalation Literature*

The phenomenon of escalation has been studied by researchers since the mid-1970s. Escalation refers to situations that have gone astray in which the decision maker faces a dilemma: whether to continue the losing path *or* not. Continuing offers the hope for eventual success, but bears with it the potential for even greater losses. In such cases some individuals are known to exhibit escalation behavior. Escalation is defined as:

> *"A continued commitment in the face of negative information about prior resource allocations, coupled with uncertainty surrounding the likelihood of goal attainment" (Brockner 1992).*

Escalation in common language is referred as “too much invested to quit”, “throwing good money after bad” or “flying in the face of defeat”. In the literature of management and psychology this phenomenon is studied under the rubrics of escalation of conflict (Teger 1980), entrapment (Brockner and Rubin 1985), escalation of commitment (Staw and Ross 1978), and sunk costs (Arkes and Blumer 1985). Many theories have been used to explain escalation. Most prominent among these are: Self justification theory (Staw 1976), Prospect theory (Whyte 1986), Agency theory (Harrell and Harrison 1993, Harrison and Harrell 1994) and Approach avoidance theory (Brockner and Rubin 1985, Rubin and Brockner 1975).

Before reviewing the prominent theories from the past, let us gain a basic understanding on what escalation means and the contexts in which it is applicable.

### 2.1.1. Understanding Escalation

Escalation is a *behavioral* response (escalation behavior) to a specific *situation* in the environment (escalation situation). Central to understanding the concept are “escalation behavior” and “escalation situation”. Research in this domain, in general focuses on measuring the degree of escalation behavior of the subjects in escalation situations (Mann 1996). The escalation situations can be broken down into escalation context and antecedents of escalation behavior (see Figure 2.1). Staw and Ross describe:

> *“escalation situations are contexts where things not only have gone wrong, but where potential actions aimed at curing the problem may actually deepen or compound the difficulty”( Staw and Ross, 1987:p40)*

Brockner's definition has three critical elements relevant to the escalation situation: the continued commitment of resources to a course of action, acknowledgement that negative feedback has already been received regarding the course of action that is being continued and goal attainment as the end that needs to be achieved (Brockner 1992).

Although the definition of escalation situations may vary with various researchers, there are some characteristics of the situation that are true to most research where escalation behavior is observed (Fox and Hoffman 2002, Fox, et al. 1995):

1. The individual is engaged in a goal-directed activity.
2. Resources such as money, time and effort, have been expended to attain the goal.
3. Expenditures have not yielded expected results.
4. A decision is faced regarding the course of future action: Continue investing in the same course of action or desist from that line of activity.
5. Future prospects seem dim for making gains or even covering losses by continuing in the same path.
6. The individual decides to persist in his original path.

There are factors that encourage an individual to persist in his previously chosen path thus investing more resources such as time, effort and money especially within escalation situations. These are known as antecedents to escalation behavior. Antecedents to escalation behavior include social, psychological, project, organizational or contextual factors (Keil, et al. 1995, Ross and Staw 1993, Staw and Ross 1987).

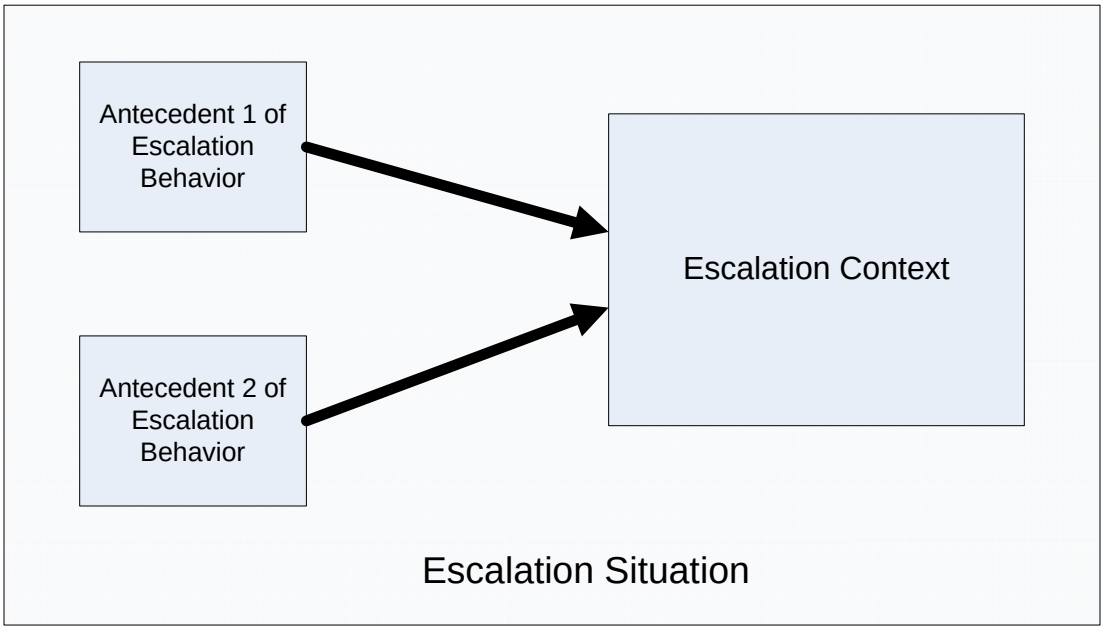


**Figure 2.1: Escalation situation**

The main research thrust in this domain has been to find specific causal factors that could explain escalation behavior (known as antecedents) through experimentation with student subjects. Escalation experiments typically involve putting the subject in an escalation context and manipulating one or more variables (that are posited to cause escalation) to see the extent to which variance in the dependent variable (degree of escalation) is explained.

The degree of escalation behavior is commonly measured in two ways: how much money was allocated after the negative feedback made success uncertain (Staw 1976) or the probability that the subject would continue the endeavor, given a certain amount of negative feedback (Keil, et al. 1995). In both cases, analysis of variance is often employed to examine if the treatment group exhibited significantly higher escalation than the control group.

The prominent theories that have been used in the literature to understand and explain escalation behavior are briefly reviewed in subsequent sections. These include: Self justification theory, prospect theory, agency theory and approach-avoidance theory.

### 2.1.2. Self Justification Theory and Personal Responsibility

Self justification theory is rooted in Festinger's (1957) theory of cognitive dissonance. Self justification theory asserts that individuals tend to escalate their commitment to a course of action in order to *self justify* their previous behavior. The escalation behavior is a result of an individual decision maker feeling compelled to justify prior actions in order to prove to himself (psychological self justification) and others (social self justification) that he is competent and rational (Keil, et al. 2000). Psychological self-justification is an attempt to justify one's own actions so as to reduce cognitive dissonance, while social self justification is an attempt to save face or credibility with others (Staw and Ross 1987).

An individual decision maker with a higher degree of personal responsibility exhibits a greater tendency to escalate commitment to a previously chosen course of action.

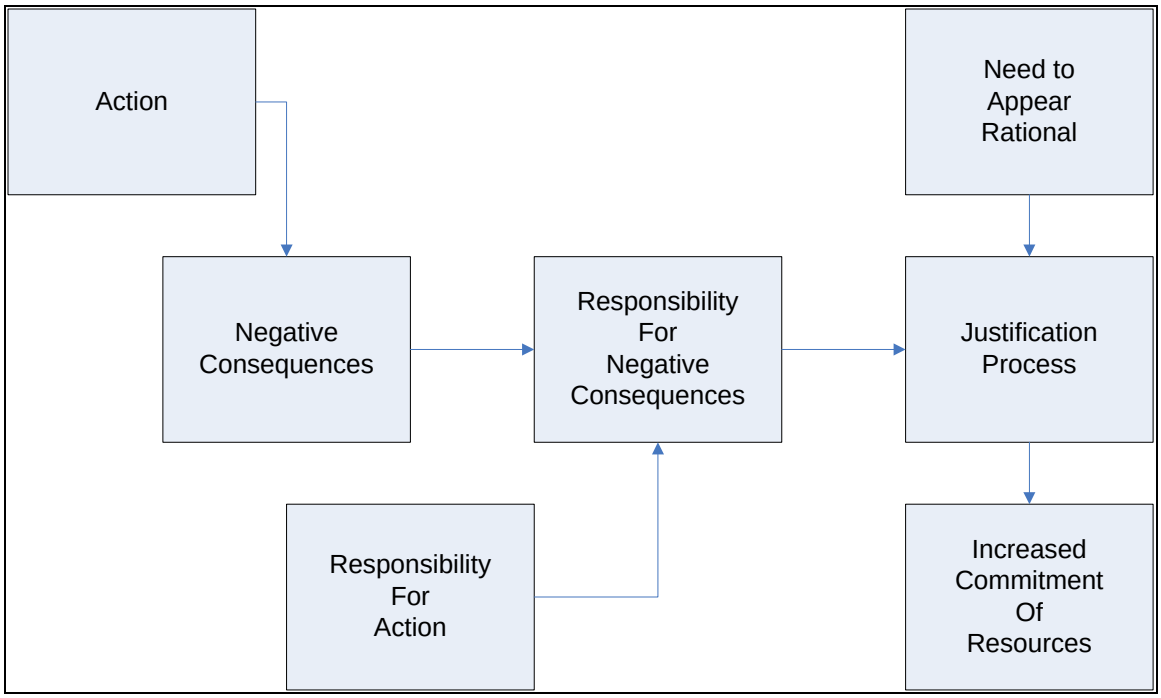


**Figure 2.2: Self-Justification theory (Staw 1976)**

Personal responsibility is a central concept in self justification. In his 1976 paper, Staw argued that when individuals feel responsible for investment decisions that result in a negative outcome, they will rationalize by greatly enlarging their investments (See Figure 2.2 for Staw's Model). Staw operationalized the construct of personal responsibility by randomly assigning subjects to one of two conditions: that they initiated an endeavor or they took charge after the endeavor had already begun. The assumption was that people feel more personally responsible if they choose to initiate an endeavor than if they take charge after the endeavor has already begun. Half the subjects were first asked to allocate $10 million to one of the two R&D divisions, and the other half of the subjects were told the decision was made beforehand by another financial officer (low personal responsibility). Performance was the other independent variable manipulated in the scenario. In half of the cases, the chosen division did poorly (negative feedback) and the rejected division did well (positive feedback). In the other half, the performance of the

two divisions was reversed. Subjects allocated significantly more resources to a project in the high responsibility and negative feedback condition supporting self-justification theory.

Although Staw and his colleagues had some convincing evidence in their papers, other researchers such as Schwenk (1988) and Singer and Singer (1985, 1986) failed to replicate the findings of the Staw's experiment. This led to the introduction of some alternative theories and explanations regarding the escalation phenomenon. The next section reviews prospect theory explanations regarding the escalation of commitment.

### 2.1.3. Prospect Theory and the Sunk Cost Effect

Prospect theory was advanced by Kahneman and Tversky (1979) for the purpose of understanding the cognitive biases that influence human decision under conditions of risk and uncertainty. A prospect theory explanation for escalation focuses on the cognition of individuals in a situation in which they have already made an investment (sunk cost situation). Arkes and Blumer showed that investments already made on a project (sunk costs) would cognitively bias an individual's decision to continue the endeavor (Arkes and Blumer, 1985). They provide evidence in their work by a series of experiments.

In sunk cost situations, individuals process the information from the situation and their resulting behavior is a product of how they frame the situation. The central tenet of prospect theory is that individuals make a decision based on their value function by evaluating their possible outcomes in relation to some reference point. The reference

point is the neutral point against which outcomes are judged either as positive or negative (Kahneman and Tversky 1979). The money already invested would form the reference point and the framing of the situation around this reference point would have an effect on the decision maker engage in risk seeking or risk averse behavior. This risk averse or risk seeking behavior has a direct impact on whether the individual continues or discontinues an existing project (Arkes and Blumer 1985, Keil, et al. 2000).

The scenarios used in the sunk cost studies included information concerning the portion of the project that had already been completed. For example, in one of Arkes and Blumer's (1985) experimental scenarios, the subjects were given a scenario in which they were the president of a company and they were in charge of a $10 million project involving the manufacturing of radar blank planes. Two levels of sunk cost were considered: $9 million invested and 90% of the project completed (high level of sunk cost), $1 million invested and 10% of the project completed (low level of sunk cost). Subjects under the high sunk cost treatment exhibited a much higher degree of escalation than subjects in the low sunk cost treatment. Arkes and Blumer concluded that sunk cost was an antecedent to escalation behavior based on these experiments. Conlon and Garland (1993) contended that in most of the sunk cost studies such as the one above, project completion is confounded with the level of sunk costs. Conlon and Garland argued that the proximity of project completion (what they call, the "completion effect") was the main reason individuals exhibited escalation behavior and not just sunk costs. They manipulated sunk costs and completion levels separately and found that the completion effect was more powerful than the sunk cost effect. They conclude that as the

proximity to the desired goal increased, the completion effect swamps the sunk cost effect. Goal proximity is also discussed as one of the driving forces that makes an individual persist in the approach avoidance theory discussed later in the chapter. The next section reviews the explanation of escalation based on agency theory.

### 2.1.4. Agency Theory and Goal Incongruence

An agency relationship is said to exist when one party (principal) delegates work to another (agent). In this relationship the agent performs some services on the principal's behalf (Jensen and Meckling 1976). The goal incongruence between principal and agent can create a situation in which the agent acts to maximize his or her own utility, rather than acting in the best interest of the principal (Eisenhardt 1989).

Escalation is expected to result because the agent could continue allocating resources to the project while at the same time concealing or distorting any negative information when communicating with the principal, fearing of negative consequences. This phenomenon is also known as "face saving". According to Harrison and Harrell, if an agent's reputation was hurt by a decision to discontinue a project he or she had started, the event would negatively affect the agent's future career opportunities, thus providing an incentive to shirk. In such situations, agents are expected to reach decisions that maximize their self-interest at the expense of the principal's interests (Harrell and Harrison 1993, Harrison and Harrell 1994).

The two concepts central to Agency theory are: Goal congruency and Information asymmetry. Goal congruency represents the degree to which the agent and principle have the same goals. Information asymmetry represents the degree to which the agent can conceal information from the principle. Thus, under conditions of goal incongruence and information asymmetry, there is greater potential for escalation.

The next section briefly reviews approach avoidance theory explanations that have been used in the literature for understanding escalation.

### 2.1.5. Approach Avoidance Theory and Entrapment

Approach avoidance theory states that an individuals' behavior is determined by the total sum of all the driving and restraining forces. Driving forces encourage him to *approach* the goal and the restraining forces encourage him to *avoid* his goal (hence called approach-avoidance).

Escalation is said to occur when persistent forces that encourage escalation outweigh restraining forces that encourage abandonment (Brockner and Rubin 1985, Rubin and Brockner 1975). Earlier, Teger (1980) had proposed his escalation explanation in conflict situations in which individuals perceive they have "*too much invested to quit*". Brockner, Rubin and their colleagues recognized that Teger's phenomenon was present not only in conflicts but also in a number of situations such as gambling, waiting in line, etc. They conducted a number of experiments in which subjects invest time and money on a game or a problem in order to win a jackpot. There was usually a point beyond which the

subject began to lose money. They termed the resource allocations past that point as "*entrapment*" because the net benefits were negative. Thus, Brockner and Rubin consider Teger's conflict escalation as a subset of the broader "entrapment" phenomenon. In entrapment situations, there are both driving forces and restraining forces. The driving forces that encourage persistence include: (1) the size of the reward for goal attainment (2) the proximity to the goal, and (3) the cost of withdrawal. The cost of persistence is the restraining force that encourages abandonment (or discourages persistence). In escalation situations, the cost of persistence is often overshadowed by one or more driving forces such as size of the award for goal attainment, cost of withdrawal and proximity to the goal. Hence the individual is entrapped to escalate his commitment. Figure 2.3 shows the approach avoidance theory as a graphic based on Mann (1996).

Ambiguity is seen as one of the drivers that make an individual persist in his/her actions (See Figure 2.3)(Lewin 1951). Bowen (1987) proposed ambiguity in the form of "*equivocality*" as an alternative explanation of escalation. His work is further substantiated by Bragger and his colleagues (Bragger, et al. 1998, Bragger, et al. 2003, DiFonzo and Bordia 1998, Dixit 1989).

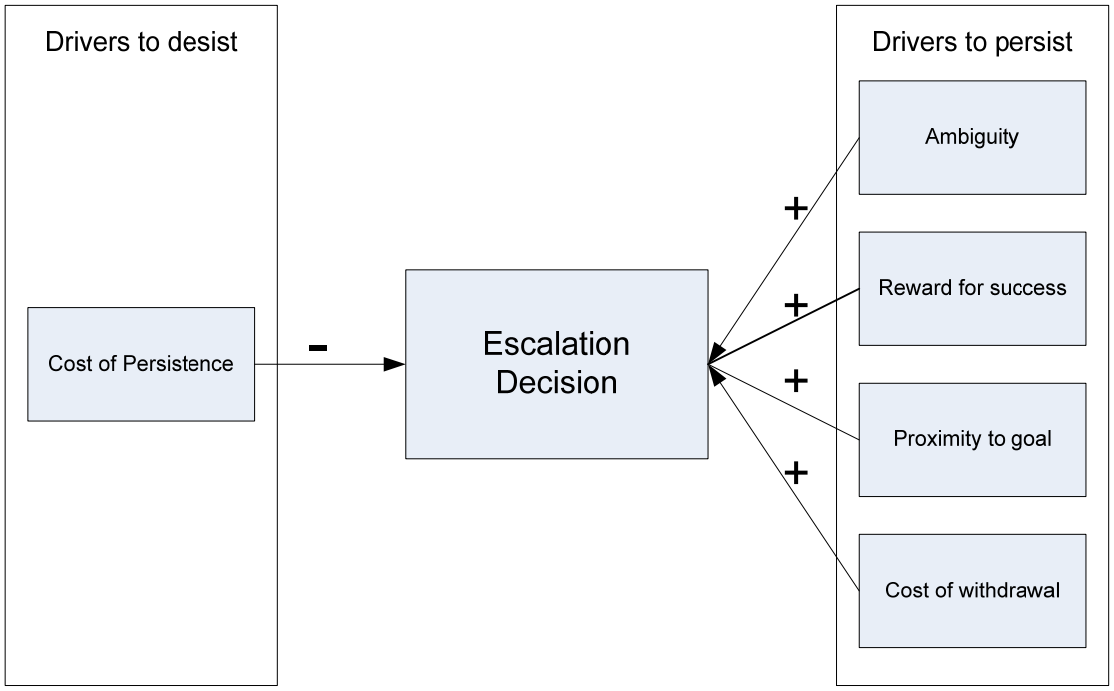


Figure 2.3: Approach avoidance theory

## 2.2. Rationale for Examining Goal Setting Theory

As already discussed, escalation is a *behavioral* response (Escalation behavior) to a specific *situation* (Escalation situation). An individual is said to exhibit escalation behavior, if s/he continues his/her course of action and allocates more resources (resources could be time, money or effort).

An individual who exhibits escalation behavior is displaying goal directed behavior. S/he is committing more resources to achieve a goal. In the hope of patching up the difficulties s/he is already in, s/he invests more resources (time, money, effort) and this over-commitment of resources actually compounds the difficulty s/he is already in (i.e. more is not better). On the other hand, we have goal setting theory, which posits that performance is increased under certain conditions that lead an individual to increase effort, direct his/her attention and persist in actions. Although the criterion is the same ( i.e. invest

more resources vs. increase the effort, direct attention, persist actions) the connotation is different in the two theories. Looking beyond the connotation, both escalation literature and goal setting theory are identifying factors that cause individuals to persist.

Most research in the escalation literature has been directed at identifying the factors that cause escalation behavior. Various theories have been employed for the same objective of identifying the causal factors. Staw (1976) used self-justification theory and identified "personal responsibility" as a cause of escalation behavior. Whyte (1986) used prospect theory and identified "sunk costs" as the cause of escalation. Harrison and Harrell (1995) used agency theory and identified goal congruency and information asymmetry as causes of escalation behavior. Conlon and Garland (1993) used the completion effect and identified goal proximity as the cause of escalation behavior. Brockner and Rubin (1985) used approach avoidance theory to identify reward, proximity and ambiguity as the major forces that drives one to persist. Table 2.1 shows the antecedents identified by various theories and their definitions. This table is adapted from Mann (1996).

**Table 2.1: Antecedents of escalation behavior**

| Theory | Key Source | Antecedents | Definitions |
|---|---|---|---|
| Self-Justification Theory | Staw (1976) | Psychological responsibility | Degree to which withdrawal is damaging psychologically. |
| | | Social responsibility | Degree to which withdrawal is damaging socially. |
| Prospect Theory | Whyte (1986) | Sunk cost effect | Degree to which sunk cost impacts decision to continue. |
| Agency Theory | Harrison and Harrell (1995) | Goal congruency | Degree to which the agent and principle have the same goals. |
| | | Information asymmetry | Degree to which the agent can conceal information from the principle. |
| Approach Avoidance Theory | Brockner and Rubin (1985) | Reward for success | The size and timing of the payoff if successful. |
| | | Cost of withdrawal | The total cost in terms of time, money and resources if the project is called off. |
| | | Goal proximity (Completion effect) | The degree to which the project is close to the goal. |
| | | Ambiguity | Degree to which goal is salient. |

It is interesting to note that some of the theories make reference to goals. This suggests the importance of goals in the context of escalation. However, prior theories have suggested goal proximity and goal congruency as the only two goal-related factors that may influence escalation. Indeed, with the exception of agency theory goals are not central to any of these theories and goal characteristics (e.g., difficulty and specificity) are not captured by any of these theories. Thus, while goals would appear to be relevant

to the study of escalation, there are only two articles in the literature that explicitly attempt to relate goals and escalation. Fox and Hoffman (2002) study the motivations for an individual's escalation of commitment. They consider escalation as a case of persistence and identify four factors based on theories of motivation that cause escalation: goal valence, proximal closure, clarity of completion and intrinsic motivation. They refer to goal valence as the attractiveness of goal which is similar to goal commitment in the goal setting literature. Their definition of proximal closure is similar to goal proximity in the goal setting literature. Thus, they study two aspects of goals, goal valence and goal proximity in their study. Kernan and Lord (1989) examined the effects of explicit goal and specific feedback on escalation. They examined the effect of 2 levels of goals (explicit, general) and 3 levels of feedback (small, moderate or large failure) on escalation. They found that the general goal subjects escalated their commitment more than explicit goal subjects. While feedback had an effect on explicit goal subjects, it did not have any effect on the general goal subjects. The explicitness or general nature goal is the same as goal specificity in the goal setting theory. With the exception of these two articles, there has not been any work that explicitly uses goals to explain escalation. Given the close association of goals with escalation, it is natural to examine the possible explanatory power of goal setting theory, in which goals are viewed as central to explaining human behavior. Goal setting theory identifies factors that cause an individual to increase effort, direct attention and persist in an endeavor as these behaviors would increase the task performance (i.e. more is better). Goal setting theory is based on the proposition that goals regulate an individual's behavior. Both goal setting theory and escalation research are observed to be answering the same question, although with

different intentions.: *What are the factors that make an individual increase effort, direct attention and direct actions?* Thus goal setting theory provides a reasonable base to identify factors that are related to goals that cause escalation behavior in individuals.

A number of concepts such as proximity to goal (Conlon and Garland, 1993), ambiguity (Brockner and Rubin, 1985), feedback, commitment (Staw, 1976) are related to both theoretical streams. It is rather surprising that in spite of some commonalities there has been little work to integrate the two theory streams. Thus, in this research we examine whether goal setting theory can shed further light on our understanding of the escalation phenomenon. The next section reviews goal setting theory in detail, discussing the major constructs and the moderators of the main relationship between goal content and task performance.

## *2.3. Goal Setting Theory*

Goal setting theory is recognized as one of the well established theories in organizational science (Locke and Latham 2004). Miner (2003) analyzed 73 established organizational behavior theories on the basis of estimated scientific validity and estimated practical usefulness of application. Goal setting theory was rated as one of the few theories that were high on both (Miner 1984, Miner 2003).

Goal setting theory states that difficult, specific goals lead to higher performance as compared to easy, vague goals. Goal setting theory is based on the premise that an

individual has conscious ideas and these conscious ideas regulate his/her action (Locke 1968, Locke and Latham 1990). In goal setting theory, a goal is defined as

> *"what an individual is trying to accomplish; it is the object or aim of an action" (Locke, et al. 1981, p126).*

An individual may choose the goal (self-set goals), be assigned a goal (assigned goals), or set the goal with the active participation of his/her management (participative goals). In a series of studies, Latham and his colleagues found that there is no significant difference between participative versus assigned goal setting (Latham and Marshall 1982, Latham and Saari 1979).

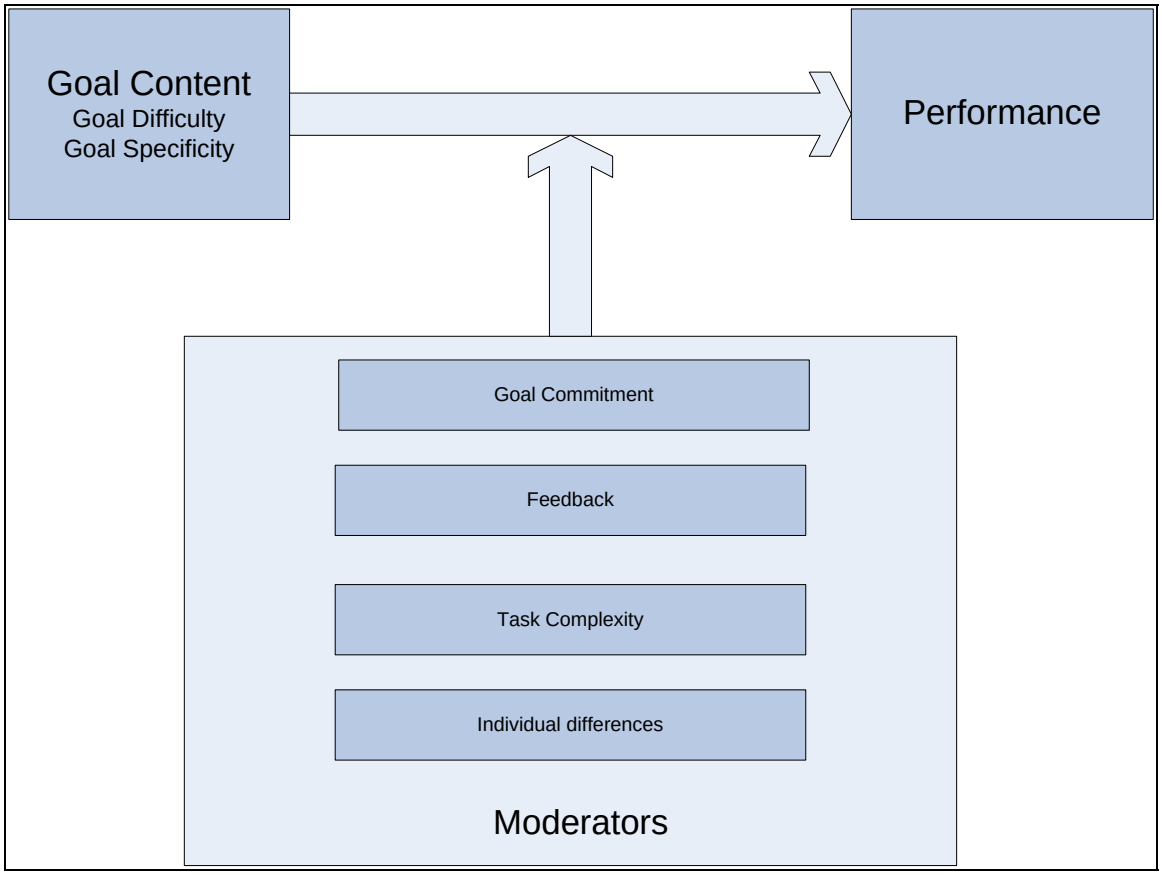


**Figure 2.4: Goal Setting Theory**

Goal setting as a theory was first discussed by Edwin A. Locke in his seminal article published in 1968 in Organizational Behavior and Human Performance (Locke, 1968) . Since then, hundreds of articles have been published in various journals. The results of goal setting studies generalize across laboratory and field settings, individual and group goals, and goals that were assigned or set participatively. The validity of goal setting theory has been established across 88 tasks ranging from laboratory and field experiments to simulations (Locke, 1986). Apart from the hundreds of articles published in various journals, there have been several reviews and meta-analyses performed on the empirical studies since 1968 (Locke and Latham, 1990, Locke and Latham, 2002, Locke, et al., 1981, Mento, et al., 1987, Tubbs, 1986). The next section discusses some of the results of meta-analyses that have been conducted in goal setting.

### 2.3.1. Results from Meta-analyses

Tubbs (1986) conducted a meta-analysis of over 87 studies. He found strong support for the relationship between goal difficulty on performance, and stated that "*there appears little need to continue conducting studies solely concerned with testing the effects of goal difficulty and goal specificity on performance*" (p480). He found a higher effect size for studies that examined goal difficulty under laboratory settings than those that examined goal difficulty in field settings. Locke et. al.(1981, p131), however noted no difference between lab and field settings and concluded that "*considerable confidence can be placed in (the experiment studies in the literature) in terms of both internal and external validity*". Tubbs (1986) also found participative goal setting to have a larger effect size than assigned goals. But, they cautioned that finding may be a result of the fact that most

studies had not held the goal level constant in their studies. They urged further research to focus more on moderator effects of the relationship between goal content and performance.

Mento, Steel and Karren (1987) examined all the empirical studies from 1966 through 1984 and based their meta analysis on 70 studies. In addition to the conventional goal content – performance relationship, they looked at the effect of moderators such as setting (lab vs. field), study type (correlational vs. experimental), feedback, incentives and level of education on the relationship between goal content and performance. Although they found that lab studies had a slightly larger effect size on the relationship between goal difficulty and performance than field studies, the difference was not statistically significant. The authors found that presence of feedback with specific, hard goals led to the greatest performance[*]. When subjects participated while choosing the goal, this led to slightly greater performance[†]. They failed to detect any other significant moderators in their study. The results on feedback and participation were based on a small set of studies and thus they urged future research to confirm this finding.

Klein, Wesson, Hollenbeck and Alge (1999) conducted a meta-analysis of 83 studies. Using the aggregated empirical evidence from these 83 studies, they clarify the role of goal commitment in the goal setting process. They found strong support for the relationship between goal commitment and performance. They also found strong support

[*] Effect size 'd' in this case was found to be 0.87, which qualifies as a strong effect size according to Cohen (1988)
[†] Effect size 'd' in this case was found to be 0.20, which qualifies as a weak effect size according to Cohen (1988)

for their hypothesis that goal difficulty moderates the relationship between goal commitment and performance. They found that the relationship between goal commitment and performance was stronger for difficult goals than easy goals. In addition they also found positive relationships between goal commitment and expectancy, attractiveness, and motivational force.

The next section explains the major constructs in goal setting theory. Goals as mental processes have two major attributes, content and intensity. The content of a goal refers to the object or result being sought. The intensity of a goal pertains to the process of setting the goal or of determining how to reach it. Goal content has two dimensions: *goal difficulty* and *goal specificity*. Goal intensity on the other hand pertains to factors including the scope of the cognitive process, the degree of effort required, the importance of the goal, and the context in which it is set. The usual predictors of goal setting (goal difficulty and goal specificity) form the Goal content variables. The  variables moderating the relationship between goal content and performance largely form the Goal intensity variables. The next section explains the major constructs in goal setting theory and reviews the relevant literature on this.

### 2.3.2. Major Constructs in Goal Setting Theory

Goal setting theory as outlined by Locke and Latham (1990) consists of goal content as the predictor variable and task performance as the dependent variable. Several variables are discussed that potentially moderate the relationship between goal content and task performance. Goal content refers to the object or result being sought. The two dimensions of goal content: goal difficulty and goal specificity are discussed below.

### 2.3.2.1. Goal Difficulty

Goal difficulty refers to the likelihood that an individual can achieve the goal; an individual would be less likely to achieve a difficult goal than an easy one. This assumes that goals are accepted by the subject (goal acceptance). There is a linear relationship between goal difficulty and performance. Locke and Latham (1990) examined a number of studies and in each case the function was linear except when subjects reach the limits of their ability at high goal difficulty levels; in such cases the function levels off. This is expressed in Figure 2.5. When the level of difficulty far exceeds the ability of the subject, the performance might decrease.

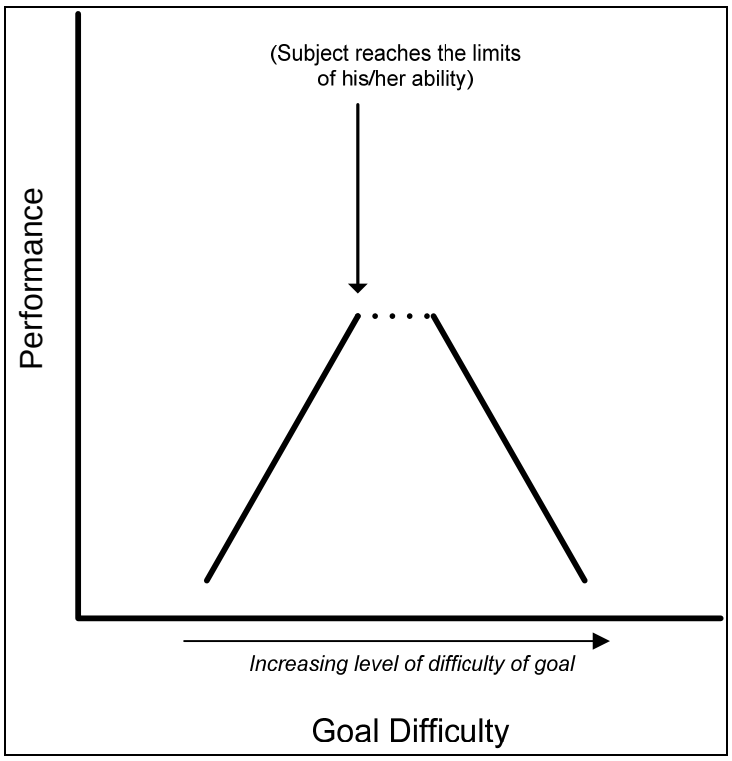


**Figure 2.5: Goal Difficulty -- Performance Relationship**

There is some confusion in the literature about the use of the terms goal difficulty and goal level. Locke et al (1989) explain that these two are highly correlated, but they are different. Goal difficulty refers to the probability that a goal can be reached but goal level

refers to the level of performance that needs to be achieved. Thus a goal that only 10% of the subjects can reach is asserted to be more difficult than one that 90% of the subjects can reach. On the other hand, a goal to complete 50 toy assemblies within a given time represents a higher level of goal than 10. Although 50 toy assemblies is more difficult than 10, still both might be easily achievable by an individual and thus there cannot be much variance in performance (Locke, et al. 1989).

**Table 2.2: Goal difficulty -- Performance meta analyses**

| Source | No of Studies | Sample Size‡ (N) | Effect Size (d) |
|---|---|---|---|
| Chidester and Grigsby (1984) | 12 | 1,770 | 0.52 |
| Mento, A.J., Steel, R.P.and Karren, R.J. (1987) | 70 | 7,407 | 0.55 |
| Tubbs (1986) | 56 | 4,732 | 0.82 |
| Wood, R.E., Mento, A.J.and Locke, E.A.(1987) | 72 | 7,548 | 0.58 |

There have been at least four meta-analyses of the goal difficulty – Performance relationship. The results of these four studies are shown in Table 2.2. The individual studies used in each of these meta-analyses are overlapping. The studies that were included in these meta-analyses varied goal difficulty quantitatively usually by an experiment. The effect sizes varied from 0.52 to 0.82. According to Cohen (1988), an effect size is considered a moderate effect size if d is between 0.50 and 0.75. A value greater than 0.75 is considered to be a strong effect size. Thus, the effect sizes between goal difficulty and performance varied from moderate to strong. It should be noted that the mean effect size (d) reported by Tubbs (1986) is larger than in the other meta-analyses, especially those of Mento, Steel and Karren (1987) and Wood, Mento and Locke (1987). This is probably because Tubbs (1986) included both within-subject

‡ N refers to the sum of all the sample sizes of individual studies in the context of a meta-analysis

design and between-subject design studies. On the other hand, Mento et al (1987) and Wood et al (1987) deleted the studies using within-subject designs. Statistically, these results are logical, because within-subject designs would control for the effect of individual differences, whereas for between-subject designs individual differences might have had an effect on the main relationship. Apart from meta-analyses there have been studies that have reviewed the literature such as Yukl and Latham (1975), Locke et al (1981) and Locke and Latham (1990), which shows the vast extent of research that exists on this construct. Next, the other dimension of goal content, goal specificity is discussed.

#### 2.3.2.2. Goal Specificity

Goal Specificity forms the second dimension of goal content. Goal specificity is a measure of explicitness or lack of vagueness of a goal. It has been found that goals that are specific and difficult lead to a higher level of performance than vague, nonspecific goals such as "do your best", "work at a moderate pace" or no assigned goals. Goal specificity has most often been studied in tandem with goal difficulty, although there are a few studies that examine goal specificity independent of goal difficulty (Locke, et al. 1989, Wright and Kacmar 1994) . One explanation of the goal specificity argument is that the more specific (or explicit) the goal, the fewer the number of outcomes that will satisfy the goal. Thus, the individual will know exactly what behaviors will lead to accomplishment of the goal. Since the goal is specifically stated, there is less ambiguity possible in assessing whether the goal was reached. Therefore, the more specific the goal, the higher the resulting performance. Vague goals can be interpreted in many different ways by different people. As the goals become more specific the leeway for interpretation

is progressively reduced. Hollenbeck and Klein (1987) use the term explicitness to refer to goal specificity.

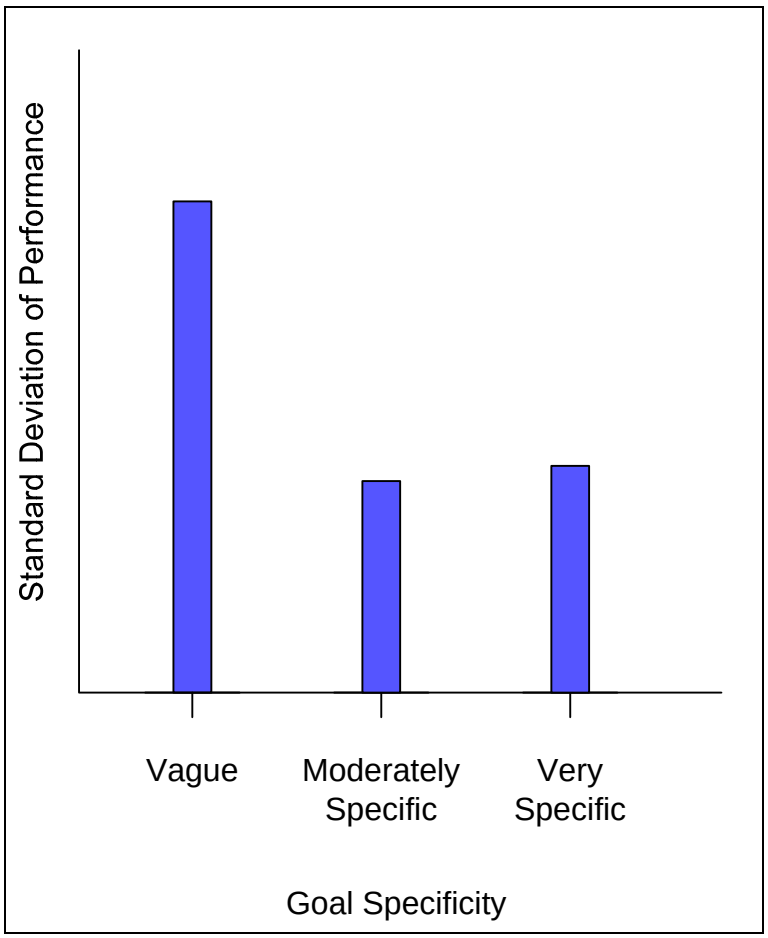


**Figure 2.6: Goal Specificity and Standard Deviation of Performance. Locke et al (1989)**

But, some researchers argue that goal specificity does not affect performance by itself and that it just reduces the variance on performance. For example, Locke, Chah, Harrison, and Lustgarten (1989), state: "Goal specificity, divorced from level, would affect the degree of variability in performance across individuals". Locke, Chah, Harrison, and Lustgarten (1989) use the following example to explain goal specificity. Say, the following are the four goals that could be assigned to a division manager:

1. improve the performance of your division;

2. increase the profits of your division;
3. increase profits by 10% or more;
4. increase profits by exactly 15%

As one proceeds down the list above, the specificity of the goal increases. As one proceeds down the list, the interpretable leeway is reduced, and the number of permissible outcomes becomes more and more limited. However, it should be noted that in some situations such as managing in an uncertain environment, vague goals might be more effective as it allows the manager to interpret the goal as the situation demands. For the reason that individuals will interpret the goal differently in the case of a vague goal, it is predicted that goal specificity would affect individual variability in performance.

As mentioned earlier, there are a number of studies that have examined goal difficulty independent of goal specificity, but very few studies have studied goal specificity independent of goal difficulty. Goal difficulty is seen to have an effect on performance at all degrees of goal specificity. Because only a few studies have examined goal specificity divorced from goal difficulty, all the meta-analyses have studied the joint effect of goal difficulty and specificity on performance (See Table 2.3). The effect sizes have ranged from 0.42 to 0.80 indicating moderate to strong effects. The next section discusses performance, the criterion variable in goal setting research.

**Table 2.3: Goal Specificity -- Performance Meta analyses**

| Source | No of Studies | Sample Size (N) | Effect Size (d) |
|---|---|---|---|
| Hunter, J., Schmidt, F.and Jackson, G (1982) | 17 | 2,400 | 0.51 |
| Chidester and Grigsby (1984) | 17 | 1,278 | 0.80 |
| Mento, A.J., Steel, R.P.and Karren, R.J. (1987) | 49 | 5,844 | 0.42 |
| Tubbs (1986) | 48 | 4,960 | 0.50 |
| Wood, R.E., Mento, A.J.and Locke, E.A.(1987) | 53 | 6,635 | 0.43 |

### 2.3.2.3. Performance

Task performance is the most common dependent variable in goal setting research. The measure for performance is dependent on the task that is being performed. Table 2.4 shows the list of tasks most frequently used in goal setting research. The typical performance measure for each task is also shown in the table. The tasks are arranged in descending order of the frequency of the task used in goal setting literature as studied by Locke and Latham (1990) (thus, the task in the topmost row is the most frequently used task in goal setting research).

**Table 2.4: List of most frequently used tasks in Goal Setting Research**

| Task | Performance Measure | |
|---|---|---|
| Listing Nouns, Objects, Uses | Number of nouns, objects identified correctly | The more number of nouns, the higher the performance (i.e. more is better) |
| Arithmetic/Computation | Number of problems solved correctly | The more problems solved correctly, the higher the performance (i.e. more is better) |
| Clerical | Number of tasks performed | The more tasks performed, the higher the performance (i.e. more is better) |
| Reading, Prose learning | Number of passages/paragraphs read | The more passages read, the higher the performance (i.e. more is better) |
| Perceptual speed | how many digits or letters in a row were the same as the circled one to the left of each row | The more digits identified, the higher the performance (i.e. more is better) |
| Assembly (toys etc) | Number of toys assembled | The more toys assembled, the higher the performance (i.e. more is better) |
| Managing/ Management simulations | Depends on individual simulation. | |
| Anagrams | Number of words a subject | The more words |

| | | |
|---|---|---|
| | creates | created, the higher the performance (i.e. more is better) |
| Course work | The performance in the course | The better the performance in the course, the higher the performance (i.e. more is better) |
| Production, manufacturing | Number/amount of product manufactured | The more products manufactured, the higher the performance (i.e. more is better) |

According to goal setting theory, goals affect performance by directing attention, mobilizing effort and increasing persistence. Goals are also said to indirectly affect performance by aiding in the development of strategies for the accomplishment of the task. Figure 2.7 shows how goals are translated to performance.

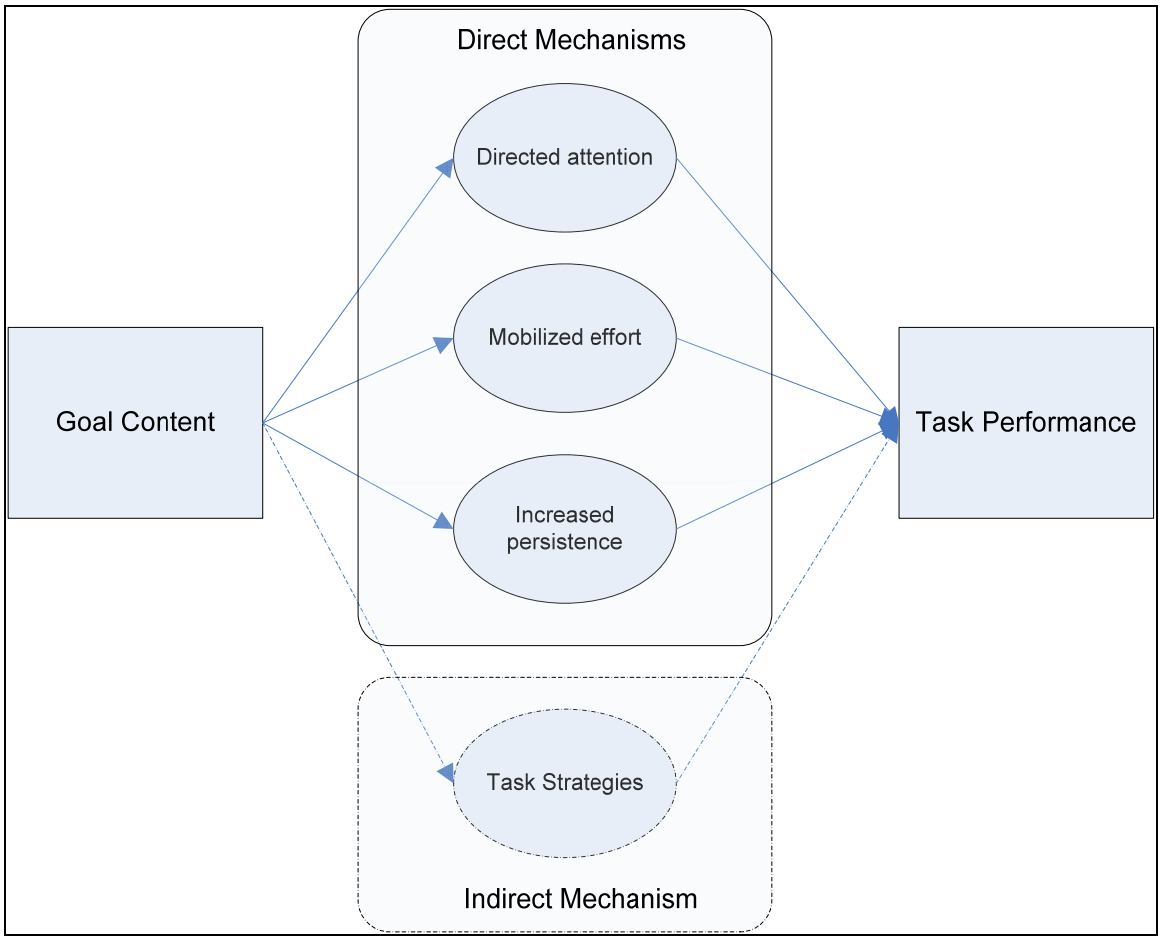


**Figure 2.7: Goal Setting Mechanism**

Goals motivate individuals to persist with their activities through time. Difficult and specific goals ensure that the individual will keep working for a longer period of time than would be the case with vague or easy goals. Hard or challenging goals inspire the individual to be tenacious in not settling for less than could be achieved. When participants are allowed to control the time they spend on a task, it is observed that hard goals prolong effort (Locke and Latham 2002).

Goals direct an individual's attention to relevant behaviors or outcomes and even affect how information is processed. This leads to less variable performance and to better performance in relation to such behaviors or outcomes than if goals are non-existent. Goals affect action indirectly by leading to the arousal, discovery, and/or use of task-relevant knowledge and strategies.

Goal setting research attempts to find the conditions that maximize task performance. In other words it attempts to understand factors that cause individuals to increase their effort, direct their attention and persist in their actions. The underlying assumption of this research is that performance is maximized when individuals spend "more effort" and "more time" on a task. Table 2.5 lists articles that are published in top journals such as Academy of Management Journal, Journal of Applied Psychology, Organizational Behavior and Human Decision Processes, Journal of Management, and Journal of Organizational Behavior that form a representative sample for the list of tasks, performance measures and type of subjects used in goal setting studies. The last column in Table 2.5 shows the performance measures in goal setting and the underlying "more is better" logic.

**Table 2.5: Specific Tasks, Performance Measures of selected Goal Setting Literature**

| Source | Task | Subjects | Performance Measure |
|---|---|---|---|
| (Schweitzer, et al. 2004) in Academy of Management Journal | Anagram task:<br>Seven letters and one minute to create words. | Employees in organizations | Create as many words as you can |
| (Earley, et al. 1990) in Academy of Management Journal | Task was a stock-market simulation exercise in which people buy and sell blocks of stock for five hypothetical companies.<br><br>The recommendations of two brokerage houses revealed reliably the movement of a stock across six rounds. One house was consistently correct, a second was consistently incorrect, and the others were correct 50 percent of the time for each stock. Thus, a key to successful investments was to discover which brokerage houses consistently predicted which stocks correctly. | Undergraduate students | The cash equivalent value of each subject's portfolio at the end of the sixth trial |
| (Erez, et al. 1985) in Academy of Management Journal | Simulated scheduling task. Subjects were given eight courses with at least ten different time and course offerings and asked to assemble as many nonconflicting and nonredundant course schedules as possible using any five of the eight courses. | Intro psychology course students | Measured by number of course schedules they make |
| (Erez and Zidon 1984) in Journal of Applied Psychology | Perceptual speed test, requiring the students to determine how many digits or letters in a row were the same as the circled one to the left of each row | Technicians and Engineers | Number of how many were same |
| (Locke, et al. | Study 1: | Student teams | Number of completed models |

| | | | |
|---|---|---|---|
| 1994) in Journal of Management | Group of production models for a fictitious arts production company with a focus on higher quality and higher quantity | | each group had produced (quantity)<br>Number of models that satisfied some quality rating (quality) |
| (Locke, et al. 1994) in Journal of Management | Study 2:<br>Research and Teaching performance of university professors | College professors | Teaching performance:<br>Self reported measure composed of 4 items:<br>1) Undergraduate/graduate teaching performance relative to other teachers (percentile)<br>2) Avg undergraduate/graduate teacher ratings<br>Research performance:<br>Self reported publications in good quality journals |
| (Lee, et al. 1997) in Journal of Management | Arithmetic task:<br>Solving 4-digit arithmetic problems according to some instructions | Undergraduate business students | Number of arithmetic problems solved correctly |
| (Drach-Zahavy and Erez 2002) in Organizational Behavior and Human Decision Processes | Stock market prediction task.<br>Stock value had to be predicted as a linear function of three parameters. Performance of manufacturing, marketing and R&D department relative to the relative goals | Undergraduate students | Extent to which the participant used a close estimation of the equation |
| (Vance and Colella 1990) in Journal of Applied Psychology | Anagram task<br>Provided with a list of seven letters and asked to list as many words as they could | Undergraduate psychology students | Number of words that a subject can list |
| (Campbell, et al. 2001) IN Research and Practice in Human Resources Management | Arithmetic<br>the problems were a mix of four-digit addition, subtraction, multiplication and division problems, and were similar to those used in earlier research | University students | defined as the number of problems solved correctly |
| (Campbell and | Arithmetic | Undergraduate | defined as the number of |

| | | | |
|---|---|---|---|
| Furrer 1995) in Journal of Organizational Behavior | the problems were a mix of four-digit addition, subtraction, multiplication and division problems, and were similar to those used in earlier research | students | problems solved correctly |

### 2.3.3. Moderators of the Goal Content – Performance Relationship

Goal setting literature discusses a number of variables that moderate the relationship between goal content and task performance. This section identifies and reviews the most common moderators from the goal setting literature.

#### 2.3.3.1. Goal Commitment

Goal commitment is one of the most commonly discussed moderators in goal setting theory. The importance of goal commitment was evident when Locke, Latham and Erez (1988, p23) stated "It is virtually axiomatic that if there is no commitment to goals, then goal setting will not work". Goal commitment refers to the determination to achieve a goal. It implies an extension of effort over time towards the accomplishment of the goal and emphasizes the unwillingness to abandon or lower the goal (Campion and Lord 1982, Locke, et al. 1981).

The effectiveness of goal setting is dependent on the existence of goal commitment (Locke, et al. 1981). Erez and Zidon (1984) provide a practical demonstration of the dependence of goal setting on goal commitment; they found a significant drop-off in performance when goal commitment declined. Although goal commitment was omitted from many early goal setting studies, much empirical support has since been garnered that supports the hypothesized moderating role of goal commitment (Renn 2003).

Hollenbeck and Klein developed a model of the antecedents and consequences of commitment (See Figure 2.8). In accordance with Vroom's Expectancy theory, they associate the antecedents of goal commitment with either the attractiveness or the expectancy of goal attainment (Vroom 1964). They also differentiate between personal and situational determinants of attractiveness and expectancy. On the other hand, Locke and Latham (1988) associate variables into three categories: internal factors, external factors and interactive factors. The internal and external factors correspond to the personal and situational factors of Hollenbeck and Klein's model. Factors such as participation (referring to participative goal setting) and competition are included in a separate category called interactive factors.

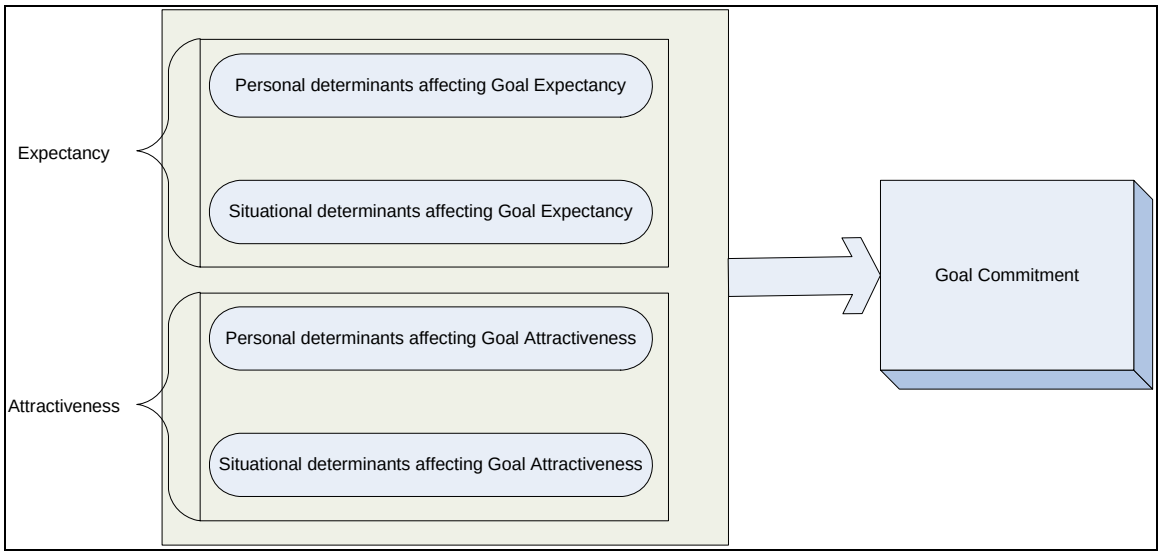


**Figure 2.8: Antecedents of Goal Commitment. Hollenbeck and Klein (1987)**

Hollenbeck and Klein (1987) and Locke, Latham and Erez (1988) performed two separate literature reviews. Both reviews recognized goal commitment as playing a central role in goal setting theory, but observed that a number of previous studies had not

empirically tested or measured goal commitment to control for its effect. Thus, they urged researchers to include goal commitment in all goal setting research. Klein et. al. (1999) performed a rigorous meta-analysis using a sample of 83 studies and found an "uncrossed interactive" nature of the relationship between goal difficulty and performance. High performance comes about only when goal difficulty and goal commitment are both high. Difficult goals do not lead to high performance when commitment is low and high levels of commitment to easy goals also fail to generate high performance. In other words, a strong linear relationship should be evident between goal difficulty and performance if the commitment is high and vice versa. Because of the uncrossed nature of this interaction, main effects rather than the interaction can be expected under certain operational conditions. In such situations, the failure to observe a significant interaction does not mitigate or refute the critical role of goal commitment (Klein et al. 1999).

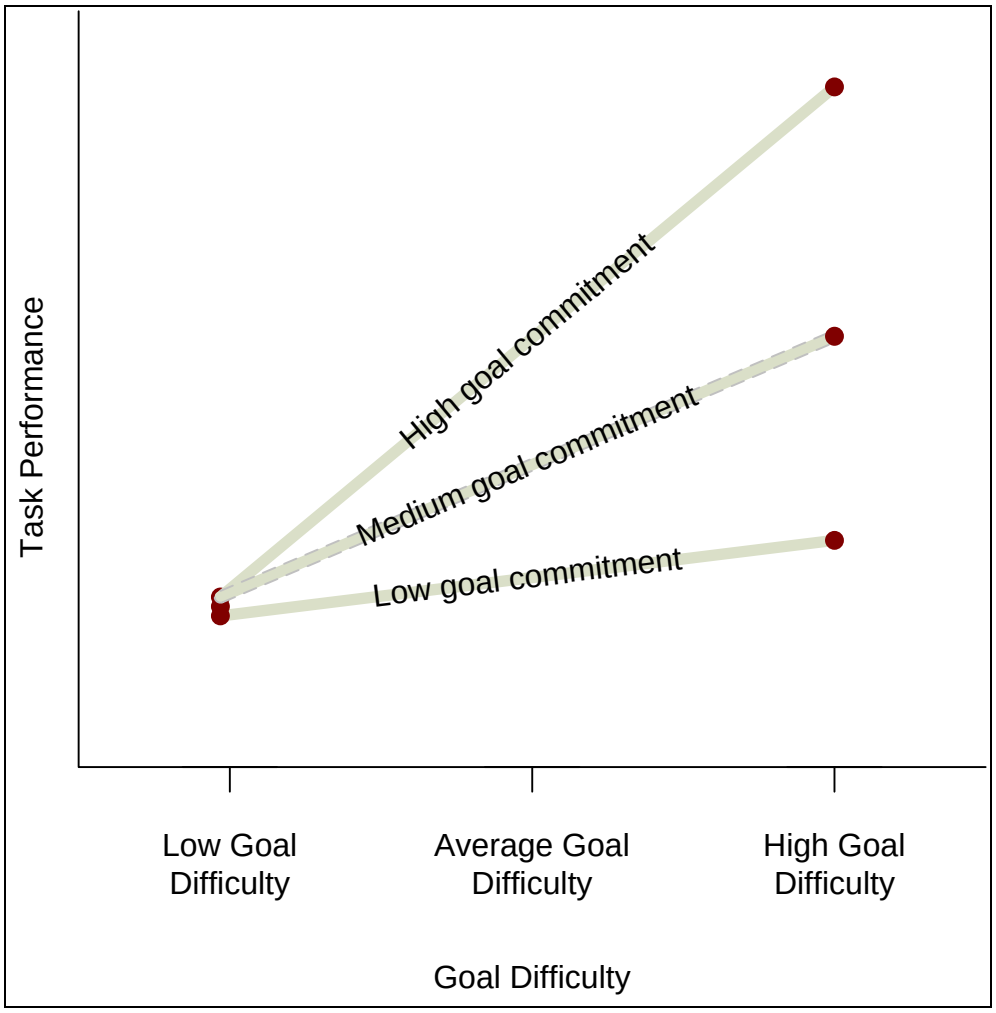


**Figure 2.9: Goal Commitment moderating the relationship between goal difficulty and performance**

The next section reviews the studies that have examined feedback as a possible moderator in the goal setting literature.

### 2.3.3.2. Feedback as a Moderator

Goals regulate performance far more reliably when feedback is present, than when it is absent (Locke et al 1981, 1990). In the goal setting model as presented by Locke and Latham (1990), feedback moderates the relationship between goals and performance.

Feedback conditions that have been studied in goal setting are (a) feedback vs. no feedback (b) more feedback vs. less feedback (Earley, et al. 1990, Kernan and Lord 1990, Locke, et al. 1981, Locke and Latham 1990, Vance and Colella 1990, VandeWalle 2003) It has been established that presence of feedback increases the performance of the subjects (Locke and Latham, 1990). For goals to be effective, people need summary feedback that reveals progress in relation to their goals. If they do not know how they are doing, it is difficult or impossible for them to adjust the level of direction of their effort or to adjust their performance strategies to match what the goal requires. If the goal is to cut down 30 trees in a day, people have no way to tell if they are on target unless they know how many trees have been cut. When people find that they are below target, they normally increase their effort or try a new strategy (Matsui, et al. 1982).

Feedback is most effective when it is perceived as credible, accurate and is specific in nature (Kernan and Lord 1989, Locke and Latham 1990). Control theory demonstrates that goals and feedback combine to affect behavior. In control theory models of human behavior, the interdependence of goals and feedback is stressed by focusing on the key role of goal feedback discrepancies in triggering attention, affect and motivation (Campion and Lord 1982). According to control theory, a goal is analogous to a standard or desired state which individuals attempt to attain. Incoming information from the environment (feedback) is compared to goals to calculate the difference between the present state and desired state. The detection of this discrepancy between goals and feedback creates a self-correcting motivation to reduce the discrepancy. Thus from this

perspective, goals and feedback are necessary for the effective regulation of behavior (Bandura and Cervone 1983, Kernan and Lord 1989).

Using social learning theory, Bandura and Cervone (1983) explain that self motivation through performance standards operates largely through an internal comparison process. When people commit themselves to explicit standards or goals, perceived discrepancies between what they do and what they seek to achieve creates dissatisfactions that serve as motivational inducements for enhanced effort. Anticipated self-satisfaction for accomplishments heightens effort (Bandura and Cervone 1983). The next section describes task complexity as another variable that moderates the relationship between goals and performance.

#### 2.3.3.3. Task Complexity

Task complexity describes the demands on knowledge, skills, and resources of individual task performers (Wood 1986). For example, a typing task is of lesser complexity compared to solving a difficult puzzle because the demands on knowledge and skills for the typing task is less than that required to solve a puzzle.

Wood et. al. (1985) have conducted a meta-analysis of over 125 studies and have shown how task complexity moderates the relationship between goals and performance. Seventy-two of the studies involved comparisons among goals of varying degrees of difficulty, and 53 involved comparisons between specific, difficult goals and do-your-best goals. The tasks used in these studies were independently rated for task complexity on a 10-point scale. The effect of goal difficulty on performance was stronger for simpler

tasks than complex tasks. For the 72 studies of goal difficulty with over 7,548 subjects, the mean effect size, corrected for measurement error was d=0.5770 and the variance corrected for measurement error was 0.1487. Across the 53 studies of goal specificity-difficulty (N=6,635) the mean corrected effect size was d=0.4305, and the variance corrected for measurement error was 0.0626. In both cases, there was a clear significance of the effect of goal difficulty and goal specificity on performance, as evidenced by high effect sizes (d >0.4). In order to explain the unexplained variance in the strength of these relationships ( 0.8513 for 72 studies of goal difficulty and 0.9374 for 53 studies of goal specificity-goal difficulty ), they investigate task complexity as a potential moderator in their study. They found task complexity to be a significant moderator as the interaction terms (task complexityXgoal difficulty, task complexityXgoal difficulty-goal specificity) significantly explained a part of the unexplained variance in performance.

The next section describes the various individual factors that moderate the relationship between goals and performance.

### 2.3.3.4. Individual Differences

Individual differences moderate the relationship between goals and performance. Both personality and demographic variables have been studied in the goal setting literature under the label of individual differences. In addition to moderating the relationship between goal content (goal difficulty and specificity) and performance, individual differences are also known to affect the level of commitment of an individual.

The demographic variables mentioned in the literature include: education, job tenure, race, cultural values, age and gender (Hollenbeck and Brief 1987, Locke and Latham 1990, Trower 1992). Although studies have examined the relationship between demographic variables and the goal setting process, there is no theoretical basis for the relationships. Demographic variables would be more meaningful to be included as control variables than as a criterion variable (Hollenbeck and Brief 1987).

The personality variables proposed in the literature include: self esteem (Hollenbeck and Brief 1987, Locke, et al. 1981, Yukl and Latham 1978), self-efficacy (Bandura 1977, Bandura and Locke 2003, Hollenbeck and Brief 1987, Judge, et al. 2003, Locke 2001, Locke, et al. 1984), perceived ability (Meyer 1987), need for achievement(Hollenbeck and Brief 1987, Yukl and Latham 1978), locus of control (Hollenbeck and Brief 1987, Locke, et al. 1981, Yukl and Latham 1978), conscientiousness (Barrick and Mount 1993, Barrick, et al. 1993), need for autonomy (Arvey and Dewhirst 1976), higher order need strength and need for independence. Need for autonomy, higher order need strength, and need for independence (Locke, et al. 1981) have failed to generate any reliable results and the theoretical justification for inclusion in a study of goal setting has not been adequately shown (Trower 1992) and thus we are excluding them in this research.

In the next sections, each of the prominent individual differences are reviewed in the light of goal setting literature.

### *Self-Efficacy*

Self efficacy is an important personality variable often discussed in goal setting theory. In the goal setting literature, self-efficacy is said to impact performance only until the subject reaches his/her maximum ability. It is generally observed that individuals high in self-efficacy will set or adopt difficult goals when given a choice compared with individuals with low self-efficacy. Hollenbeck and Brief (1987, p395) define self-efficacy as:

> *".. a concern about an individual's perception of how well he/she can execute some required course of action needed to deal with a perspective situation. Since the capability to perform well in any situation requires the use of multiple subskills, these judgments of one's operative capabilities largely govern the regulation of one's behavior."*

They relate self-efficacy with "self perceptions of specific ability". Their argument is that self-efficacy is a generalized and stable trait and it does not change over time. Bandura (1977) contends that self-efficacy is task specific, and thus is a psychological state rather than a trait. Thus according to Bandura, self-efficacy can vary with tasks. In socio-cognitive theory, self-efficacy is referred to as task specific confidence. It is the individuals' belief that s/he can attain specific performance outcomes in a given context.

Meyer (1987) contends that self-efficacy defined as self perceptions of ability will affect both an individual's thoughts and actions. Meyer states that self-efficacy influences intended effort, with individuals high in self-efficacy exerting more effort on difficult tasks than individuals low in self-efficacy. Furthermore, Meyer shows that task choice is

related to self-efficacy, with individuals low in self-efficacy preferring easy tasks while those with high self-efficacy choosing difficult tasks (Trower 1992).

Finally, task persistence is also related to self-efficacy. When faced with failure, individuals low in self-efficacy give up earlier than those with high perceived ability. Locke, Frederick, Lee and Bobko (1984) empirically examined the relationship between self-efficacy and self set goal difficulty and found a significant correlation of 0.59. This result implies that self-efficacy has a significant impact on self set goal difficulty.

### *Need for Achievement*

Need for achievement is discussed in the goal setting literature by Hollenbeck and Brief (1987), Yukl and Latham (1978) and others. Individuals with a high need for achievement prefer tasks that are challenging compared to individuals with a low need for achievement. Jackson (1974, p6) states that the individual high in need for achievement *"aspires to accomplish difficult tasks; maintains high standards and is willing to work toward distant goals."* Thus the relationship between need for achievement and task performance is expected to be linear. However, McClelland (1968) hypothesized that the relationship between need for achievement and self set goal difficulty is curvilinear. Locke (1968) attributed this apparent contradiction to the lack of commitment on the part of individuals when faced with what they perceived to be an impossible goal. Locke (1968) felt that individuals would only commit to goals that they felt were achievable. Hollenbeck and Klein (1987) hypothesized that individuals with a high need for achievement would both set more difficult goals and would have higher levels of goal commitment (consistent with Locke 1968). Yukl and Latham (1978) tested

the relationship between need for achievement and self set goal difficulty and found a significant linear correlation of 0.46. Hollenbeck, Williams, and Klein (1989) found a significant relationship between need for achievement and goal commitment (r= 0.25).

### *Self Esteem*

Hall (1971) proposed a model that relates self-esteem, goal setting and goal attainment. Hall's model holds that there is "*an upward spiral of success*" characterized by a dynamic relation among self-esteem, goal setting, task performance, and psychological success (Trower 1992). According to this model, the generalized self-confidence of high self-esteem individuals leads them to adopt more difficult goals relative to those low in self esteem. In this model, individuals with high levels of self-esteem commit to more difficult goals relative to individuals with low levels of self esteem. Goal setting theory states this will lead to increased performance both in an objective sense and in a psychological feeling of success. This in turn should lead to an increase in self esteem relative to the task, and should lead to even higher levels of goals in the future. Hall and Foster (1977) tested the hypothesized relationship between self esteem and goal difficulty and found a significant correlation of 0.40. Locke (1981, p147) cautioned that a generalized self-esteem measure may not be as useful as a task-specific measure of perceived competence.

### *Locus of Control*

Rotter (1966) developed the concept of locus of control in explicating his social learning theory. According to Rotter, people with an internal locus of control believe that their own actions determine the rewards that they obtain, while those with an external locus of control believe that their own behavior doesn't matter much and that rewards in life are

generally outside of their control. Hollenbeck and Brief (1987) state that individuals with an external locus of control will feel that as goals become more difficult, more and more factors outside the individual's control would have to work together simultaneously for the goal to be met; individuals with an internal locus of control, on the other hand, should find that difficult goals are not impossible, but that they will simply require more effort to achieve. Thus, goal commitment should be related to locus of control as follows: individuals with an internal locus of control should commit to difficult goals, whereas those with an external locus of control should tend not to commit to difficult goals. Hollenbeck, Williams, and Klein, H.J. (1989b) found a significant relationship (r=0.18) between locus of control and goal commitment. In terms of goal setting, internals should set more difficult goals for themselves whereas externals should set easier goals for themselves (Trower 1992).

### *Conscientiousness*

Barrick, Mount, and Strauss (1993) found that conscientiousness, viewed as a broad construct, was positively related to performance across all job criteria and across all occupational groups. The model showed that sales representatives high in conscientiousness are more likely to set goals and are more likely to be committed to goals, which in turn are associated with performance.

The broad construct of conscientiousness is known to have six facets (Costa and McCrae 1992, Goldberg 1990): competence, orderliness, dutifulness, achievement striving, self discipline and deliberation. Out of these six facets, achievement striving is well

researched in the goal setting literature. There is not much work relating other facets of conscientiousness.

Mount and Barrick (1995) asserted that the trait of conscientiousness includes: a responsibility aspect and an achievement-striving aspect. Moon (2001b) has examined two facets of conscientiousness, duty and achievement striving in escalation situations and found that duty was associated with de-escalation of commitment, while achievement striving was associated with escalation of commitment and the broad measure of conscientiousness was unassociated with commitment. This shows the importance of examining the individual facets in addition to the broad trait of conscientiousness.

### *Core Self-Evaluation*

Core self evaluation is a broad, latent, higher order individual trait. It is indicated by four well established traits in the personality literature: a) self-esteem, the overall value that one places on oneself (b) generalized self-efficacy, an evaluation of how well one can perform across a variety of situations (c) neuroticism, the tendency to have a negativistic cognitive/explanatory style and to focus on negative aspects of the self and (d) locus of control, beliefs about the causes of events in one's life – locus is internal when individuals see events as being contingent on their own behavior (Rotter 1966). Judge et al (1997) introduced the concept of core self-evaluations in an effort to provide a trait that would be a useful predictor of constructs such as satisfaction, job performance and other criteria. As one can gather from the commonality among these traits, core self evaluations is a basic, fundamental appraisal of one's worthiness, effectiveness and capability as a person.

Judge reports that the four traits that comprise core self evaluation are some of the most prominent in psychology. Cumulatively, they have been referenced in more than 50,000 publications (Judge 2003), but only a fraction of the population of studies have included more than a single core trait. This is regrettable because research has demonstrated that a single personality variable often is a poor predictor of job behavior.

In response to the call by Judge et al (1998) that core self evaluation would be related to performance primarily through motivation, Erez and Judge (2001) investigate the effect of this broad trait of core self evaluation on motivation and performance. In their study they explore the relative validity of core self-evaluations versus the four traits in predicting motivation and performance in the goal setting context. They present the results of three studies they performed. Specifically, study one tested whether the four traits form a higher order factor. In the second study, they tested whether there is a relationship between core self-evaluations and motivation and performance by exploring the relationships among the constructs in a laboratory setting. The third study tested whether these relationships could be replicated in a field setting and further tested whether the relationship between core self-evaluations and performance is mediated by goal-setting behavior. They also compared the predictive validity of the single core trait relative to the four individual traits. They found that core self-evaluations is a higher order factor that explains the association among the four lower level traits. The relationship between task performance and the core self-evaluations factor was positive and significant ($r=0.35$ $p<0.01$) and core self-evaluations was a stronger and more consistent predictor of the criteria than any single trait (generalized self-efficacy, self

esteem, neuroticism, locus of control). This suggests the importance of core self evaluation in the goal setting context.

## *2.4. Summary*

Escalation is defined as "a continued commitment in the face of negative information about prior resource allocations, coupled with uncertainty surrounding the likelihood of goal attainment" (Brockner, 1992). Most of the research focuses on identifying the causes of this escalation behavior. Although escalation behavior is agreed to be goal directed behavior, research on escalation has largely ignored goal setting theory. Goal setting literature discusses the antecedents of goal oriented behavior as goal content and discusses a number of other moderators such as goal commitment, task complexity, feedback, and individual differences. Thus goal setting theory may be useful in understanding the escalation phenomenon.

# Chapter 3. Research Model and Hypotheses

This chapter presents a proposed research model that relates goal setting to escalation. In presenting the research model and framework, I first discuss the criterion variable of the research, "willingness to continue." Second, I discuss "goal content," the predictor variable in the model and the effect of this predictor variable on "willingness to continue". Third, I discuss the variables that are hypothesized to moderate the relationship between goal content and willingness to continue, followed by the control variables.

## *3.1. Research Model*

The proposed research model which is grounded in goal setting theory (Locke 1968, Locke and Latham 1990) is presented in Figure 3.1. The research model relates goal setting theory to escalation by proposing variables that may have an effect on an individual's willingness to continue. The research model is presented in three stages:

1. Stage 1– Project context and goals (T0-T1): Initial stage of the project, when goals of the project are established
2. Stage 2 – Project feedback (T1-T2): Project feedback on the completion of the project
3. Stage 3 – Project continuation decision (T2-T3): A decision on project continuation or discontinuation needs to be made

The research model relates goal content and its two dimensions: goal difficulty and goal specificity to willingness to continue. In the model, the relationship between goal content and willingness to continue is moderated by initial goal commitment and project completion. Individual differences are measured to control for any effect they may have

on the dependent variable. The definitions of each of the constructs in the research model are presented in Table 3.1.

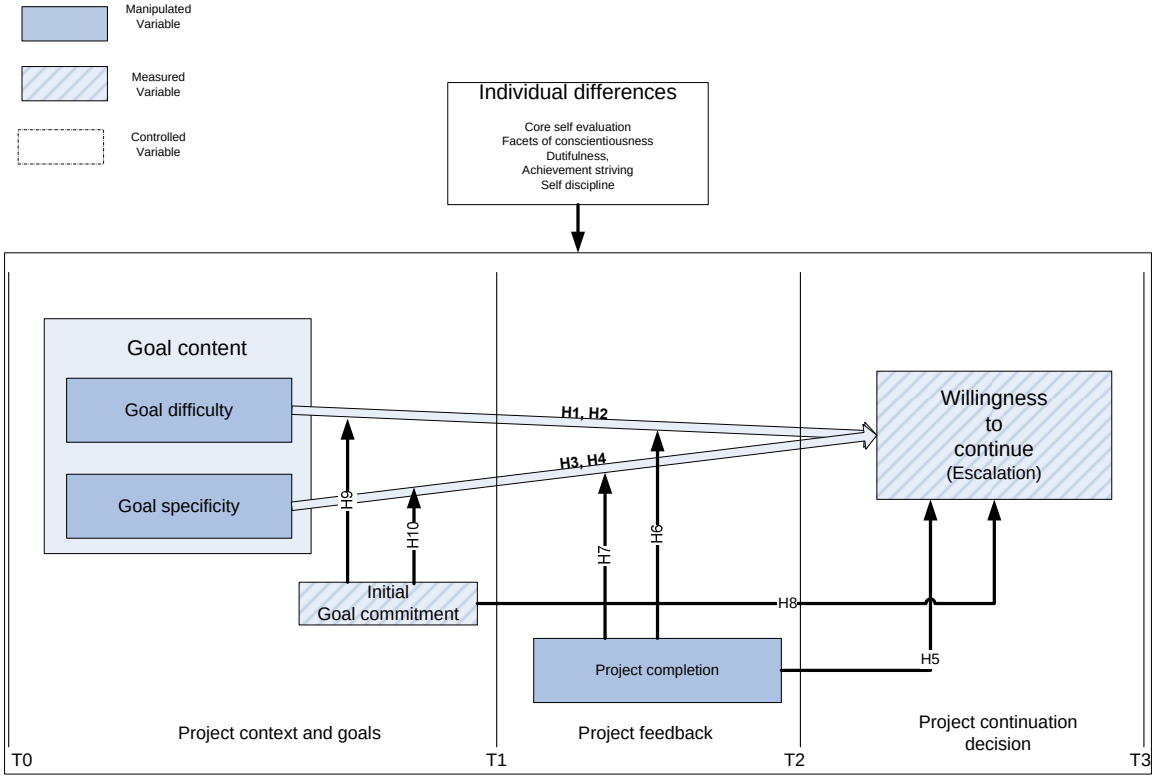


**Figure 3.1: Research model**

**Table 3.1: Definition of constructs in research model**

| Construct | Definition | Sources |
|---|---|---|
| *Dependent Variable* | | |
| Willingness to continue | Willingness to continue is defined as the continued allocation of resources to a course of action after negative feedback has made future success uncertain. | (Brockner 1992, Keil, et al. 1995, Staw 1976) |
| *Independent Variables* | | |
| Goal content | Goal content refers to the object or the result being sought. | (Locke, et al. 1981, Locke and Latham 1990) |
| • Goal difficulty | Goal difficulty is defined as the likelihood that an individual can achieve the goal. | (Locke, et al. 1981, Locke and Latham 1990) |
| • Goal specificity | Goal specificity is defined as a measure of the explicitness or lack of vagueness of a goal. | (Locke, et al. 1989, Locke and Latham 1990) |

| | | |
|---|---|---|
| *Moderators* | | |
| Project completion | Project completion is a measure of how far along a project is in terms of the portion left before final completion. | (Conlon and Garland 1993, Moon 2001a, Staw 1976) |
| Initial goal commitment | Goal commitment refers to the determination to try for a goal. Goal commitment implies the extension of effort over time towards the accomplishment of the goal and emphasizes the unwillingness to abandon or lower the goal | (Hollenbeck and Klein 1987, Locke and Latham 1990, Locke, et al. 1988) |
| *Control Variables* | | |
| Core self-evaluation | Core self evaluation is a broad, latent higher order trait informed by self-efficacy, self esteem, neuroticism and locus of control. | (Judge and Bono 2001, Judge, et al. 2003) |
| Conscientiousness | Conscientiousness refers to the degree of conscience and morality, of commitment, of incorruptibility, of attachment to moral values. It confers a sense of what is right or wrong, a desire for justice, with moral obligation, integrity, a love of truth and honesty, and regard for duty. | (Costa and McCrae 1992, Goldberg 1990, Goldberg 1992, Moon 2001b) |
| • Achievement striving | Achievement striving refers to high aspiration levels of an individual. | (Costa and McCrae 1992, Goldberg 1990, Goldberg 1992, Moon 2001b) |
| • Dutifulness | Dutifulness refers to ethical principles and moral obligations of an individual. | (Costa and McCrae 1992, Goldberg 1990, Goldberg 1992, Moon 2001b) |
| • Self-discipline | Self discipline refers to discipline of an individual to begin a task and carry it to completion despite boredom and other distractions. | (Costa and McCrae 1992, Goldberg 1990, Goldberg 1992, Moon 2001b) |

## *3.2. Willingness to Continue: The Dependent Variable*

"Willingness to continue" is the criterion variable in this research. Willingness to continue is defined as the continued allocation of resources to a course of action after negative feedback has made future success uncertain (Brockner 1992). This criterion

variable has also been labeled as “decision to continue”, “escalation” and “escalation of commitment” in previous research. Willingness to continue represents the degree of inclination of an individual to continue a previously chosen course of action.

One of the main objectives of this research is to examine the effect of goals and other goal setting attributes on an individual’s willingness to continue. Goal setting theory suggests that a difficult and specific goal makes an individual increase his effort towards achieving the goal, makes him/her direct his/her attention only on the goal and maintain his/her effort over time towards achieving the goal (Locke 1968, Locke and Latham 1990, Locke and Latham 2002). There are several reasons why the performance of an individual increases under a difficult and specific goal. A difficult goal intensifies effort and increases the persistence of an individual. Intensified effort refers to the increase in the extent of effort s/he expends towards achieving the goal and persistence refers to maintenance of this intensified effort over time. The discrepancy between the state to be achieved (goal) and the present state would be higher with a difficult goal than an easy goal. According to Bandura and Cervone (1983), an individual’s behavior is dependent on the level of discrepancy perceived. Difficult and specific goals make an individual direct his/her effort and attention on goal-relevant activities while ignoring other goal-irrelevant activities.

Based on the discussion of the goal setting literature from Chapter 2, I have established that (1) increased effort, (2) directed attention, and (3) persistence should increase the performance of an individual (Locke 1968, Locke and Latham 1990). In this research, I

argue that these three mechanisms increases an individual's willingness to continue (See Figure 3.2).

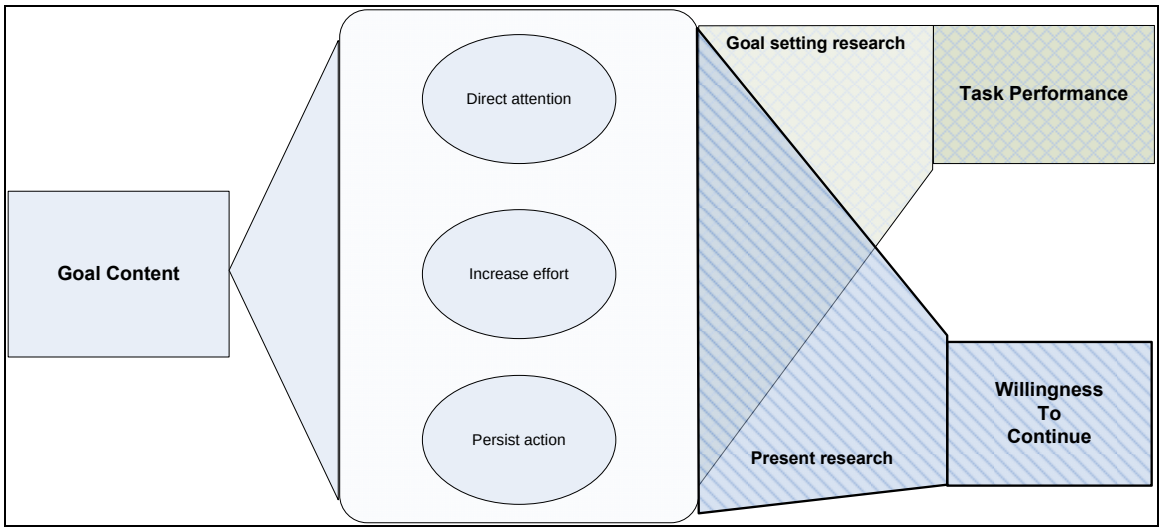


**Figure 3.2: Research argument**

The effect of major constructs from goal setting theory on willingness to continue is described in the remainder of this chapter. Table 3.2 lists the research hypotheses and the key informed sources. In the case where goal difficulty and goal specificity are the key determinants, I have rival hypotheses (H1 and H2 in case of goal difficulty; H3 and H4 in case of goal specificity) as theory does not offer definite explanation on the direction of the effect.

**Table 3.2: Research hypotheses**

| Key determinant | Hypothesis | Informed Source |
|---|---|---|
| Goal Difficulty | H1: The higher the difficulty of the goal, the more willing the individual is to continue his/her chosen course of action. | (Locke 1968, Locke and Latham 1990) |
| | H2: The higher the easiness of the goal, the more willing the individual is to continue his/her chosen course of action. | (Bandura and Cervone 1982) |

| | | |
|---|---|---|
| Goal Specificity | H3: The higher the degree of specificity of the goal, the more willing the individual is to continue his/her chosen course of action to achieve the goal. | (Locke 1968, Locke and Latham 1990) |
| | H4: The higher the degree of specificity of the goal, the less willing the individual is to continue his/her chosen course of action to achieve the goal. | (Kernan and Lord 1989, Bowen 1987, Bragger et al. 2003, Campion and Lord 1982) |
| Project Completion | H5: The higher the level of completion, the more willing the individual is to continue his/her course of action. | (Conlon and Garland 1993, Garland 1990, Keil, et al. 2000, Moon 2001a) |
| | H6: The level of completion moderates the relationship between goal difficulty and an individual's willingness to continue. | (Brockner 1992, Conlon and Garland 1993, Locke 1968, Locke and Latham 1990, Staw 1976) |
| | H7: The level of completion moderates the relationship between goal specificity and willingness to continue of an individual. | Not supported |
| Goal Commitment | H8: The higher the level of goal commitment, the more willing an individual is to continue his/her course of action. | (Hollenbeck and Klein 1987, Locke, et al. 1981, Locke and Latham 1990) |
| | H9: The level of goal commitment moderates the relationship between goal difficulty and willingness to continue. | (Erez and Zidon 1984, Hollenbeck and Klein 1987, Klein, et al. 1999) |
| | H10: The level of goal commitment moderates the relationship between goal specificity and willingness to continue. | (Erez and Zidon 1984, Hollenbeck and Klein 1987, Klein, et al. 1999) |

## *3.3. Goal Content: The Independent Variable*

Locke and Latham (1990, 2002) define goal content as the object or the result being sought. Goal content consists of two dimensions: goal difficulty and goal specificity. In this study, goal difficulty and goal specificity are individually manipulated and therefore I discuss goal difficulty and goal specificity separately.

### 3.3.1. Goal Difficulty

Goal difficulty is defined as "the likelihood that an individual achieves a goal". If an individual is more likely to achieve the goal, then the goal is said to be easy and if the individual is less likely to reach the goal, then the goal is said to be difficult (Latham and Yukl 1975, Locke, et al. 1981, Locke and Latham 1990).

In this study two levels of goal difficulty are considered: difficult and easy. A goal that is reached by few individuals is a difficult goal and one that is reached by many individuals is an easy goal. Locke and Latham (1990) in their experiments considered a goal that was reached by 90% of the subjects to be an easy goal and one that was reached by 10% of the people to be a difficult goal.

#### 3.3.1.1. Effect of Goal Difficulty on Willingness to Continue

In the goal setting literature, goal difficulty is said to have a linear relationship with performance until the subject reaches the limits of his/her ability. The discrepancy between the state to be achieved (goal) and the present state would be greater with a difficult goal than an easy goal. An individual's behavior is dependent on the level of discrepancy, as s/he regulate his/her behavior to reduce the perceived discrepancy (Bandura 1977, Bandura and Cervone 1983, Latham and Locke 1991). High levels of discrepancy due to a difficult goal intensifies effort and increases the persistence of an individual (Bandura and Cervone 1983, Latham and Locke 1991, Locke and Latham 1990). Intensified effort in this case refers to the increase in the extent of effort s/he expends towards achieving the goal and persistence refers to maintenance of this

intensified effort over time. While intensified effort and persistence are referred to as reasons for increased performance in goal setting theory, I expect them to increase an individual's willingness to continue, which can be viewed as a kind of persistence. At high levels of goal difficulty, I expect an individual encounters a high level of discrepancy between the current state and the desired state and would be more willing to continue his chosen course of action. The expected relationship between goal difficulty and willingness to continue is plotted in Figure 3.3. Thus the following hypothesis is stated:

*H1: The greater the difficulty of the goal, the more willing the individual is to continue his/her chosen course of action.*


Figure 3.3: Effect of goal difficulty on willingness to continue

When the negative feedback is given to the subject in escalation situations, the posited direction of the hypothesis is different. In the case of an already difficult goal, the negative feedback might cause the subject to perceive the goal to be more difficult after the negative feedback is introduced. This may cause him to abandon as s/he thinks it might be beyond his/her ability to achieve. On the other hand, an easy goal may appear more difficult but still could be within the ability of the subject, thus s/he might perceive it as still as within his/her ability and thus may cause to increase his/her willingness to continue. Thus the following hypothesis competing against H1 is stated as H2:

> *H2: The greater the easiness of the goal, the more willing the individual is to continue his/her chosen course of action.*

### 3.3.2. Goal Specificity

Goal specificity is defined as the "explicitness or lack of vagueness of the goal". If an individual is assigned a goal such as "do your best", or "as much as possible", the goal is said to be a vague goal. On the other hand, if an individual is assigned a goal that exactly specifies what the goal is, it is referred as a specific goal (Locke, et al. 1989, Locke and Latham 1990).

In this study, goal specificity is manipulated at two levels: vague and specific. A specific goal is one in which the goal is clearly conveyed to the subject and a vague goal is one in which the exact goal is unspecified. Manipulating goal specificity and goal difficulty separately at two levels, yields four goal content treatments: Difficult – specific goal, difficult-vague goal, easy-specific goal, easy-vague goal.

### 3.3.2.1. Effect of Goal Specificity on Willingness to Continue

Goal setting theory establishes that a specific and difficult goal causes an individual to increase effort towards achieving the goal, direct attention towards achieving the goal and persist in his/her actions towards achieving the goal (Locke 1968, Locke and Latham 1990, Locke and Latham 2002, Mento, et al. 1987). Almost always goal specificity is manipulated in tandem with goal difficulty to observe the effects of easy-vague and difficult-specific goals in the goal setting literature. In this research we separate out the effects of goal specificity and goal difficulty by manipulating them independently.

Within the goal setting literature, Locke, Chah, Harrison and Lustgarten (1989) have observed that as the degree of goal specificity increases the performance variance decreases. This implies that the more specific (or explicit) the goal, the fewer the number of interpretations a subject could have about the goal. When the subject is given a specific goal at either an easy or a difficult goal level, it directs attention towards achieving the goal as there would be fewer interpretations of what the goal is.

Thus, based on the goal setting literature, I expect that the higher the degree of goal specificity, the more willing an individual is to continue his/her course of action to achieve the goal. Figure 3.4 plots the expected graph and the same is stated as H3.

> *H3: The higher the degree of specificity of the goal, the more willing the individual is to continue his/her chosen course of action to achieve the goal.*

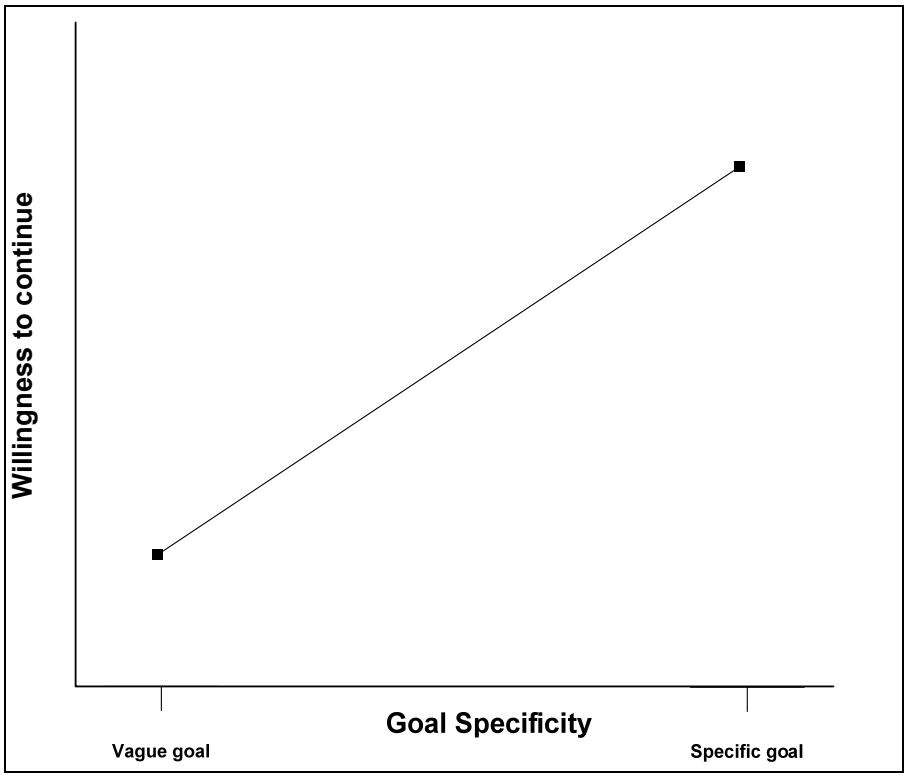


**Figure 3.4 : Effect of goal specificity on willingness to continue**

Previous studies in the escalation literature have studied variables that are related to goal specificity. Kernan and Lord (1989) examined the effect of explicit and general goals on escalation in the presence of negative feedback. They found that individuals escalate their commitment under general goals more than specific goals. They also varied the negativity of feedback in their study and found the same result at all levels of feedback. A general goal in their study can be viewed as a vague goal in our research. Thus this empirical work provides some basis to expect that at higher levels of goal specificity, an individual should be less inclined to escalate his/her commitment. Further support for this relationship can be derived from studies of ambiguity in escalation situations. As the goal becomes more specific (or explicit), the ambiguity regarding the goal is reduced. Ambiguity has been studied in escalation research as a factor that causes a higher degree

of escalation. One of the reasons for such a relationship is that ambiguity interacts with negativity of the feedback and when this interaction occurs, the subject may not fully perceive the negativity and thus continues his/her course of action. This relationship was found to be true in a series of experiments conducted by Bragger and his colleagues (Bragger et al. 2003; Bragger et al. 1998; Hantula et al. 1999). On the above grounds, based on the previous escalation studies, I expect that the higher the degree of goal specificity, the less willing an individual is to continue his course of action to achieve the goal. This is stated as H4:

> *H4: The higher the degree of specificity of the goal, the less willing the individual is to continue his/her chosen course of action to achieve the goal.*

## *3.4. Moderators*

Moderators are variables that interact with the predictor variable to produce an interaction effect on the relationship between the predictor and criterion variables. In this study, we examine the interaction effects of two moderators: Project completion and goal commitment on the main relationship of goal content on performance. Although individual differences are shown as moderators in the model, they are measured variables so that their effect on relationship or the criterion variable could be controlled for.

Sharma, Durand, and Gur-Arie (1981) provide a typology of specification variables based on the relationship between the variable of interest with criterion and predictor variables.

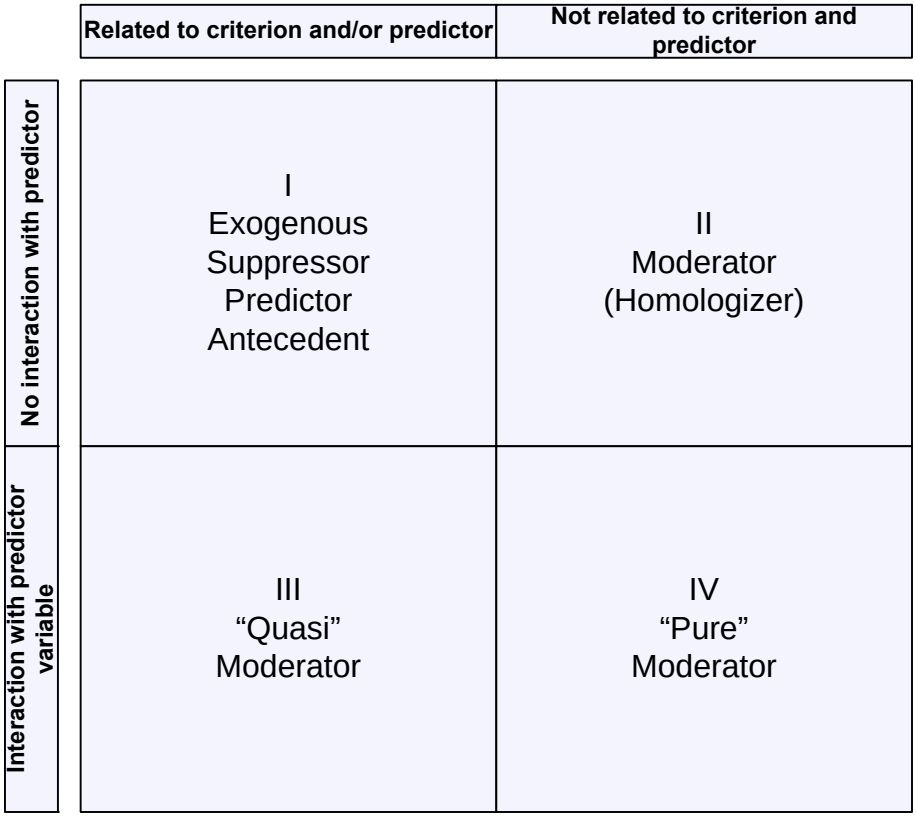


**Figure 3.5: Typology of specification variables. Source Sharma et. al. (1982)**

In the 2x2 framework, the two axes used to assess a moderator variable in this typology are: whether or not the moderator interacts with the predictor variable, and whether or not it is related to the predictor or criterion variable. Their framework is shown in Figure 3.5. In the Figure, we can see there are four quadrants into which a variable could fall. A variable falls under the category of moderator if it is in quadrant II, III or IV. A variable that interacts with the predictor variable and is not related to the criterion and predictor variable would be in quadrant IV and would be called a “pure” moderator. A variable that is correlated with the criterion variable and that interacts with the predictor variable falls into quadrant three and is called as “quasi moderator”. A variable that is not related to the criterion and predictor variables and has no interaction with the predictor is called a homologizer.

As shown in the research model in Figure 3.1, we posit project completion and initial goal commitment as two variables that moderate the relationship between goal content and willingness to continue. According to the model (Figure 3.1), project completion interacts with the predictor (goal difficulty or goal specificity) and is related to the criterion (willingness to continue). Project completion is a "quasi-moderator", based on Sharma's typology (quadrant III in Figure 3.5). Figure 3.6 shows the same diagrammatically.

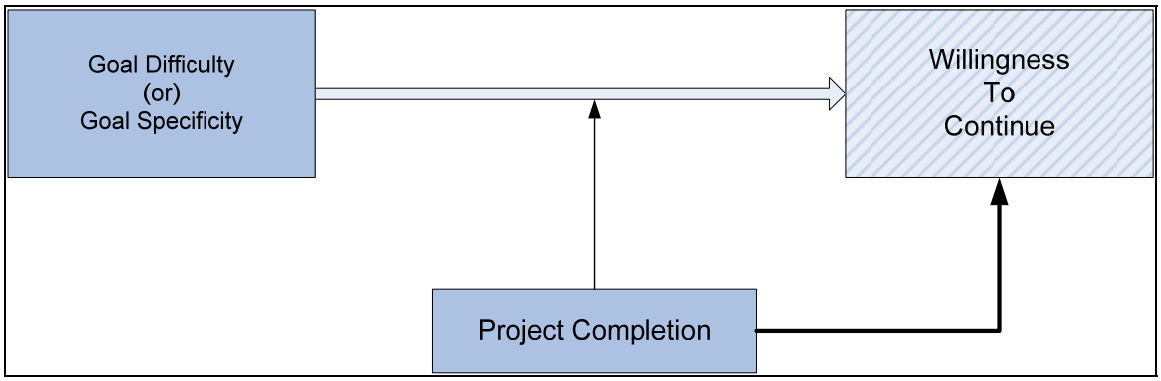


Figure 3.6: Project completion as "quasi" moderator

Goal commitment is also posited to be related to willingness to continue (criterion) and is expected to interact with goal difficulty (predictor) and goal specificity (predictor). Thus, goal commitment also acts as a "quasi moderator" in the model. This is *diagrammatically* represented in Figure 3.7.

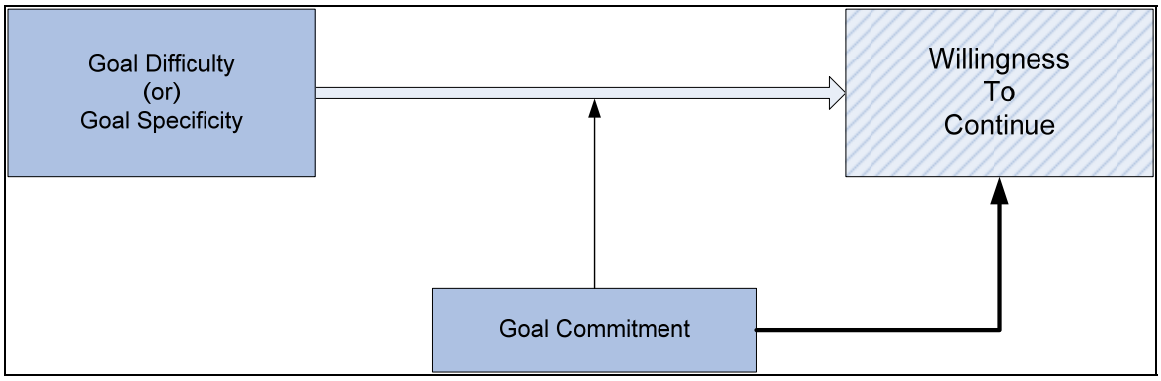


Figure 3.7: Goal commitment as a "quasi" moderator

In the following sub-sections, both variables--project completion and goal commitment--are discussed as “quasi” moderators. Thus, in the discussion of each of these variables, first their relation with the criterion is discussed as a direct effect and second, their moderation effect is discussed.

### 3.4.1. Project Completion

Project completion is a measure of how far along a project is in terms the proportion of the project already completed. Escalation literature identifies sunk costs and project completion as two factors that promote escalation. Arkes and Blumer (1985) performed a series of over ten experiments and demonstrated that prior investments (sunk costs) in an endeavor will motivate people to escalate their commitment. Other researchers Garland (1990), Moon (2001a), Garland and Newport (1991) performed similar experiments. All these studies consistently showed that when faced with negative information, subjects at higher sunk cost level have a greater tendency to continue a project than subjects at a lower sunk cost level. Keil, Mixon, Saarinen and Tuunainen (1995) did a few experiments and demonstrated the sunk cost effect as a significant factor in IT project escalation. Conlon and Garland (1993) have pointed out that previous research has

confounded project completion effect with sunk cost. In this and subsequent papers, they suggest that project completion may dominate sunk cost. In this research, I use level of project completion as the variable of interest. I have two levels of project completion in this research: High level of project completion and low level of project completion. The escalation literature provides good reasons to expect a direct relationship between project completion and an individual's willingness to continue (Garland 1990, Garland and Newport 1991, Keil, et al. 2000, Moon 2001a) . Table 3.3 summarizes the major findings of studies that used project completion to explain escalation.

**Table 3.3: Selected research on project completion**

| Study | Type | Major Finding |
|---|---|---|
| (Keil, et al. 2000) | Survey | Project completion has a direct effect on escalation |
| (Moon 2001a) | Experiment | Project completion has a direct effect on escalation |
| (Fox and Hoffman 2002) | Conceptual paper | Proximity of closure is one of the motivational factors that cause an individual to escalate his commitment |
| (Brockner and Rubin 1985) | Review | Goal proximity is one of the driving forces that make an individual persist his/her actions |
| (Bandura and Simon 1977) | Experiment | Individuals who set proximal goals (daily) performed better than individuals who set distal goals (weekly) in a weight loss program |
| (Morgan 1985) | Experiment | Students who set and monitor proximal goals for each study did better on a year end examination than did those who set and monitored distal study goals for each study session |
| (Stock and Cervone 1990) | Experiment | When individuals are somewhat unsure of their ability to handle a complex, challenging endeavor, the setting of short-term, proximal goals can beneficially affect motivation and performance |
| (Bandura 1986) | Conceptual | Proximal goals provide clear markers of success leading to the higher performance on the task |

Based on goal setting theory, project completion is closely related to the concept of goal proximity. A high level of project completion would normally mean that an individual has already invested most (say 90%) of the resources and the project is almost complete (say 90%). Thus, at a high level of project completion the goal is proximal (from that

point) compared to a low level of project completion where an individual has invested less (say 10%) of the resources and the project is far from completion (say 10% complete). Thus, at a low level of project completion the goal is distal (from that point). According to goal setting theory, a proximal goal increases the performance of an individual more than a distal goal. Under a proximal goal an individual is willing to expend more effort and direct all his/her attention towards the goal. Thus, we expect an individual's willingness to continue to be higher under a proximal goal (High project completion) than a distal goal (Low project completion).

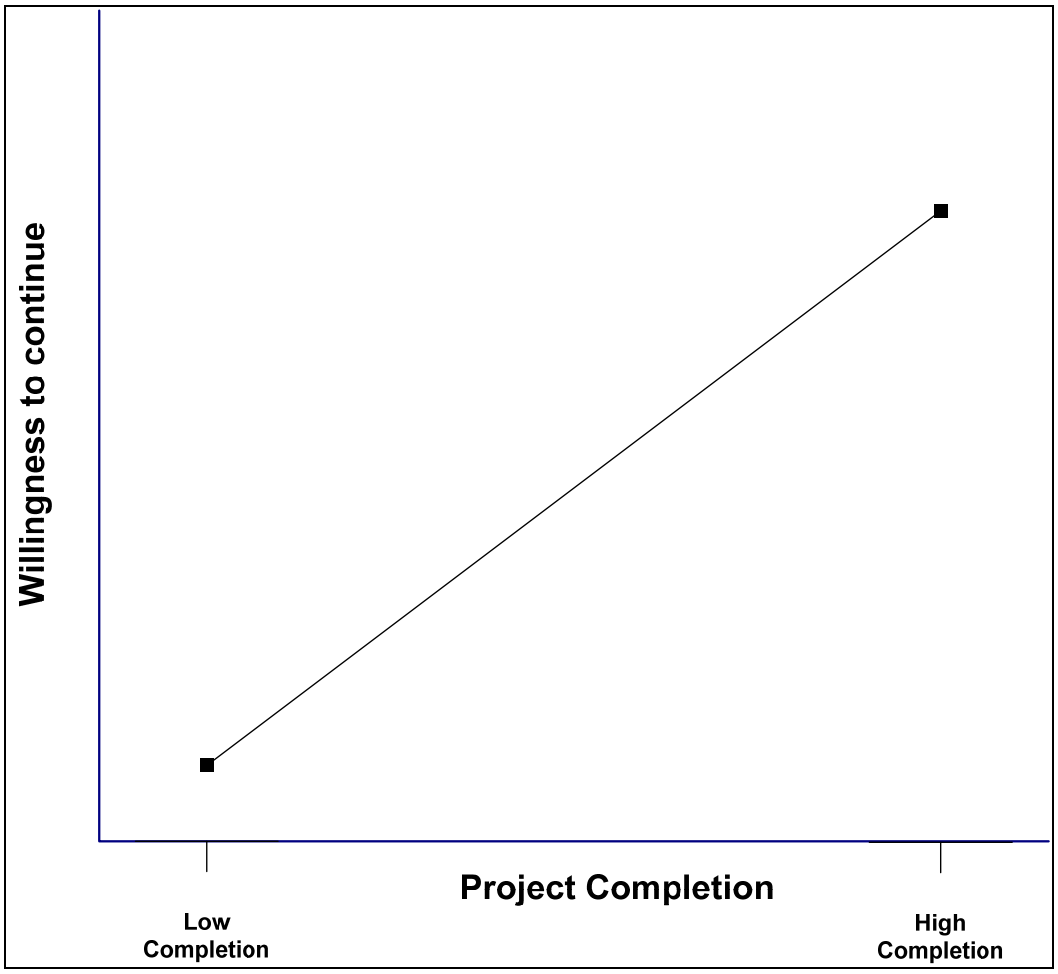


Figure 3.8: Effect of project completion on willingness to continue

Thus based on the support from both escalation and goal setting theories, I expect project completion to have a direct, positive effect on an individual's willingness to continue. This is stated as H5 below and the expected graph is presented in Figure 3.8.

> *H5: The higher the level of completion, the more willing the individual is to continue his/her course of action.*

### 3.4.2. Moderating Effect of Project Completion

Project completion  expressed as how far along in the project the subject has progressed, can be viewed as the feedback received by the subject. Feedback is a well established moderator in the goal setting research that moderates the relationship between goals and performance. Feedback as a moderator has been tested in a number of different ways such as "level of feedback", "frequency of feedback", "negativity of feedback", "Feedback/no-feedback" (Earley, et al. 1990, Kernan and Lord 1990, Locke, et al. 1981, Locke and Latham 1990, Vance and Colella 1990, VandeWalle 2003).

In this research, we are interested in the moderating role of project completion as a form of feedback. In the case of low completion, the feedback is given when the project is 10% complete. The goal is distal from that point. In the case of high completion, the feedback is given when the project is 90% complete.

As the goal becomes difficult, an individual intensifies his/her effort and persistence towards achieving the goal and thus is expected to increase willingness to continue his/her actions (see discussion in section 3.3.1). This is depicted along the X axis in

Figure 18. As the level of completion increases, the goal proximity causes an individual to increase his/her persistence thus increasing his/her willingness to continue ( see discussion in 3.4.1). This is depicted along the Y axis in Figure 3.9. When both conditions are high (high goal difficulty and high level of completion), the multiplication effect of these conditions causes the willingness to continue of an individual to be very high (DH in Figure 3.9). Similarly, when the level of project completion is low and the goal is easy, an individual's willingness to continue is expected to be the lowest (EL in Figure 3.9). In other words, a difficult goal causes an individual's willingness to continue to increase by a greater degree at a higher level of completion than at a lower level of completion. This moderation effect of level of completion is stated as :

*H6: The level of completion moderates the relationship between goal difficulty and an individual's willingness to continue.*

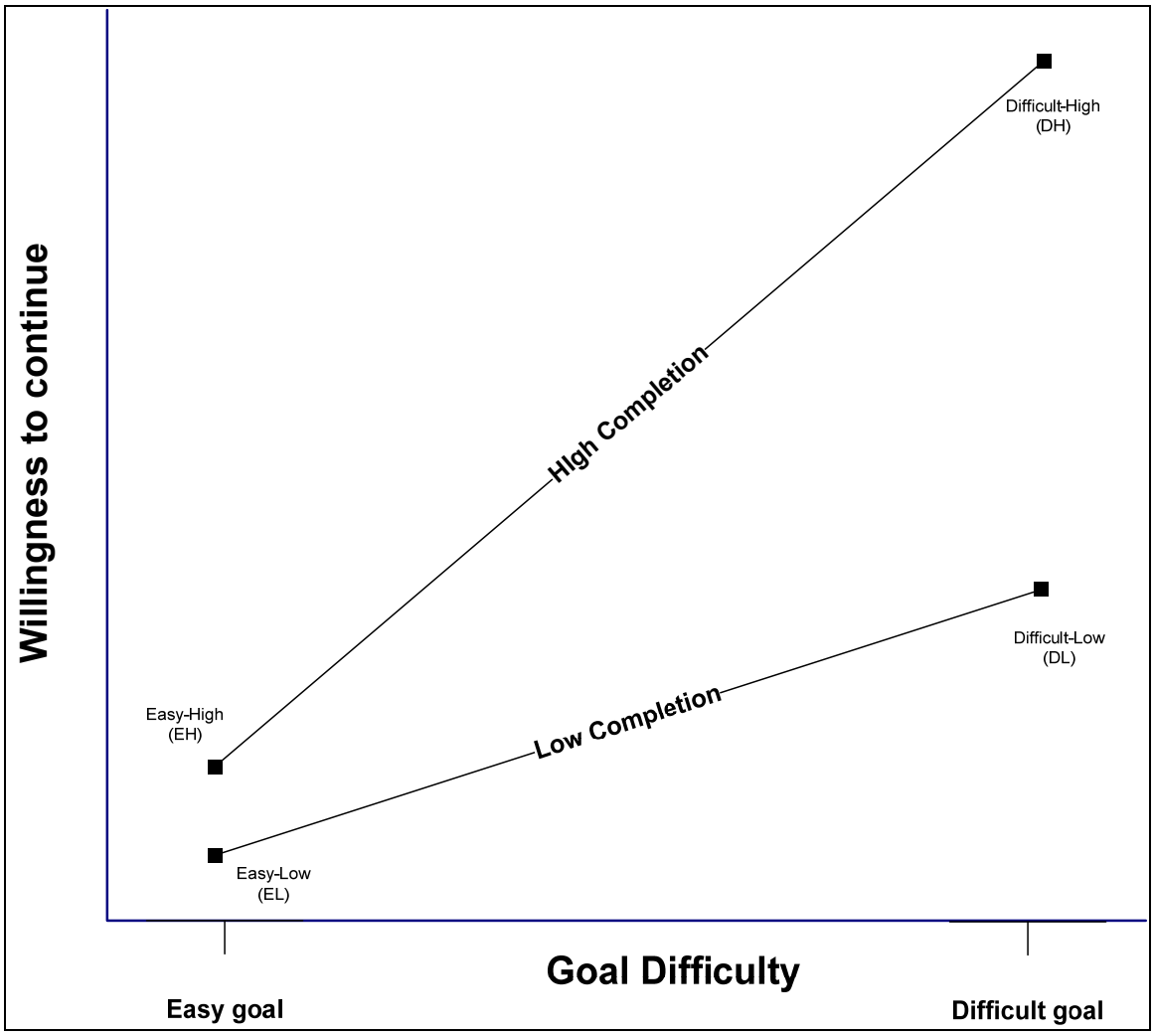


Figure 3.9: Moderating effect of project completion on goal difficulty-- performance relationship

An individual is more willing to continue his/her course of action in the event of a specific goal than a vague goal (X-axis in Figure 3.4), as discussed in section 3.3.2.1. As the level of completion increases, the goal proximity causes an individual to increase his/her persistence thus increasing his/her willingness to continue (see discussion in 3.4.1). Under conditions in which the goal is specific and project completion is high, the multiplication effect causes the willingness to continue of the individual to be the highest (SH in Figure 3.10). On the other hand, an individual's willingness to continue under conditions of low level of project completion and specific goal is lowest as indicated by

VL in Figure 3.10. The difference between VL and VH is much lower than the difference between SH and SL, indicating the interaction effect of level of completion on the goal specificity – willingness to continue relationship. Thus, a specific goal causes an individual's willingness to continue to increase by a greater degree at a higher level of completion than at a lower level of completion. The same is stated in the form of hypothesis H7:

> *H7: The level of completion moderates the relationship between goal specificity and willingness to continue of an individual.*

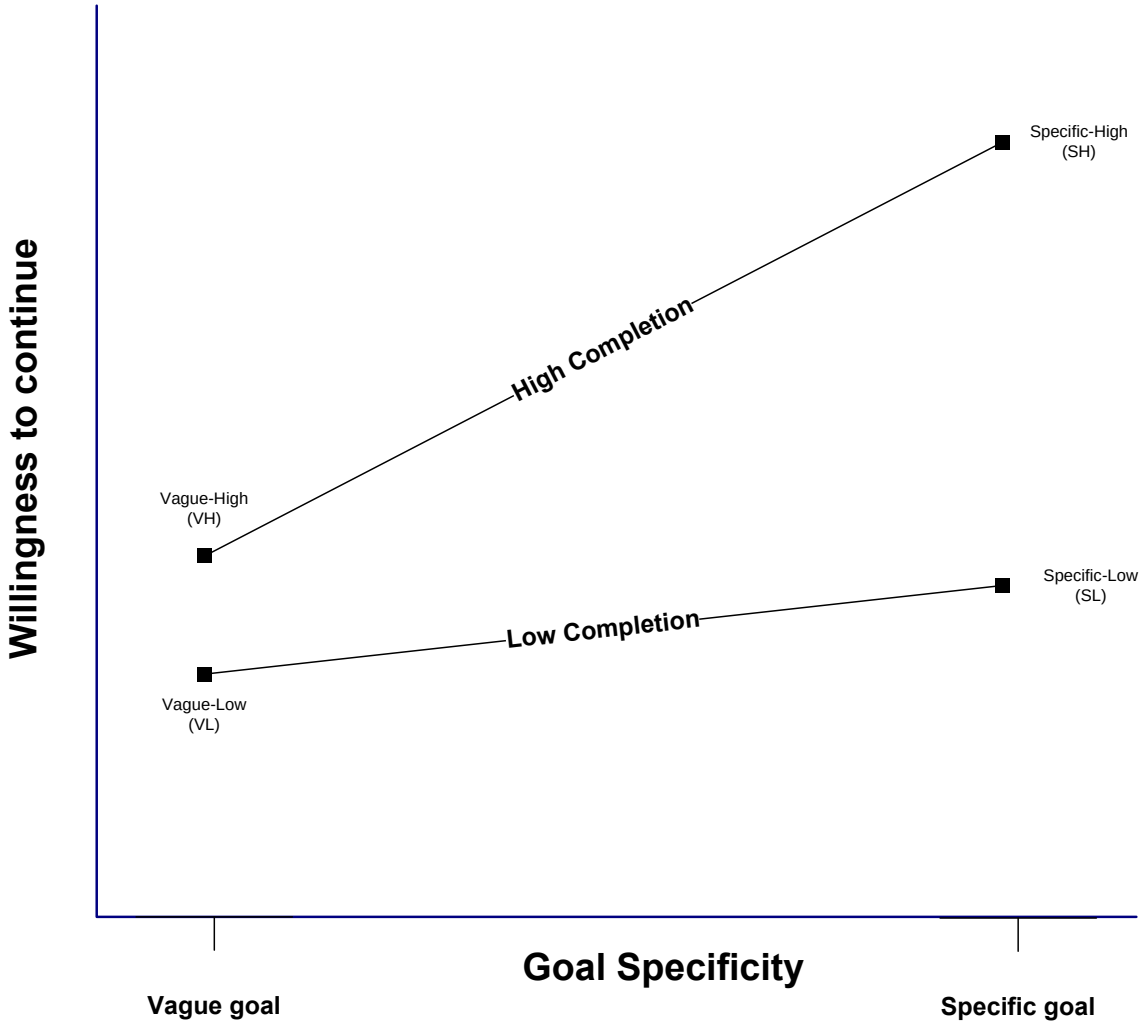


Figure 3.10: Moderating effect of project completion on goal specificity-- performance relationship

## *3.5. Goal Commitment*

Goal commitment refers to the determination to try for a goal. Goal commitment implies the extension of effort over time towards the accomplishment of the goal and emphasizes the unwillingness to abandon or lower the goal (Allen and Nora 1995, Dodd and Anderson 1996, Donovan and Radosevich 1998, Hollenbeck and Klein 1987, Locke, et al. 1988) (See Table 3.4). Goal commitment is often discussed as a necessary condition

for goal setting to work. In other words if the subject does not have any commitment towards the goal, goal difficulty would not have an impact on his/her performance.

Locke and Latham (1990) explain that commitment would have a direct, positive effect on performance if goal level were held constant statistically or if all individuals within a given sample were given the same challenging goal. Erez and Zidon (1984) found that within each of their difficult goal levels, there was a positive effect of commitment on performance. Klein et al (1999) in their meta analysis, calculated the average effect size of goal commitment on performance as 0.23. According to Cohen and Cohen (1977, 1988) this represents a small but significant effect size. The effect size examining only difficult goals was 0.35. In these studies, goal commitment is argued to increase performance because: (1) it increases the effort an individual exerts towards achieving the goal (2) it helps maintain a high level of effort over time (persistence) and (3) it makes an individual unwilling to abandon the goal. By the same token, I expect that if an individual is highly committed to the goal, his willingness to continue his/her actions increases because s/he tries to achieve the goal at any cost and is unwilling to abandon the goal. The same is expressed as H8 and as a plot in Figure 3.11:

> *H8: The higher the level of goal commitment, the more willing an individual is to continue his/her course of action.*

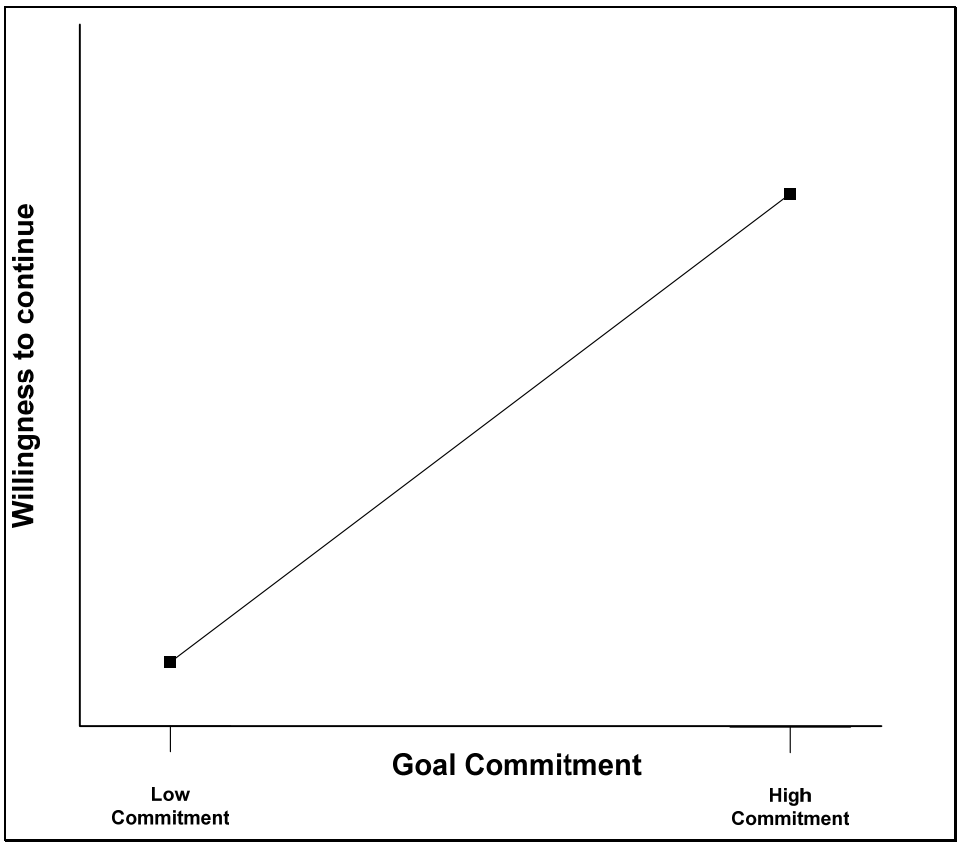


Figure 3.11: Effect of goal commitment on willingness to continue

**Table 3.4: Selected research on goal commitment**

| Study | Type | Major Finding |
|---|---|---|
| (Tubbs 1993) | Experiment | Using three different studies shows that goal commitment moderates the relationship between goal level and performance. |
| (Erez and Zidon 1984) | Experiment | Goal commitment moderates the effect of goals on performance. When commitment to all goal levels was high, goal level and performance were positively related. When commitment was artificially decreased as the goals became more difficult, goal level and performance were negatively related. |
| (Klein, et al. 1999) | Meta-analysis | After examining 83 independent samples conclude that:<br>• Goal commitment had a strong effect on performance<br>• Goal commitment moderated the relationship between goal difficulty and performance |
| (Hollenbeck and Klein 1987) | Review/ Conceptual | Building on past research, they developed a model of goal commitment and used it to interpret past goal-setting research. The model shows goal commitment as a moderator of goal level and performance. |

| | | |
|---|---|---|
| (Woffod, et al. 1992) | Meta-analysis | After examining 78 goal setting studies, their findings include:<br>• Goal commitment affects goal achievement.<br>• Goal level and setting are moderates the relationship between goal commitment and performance |
| (Klein, et al. 2001) | Meta-analysis | Goal commitment is an essential moderator of the linkage between goals and behavior |

### 3.5.1. Moderating Effect of Goal Commitment

According to goal setting theory, goal commitment is a moderator of the relationship between goal difficulty and performance. Locke and Latham (1990) state that goal level should be more highly and positively related to high performance among individuals with high commitment than among those with low commitment to goals. Erez and Zidon's (1984) study is a case in point. During phase 1 of their study, when commitment to all goal levels was high, goal level and performance were positively related. In phase 2, when commitment was artificially decreased as the goals became more difficult, goal level and performance were negatively related. Wofford's (1982) study also supports this claim; he found that there was a smaller goal-performance discrepancy among subjects with medium and high goals in a high commitment condition than in a low commitment condition.

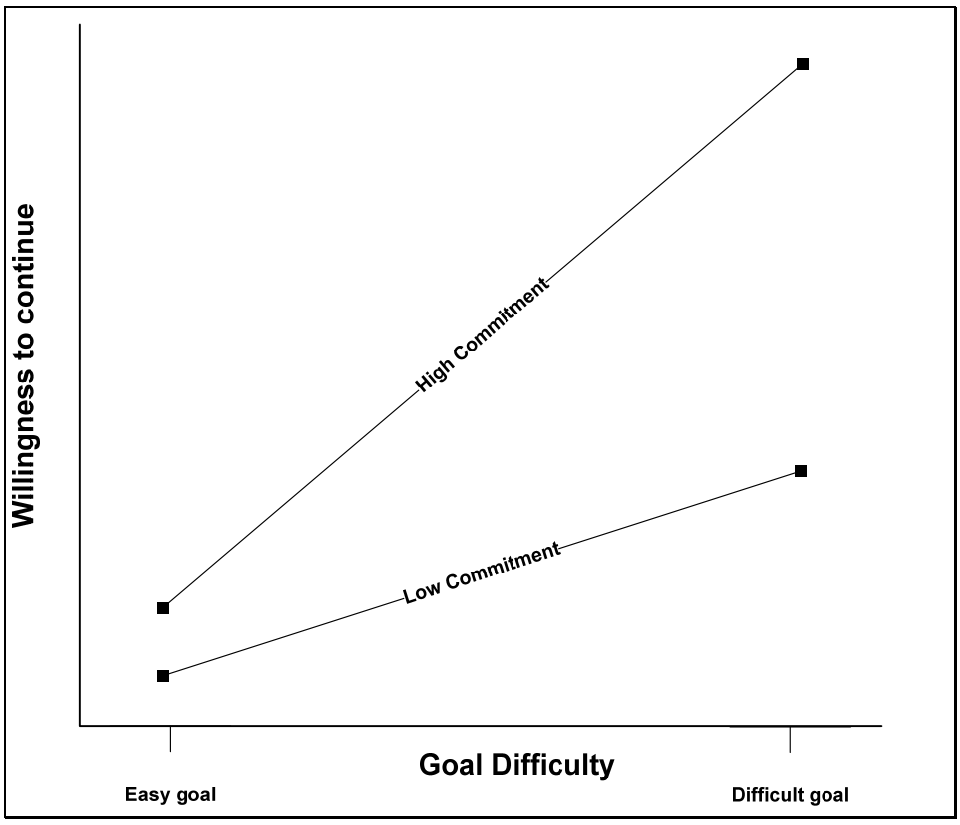


Figure 3.12: Moderating effect of goal commitment on goal difficulty--willingness to continue relationship

Klein et al (1999)'s meta analysis provides further evidence for the moderator relationship of goal commitment on goal difficulty and performance. The effect size for the relationship between goal commitment and performance was 0.35 for difficult goals, but decreased to 0.15 when the goal difficulty was decreased. Thus in addition to the main effect as hypothesized in H8; I expect that goal commitment will have a moderating effect on the relationship between goal difficulty and willingness to continue (See Figure 3.12). In other words, a difficult goal causes an individual's willingness to continue to increase by a greater degree at a higher level of goal commitment than at a lower level of goal commitment.

*H9: The level of goal commitment moderates the relationship between goal difficulty and willingness to continue.*

While the goal setting literature establishes goal commitment as a moderator of the relationship between goal content (goal difficulty – goal specificity) and performance (Locke and Latham, 1990*)*, in this research we separate the effects of goal specificity from goal difficulty manipulating them independently. A specific goal in expected to cause an individual to increase his/her willingness to continue as discussed in 3.3.2.1 and goal commitment is expected to increase an individual's willingness to continue as discussed in section 3.4.2. When both conditions are high (specific goal and high goal commitment), the multiplication effect of these conditions causes the willingness to continue of the individual to be the highest. On the other hand, under the condition of a vague goal and low level of commitment, the willingness to continue is expected to be the lowest indicating the interaction effect of goal commitment on the goal specificity – willingness to continue relationship. In other words, it is expected that a specific goal causes an individual's willingness to continue to increase by a greater degree at a higher level of goal commitment than at a lower level of goal commitment. This is stated as hypothesis H10:

*H10: The level of goal commitment moderates the relationship between goal specificity and willingness to continue.*

## *3.6. Control Variables*

After the discussion of moderator variables in the research model, we now move on to the discussion of control variables in this section. Based on the literature, a number of individual difference variables have a direct relationship on the dependent variable and may also have a moderating effect on the relationship between goal difficulty and willingness to continue. In this research, we can control for the effect of these individual differences. Chapter II discusses individual differences such as self-efficacy, achievement striving, locus of control, and conscientiousness. This section details some of the effects we may expect to have and the measurement scales to control for their effects.

### 3.6.1. Core Self-evaluation

The core self evaluation trait as discussed by Judge and his colleagues (Judge, et al. 1997, Judge, et al. 2003) is a broad construct which consists of four traits: self-efficacy, self esteem, locus of control and neuroticism. This construct is included in this research instead of including self-efficacy, self esteem, and locus of control individually. The Core self-evaluation trait has been tested in relation to goal setting by Erez and Judge (2001) and they found this trait to be significantly related to performance. Given such a relationship between core self evaluation and performance, core self evaluation traits of subjects will be measured in order to control for its effect.

### 3.6.2. Conscientiousness

Conscientiousness measures the degree of conscience and morality, of commitment, of incorruptibility, of attachment to moral values. It confers a sense of what is right or

wrong, a desire for justice, with moral obligation, integrity, a love of truth and honesty, and regard for duty. When conscientiousness is weakly developed, it manifests in a lack of moral principle, and indifference to what is the sense of right or wrong. A very strong developed conscientiousness, on the other hand can bring about self-condemnation and remorse, with a morbid sense of justice or duty, making insufficient allowance for the weaknesses and faults of others, with a tendency to sit in judgment on them (Costa and McCrae 1992, Goldberg 1990, Wikipedia 2005). This dimension contrasts dependable, fastidious people with those who are lackadaisical and sloppy. The amount of personal control and the ability to delay gratification of needs are also represented here. There are six facets of conscientiousness that are described in the next section as discussed by Costa and McCrae (1992) and Goldberg (1992): competence, orderliness, dutifulness, achievement striving, self-discipline and deliberation. Based on the support from previous literature we chose achievement striving, and dutifulness in this research as they may have an effect on the variables of interest in this research. Moon (2001a) has shown the relationship of achievement striving and dutifulness to escalation and thus the effect of these two facets needs to be controlled for. A self disciplined person as defined by Costa and McCrae (1992) will carry out the project to completion despite boredom and distractions. Since such behavior can be attributed to escalation of commitment, we are measuring self discipline in the study along with achievement striving and dutifulness in this study (See Table 3.1 for definitions).

# Chapter 4. Research Methodology

## 4.1. Research Setting

The empirical context for this research is IT projects that are geared towards process innovation and improvement. We specifically consider the case of business process management (BPM) software. Business process management (BPM) applications are headed for mainstream adoption. Henschen (2005) reports that sales of such software approached $1 billion in the past year. The projected double digit growth through 2009 will bring the figure to $3 billion. Henschen (2005)'s surveyed 1,688 individuals on the stage of their organization in the adoption of business process management and found that 60% of the individuals reported that they were piloting, considering or already using business process management. Thus, this research is situated in the context of BPM projects. The unit of analysis in this research is the individual decision maker. Our theoretical predictions are tested based on the decision making of individuals exposed to hypothetical scenarios (i.e., role-playing scenarios).

## 4.2. Experiment as a Research Strategy

A major objective of this research is to explore the relationship between goal setting theory and escalation in the context of IT projects geared towards business process management. We are interested in finding the impact of goal setting attributes on an individual's willingness to continue and the variables that moderate the relationship. Thus, we seek to examine the causal relationship between goal setting attributes (goal difficulty and goal specificity) and an individual's willingness to continue. To establish any casual relationship, there are three conditions that need to be satisfied (Shadish, et al. 2001, Trochim 2001):

1. Covariation: Changes in the presumed cause must be related to changes in the presumed effect
2. Temporal precedence: The presumed cause must occur prior to the presumed effect
3. No plausible alternative explanations: The presumed cause must be the only reasonable explanation for changes in the outcome measures

Although causality cannot be established with certainty, Emory and Cooper (1991) argue that the experiment comes closer to this goal than any other research method. In an experiment, the undesired contamination from extraneous variables can be more effectively controlled. Manipulation of independent variables in the research increase the chances that the variance on the dependent variable is a result of these manipulated variables. Since a laboratory experiment allows greater control in manipulating goal difficulty, goal specificity and project completion between projects, a greater degree of internal validity can be achieved.

Internal validity refers to the ruling out of alternative explanations of systematic biases with respect to the researcher's conclusion that the relationship between independent and dependent variables implies a causal relationship. Consequently a higher level of internal validity implies that the experimental variables can be isolated and their impact can be evaluated more precisely (Cook and Campbell 1979, Marchewka 1994).

One of the major criticisms of experiments concerns a lack of external validity since the situation in the laboratory in contrived and only a few independent variables may be manipulated at one time (Benbasat 1990). Although a research strategy that is strong in both internal and external validity is the most desirable, internal validity is indispensable

for research design since external validity cannot be achieved unless a high level of internal validity is achieved (Benbasat 1989, Marchewka 1994).

A role playing experiment is a suitable methodology for this research, based on the three characteristics as described by Fromkin and Streufert (1976) :

1. Experimental events can occur at the discretion of the experimenter. That is, instead of waiting for the conditions of interest to occur, the experimenter creates a situation and manipulates events within the situation.
2. Using experiments, one can use controls to identify sources of variation. The control of variables increases confidence in the conclusion that the observed behavior can be attributed to conditions varied by the experimenter because eliminations of uncontrolled variables reduces the number of potential alternative explanations.
3. Experiments enable random assignment of subjects to different treatment groups. This process of randomization disrupts any potential relationship which may occur when both the treatment and a third variable become associated and together affect the dependent variable.

The scenario was based on the research model (Figure 3.1). It placed the subject in the role of the manager of an IT project geared towards process innovation and business process management and set up a situation in which escalation may occur. The scenario was designed as two parts: Case A and Case B. Case A establishes the context of the company and contains the goal difficulty and goal specificity manipulations. Case A was

followed by a series of questions measuring the commitment of the subject towards the goal. This corresponds to the stage 1- project context and goals in the research model. This was followed by Case B, in which negative feedback was introduced to the subject along with the project completion manipulation, corresponding to the stage 2 – project feedback stage of the research model. At the end of Case B, the subject was required to make a decision. The decision choices were (a) to continue the project by allocating additional resources to the project (escalation), or (b) to discontinue the project. The "willingness to continue" construct in the research model represents this decision. This decision making stage corresponds to stage 3 – project continuation decision in the research model.

The scenario established the conditions within which previous research has shown that escalation may take place. These conditions are: (a) negative feedback to the decision maker regarding the project's status, (b) a project outcome that is subject to uncertainty (Bazerman, et al. 1984, Brockner 1992, Staw 1976).

Following the scenario, subjects completed a short questionnaire that follows. The questionnaire consisted of items representing (1) constructs that are measured in the model (2) manipulation checks for the manipulated constructs in the model, and (3) control variables and demographic information.

## *4.3. Research Design*

The research was conducted as a 2x2x2 fully factorial design with the three manipulated variables: Goal difficulty, goal specificity and project completion. Each of the

manipulated variables were examined at two levels. The experiment was a posttest-only, randomized experiment with a total of eight groups (2x2x2). In order for the groups to be probabilistically equivalent, random assignment was used.

*Willingness to continue* was the dependent variable in this research. This construct is used in escalation literature under labels of escalation, escalation of commitment, etc (Garland 1990, Keil, et al. 2000, Keil, et al. 1995). Willingness to continue was measured on an eight point likert scale. The construct was measured with two measurement items as shown in Table 4.9.

*Goal content* was the independent variable of this research. Goal content consists of two dimensions: Goal difficulty and Goal specificity. In this research, both goal difficulty and goal specificity were independently manipulated. *Goal difficulty* was manipulated at two levels: Easy goal and Difficult goal. An easy goal is a goal that can be reached by a large number of people compared to a difficult goal, which can be reached by fewer people. This is consistent with the goal setting research where researchers have typically examined two levels of goals (Locke 1968, Locke and Latham 1990, Mento, et al. 1987). *Goal specificity* was also manipulated at two levels: Specific goal and Vague goal. This is also consistent with previous manipulation of this variable in the goal setting literature (Kernan and Lord 1989, Locke, et al. 1989, Mento, et al. 1987).

*Level of project completion* was a moderator variable in the research. This variable was manipulated at two levels: Low level of completion and High level of completion. The

10% and 90% anchors for low and high level of completion are consistent with previous work in the escalation literature (Conlon and Garland 1993, Garland 1990, Heath 1995, Keil, et al. 1995, Moon 2001a) .

*Initial goal commitment* was the other moderator variable of interest. Goal commitment was a pure measured variable in this research. Goal commitment refers to the initial commitment of the subject to achieve the goal..

## Measurement of Goal Commitment

Hollenbeck, Williams and Klein (1989a) developed a scale to measure goal commitment. This measure has been used to assess goal commitment in many research areas including traditional goal setting, absenteeism, personality, creativity, complex task environments, and group goal settings (DeShon and Landis 1997). The widespread use of this scale was attributed to its stability over time, and its relation to other important constructs such as motivation force and performance. In spite of the scale's widespread usage, Tubbs et. al. (1993) and other researchers (Dodd and Anderson 1996, Tubbs and Dahl 1991, Wright, et al. 1994) have raised concerns regarding the dimensionality of the goal commitment construct measurement. DeShon and Landis (1997) reassessed the 9 items of the goal commitment scale and performed a content analysis on the items. They found that items 4 to 8 in Table 4.1 were most consistent with the definition of goal commitment as commonly used by Campion and Lord (1982), Hollenbeck and Klein (1987) and Locke, Latham and Erez (1988). They argued that items 1 to 3 in the scale refer to a different dimension than items 4-8 as these items are measuring the perceptions of goal difficulty and performance expectancies. This result was consistent with Wright et al's (1994)

view on the different dimensions that goal commitment may have. The first three items in the scale refer to the expectancy evaluations and not the core definition of goal commitment.

Klein, Wesson, Hollenbeck, Wright and DeShon (2001) later addressed these concerns by designing a study combining results of 17 independent samples to provide a more conclusive assessment by combining meta-analytic and multisample confirmatory factor analytic techniques. Based on the results they recommend using a five item scale (items 4 to 9) for future research assessing goal commitment (items 4-9 in Table 4.1). Thus in this research goal commitment was measured using the recommended five item scale.

**Table 4.1: Hollenbeck, William and Klein (1989) scale for measuring goal commitment**

| | |
|---|---|
| 1 | It's hard to take this goal seriously |
| 2 | It's unrealistic for me to expect to reach this goal |
| 3 | It's quite likely that this goal may need to be revised, depending on how things go. |
| 4 | Quite frankly, I don't care if I achieve this goal or not |
| 5 | I am strongly committed to pursuing this goal |
| 6 | It wouldn't take much to make me abandon this goal |
| 7 | I think this goal is a good goal to shoot for |
| 8 | I am willing to put in a great deal of effort to achieve this goal |
| 9 | There is not much to be gained by trying to achieve this goal. |

The control variables included in the research were (1) core self-evaluation which is comprised of self-efficacy, self esteem, locus of control and neuroticism (Judge, et al. 2003) and (2) conscientiousness and three facets of conscientiousness: achievement striving, dutifulness and self discipline (Costa and McCrae 1992, Goldberg 1990).

## Measurement of Core Self-evaluation

Judge, Erez, Bono and Thoresen (2003) provide a 12 item scale to measure the core self evaluation trait. The list of measures is shown in Table 4.2. Judge et al (2003) performed four independent experiments to examine the validity of the measure. They reported the psychometric properties of the measure based on these experiments. Across all measurements, all coefficient alpha reliability estimates were above 0.80 with an average reliability of 0.84. Thus the measure appeared to be consistently reliable. The alphas, item-total correlations, and inter-item correlations all suggest a high level of internal consistency. Test—retest reliability was 0.81, which shows good stability. The measure also displayed convergent validity as evidenced by its correlations with the four core traits. Based on these psychometric properties, we can have reasonable confidence on the measures of this construct.

**Table 4.2: Scale for measuring core self evaluation. Source: Judge et. al. (2003)**

| |
|---|
| 1. I am confident I get the success I deserve in life |
| 2. Sometimes I feel depressed |
| 3. When I try, I generally succeed |
| 4. Sometimes when I fail I feel worthless |
| 5. I complete tasks successfully |
| 6. Sometimes, I do not feel in control of my work |
| 7. Overall, I am satisfied with myself |
| 8. I am filled with doubts about my competence |
| 9. I determine what will happen to my life |
| 10. I do not feel in control of my success in my career |
| 11. I am capable of coping with most of my problems |
| 12. There are times when things look pretty bleak and hopeless to me |

## Measurement of Conscientiousness

To measure conscientiousness and the individual facets of conscientiousness, there are two popular sources (1) Costa and McCrae (1992) from the NEO – PI – R inventory (Neuroticism, Extraversion, Openness to Experience -- Personality Inventory -- Revised)

and (2) Goldberg (1992)'s International Personality Inventory Pool (IPIP). The individual reliabilities of the measures on each of these scales are shown in Table 4.3. Goldberg's scale has higher levels of reliabilities for individual facets of conscientiousness than Costa and McCrae's scale. Thus, Goldberg's scale was chosen to measure conscientiousness in this research.

**Table 4.3: Reliabilities of conscentiousness scale**

| Construct | Costa and McCrae's alpha | Goldberg's alpha |
|---|---|---|
| Conscientiousness | 0.90 | 0.81 |
| Dutifulness | 0.62 | 0.71 |
| Achievement striving | 0.67 | 0.78 |
| Self discipline | 0.75 | 0.85 |

## *4.4. Instrument Development and Refinement*

### 4.4.1. Design Considerations

The scenario and the questionnaire were developed with a number of design considerations. The scenario section of the instrument had to include the conditions that precede escalation. These conditions included an unambiguous choice between actions that result in escalation or in de-escalation, negative feedback about the project and a plausible story that contained no distractions. One other important consideration was to ensure subjects perceived the manipulation of constructs in the scenario. This was measured by manipulation checks within the questionnaire.

The subject's initial goal commitment had to be measured before any further information on the feedback or completion of the project was given to the subject. This ensured that the subject's initial commitment was not influenced by feedback or completion. The questionnaire had to reliably measure both the dependent variable (escalation decision),

and the independent variables (goal difficulty, goal specificity, goal commitment, project completion).

### 4.4.2. Initial Instrument Development

#### Scenario

Researchers in the past have used a variety of scenarios to investigate escalation of commitment in projects. I examined the previously used scenarios to determine if any of these could be adapted for the present research and if not, to identify the elements that a new scenario must incorporate. Based on the results of this review, it became clear that a new scenario had to be constructed.

#### Questionnaire

The literature was reviewed to identify suitable measurement scales for the construct of interest. The scale for goal commitment was used from Hollenbeck and Klein (1987) and for escalation the scale was adapted from Depledge's dissertation (Depledge, 2004).

#### Instrument Refinement

Data were gathered after receiving the appropriate permission from the Institutional Review Board (IRB) at Georgia State University to conduct experiments using human subjects. Each participant completed an informed consent form and participation was voluntary. Appendix A shows the informed consent form that was used in this study
A set of pretests were conducted before the actual experiment with IT managers. The purpose of the pretests was to: (1) ensure the comprehensibility of the scenario, (2) verify

that the manipulations were working, and (3) verify that the questions following the scenario were clear and understandable.

There were a total of five pretests conducted between Nov.2005 and May 2006. All pretests were conducted on subjects enrolled in the Robinson College of Business at Georgia State University. To gain access to potential subjects, the researcher identified appropriate classes and obtained permission from each instructor to ask for volunteers from their classes.

### *Pre-test: Round One*

The first round of pre-testing involved 46 subjects. The scenarios used in this round are shown in Appendix C. Two versions of the scenario, easy vague goal at low completion and difficult specific goal at low completion were tested. The results of this round indicated significant problems with both the scenario and the questionnaire.

Specifically, the narrative of the scenario in both the versions appeared too similar for the subjects and the manipulations of goal difficulty and goal specificity were not clearly perceptible. The majority of subjects (25 of 46) failed one or more manipulation checks in the scenario. The willingness to continue scores for the two versions were also very close to each other (5.4 and 5.5). The difference was not statistically significant.

Several changes to the scenario and questionnaire were applied for the next round of pre-testing. The major changes included: 1) Changed the manipulation checks from dichotomous to 8 point likert scales. This enabled us to get more information on the

perceived manipulation by the subject. This also helped us to calculate reliability and other statistics. 2) Specific formatting changes were made to the scenario which helped the subject to perceive the intended manipulation. 3) We included an additional question in which subjects were asked to explain the reasons for their decision. This enabled us to get more insights on what the subject considered in making a decision.

### *Pre-test: Round Two*

The second round of pre-test involved 36 subjects. The scenarios used in this round are presented in Appendix D. The same two versions of the scenario, easy vague goal at low completion and difficult specific goal at low completion were tested. The results of this round indicated significant problems with the scenario and manipulations.

Specifically, the competitor information as the negative feedback was causing some distraction in the scenario. This was detected by reading the explanations that subjects gave for their decision. Subjects' decisions was based on the competitor information more than the project goals. The willingness to continue scores were 4.9 and 5.3. The difference was not statistically significant, either. Thus for the next version of the scenario, the negative feedback was introduced to the subject in the form of a software bug and the competitor information removed from the scenario.

### *Pre-test: Round Three*

Round three of pre-testing was conducted with 35 subjects. The scenarios used in this round are presented in Appendix E. The same two versions of the scenario, easy vague

and difficult specific goals at low completion were tested. The mean scores on the willingness to continue variable was 4.4 and 5.0. The difference was statistically significant at 0.05 alpha level. Thus the changes made to the previous round contributed positively in this pretest.

Analyzing the reasons that subjects indicated in the scenario suggested that goals were playing a major role in the decision and thus the changes were in the right direction. A number of subjects also indicated project completion or sunk costs as a major reason for their escalation decision. Very minimal changes were made to the scenario 1) to ensure subjects consider both goals and project completion for their decision making and to 2) increase the separation of the willingness to continue variable. A few formatting changes to highlight the goal aspects were made for the next version of the scenario.

### *Pre-test: Round Four*

The revised scenario from the previous round was tested with 39 subjects as part of round four pre-testing. The two versions of the scenario were tested with 39 subjects. The scenarios used in this round are presented in Appendix F. The results of this round were positive as the subjects based their decision on the manipulated variables (goal difficulty, goal specificity and project completion) and the mean scores on willingness to continue for the two versions of the scenario was also further apart. The mean scores were 3.9 and 6.1. For the next round of pilot tests, four versions of the scenarios were prepared with no further changes.

### *Pre-test: Round Five*

This pretest was conducted on a large scale with 157 students. The scenarios used in this round is presented in Appendix G. A full sample scenario is presented in Appendix H Four versions of the scenario: 1) Difficult-Specific goal at low completion 2) Difficult-Specific goal at high completion, 3) Easy-Vague goal at low completion and 4) Easy-Vague goal at high completion were tested. Table 4.4 presents the mean scores on the dependent variable for this round

**Table 4.4: Pre-test round five results**

| | **Willingness to continue** | |
|---|---|---|
| | Mean | Standard Deviation |
| Difficult-Specific-Low | 4.16 | 1.66 |
| Difficult-Specific-High | 5.36 | 1.86 |
| Easy-Vague-Low | 5.52 | 1.74 |
| Easy-Vague-High | 5.25 | 2.05 |

Encouraged by the results, a decision to proceed with the actual test with IT managers was made. The next section describes the experiment execution with IT managers and the data collection procedure.

## *4.5. Experiment Execution and Data Collection*

Data was collected using a web-based role-playing experiment. The final data gathering was conducted during the period May-July 2006. A total of 350 IT managers responded to the web based experiment. Eight versions of the scenario were used and the subjects were randomly assigned to one of the eight conditions.

Subjects who were working for IT companies or IT departments in other major companies participated in the experiment. The subjects were chosen based on personal

contacts. Several companies were contacted and sent emails to the relevant people who participated in the experiment.

In most cases, the researcher contacted the potential respondent by an initial email or by phone, requesting their help along with the description of the task that the subject needed to perform. This initial contact was made to get their consent to participate in the experiment. After a considerable number of subjects were contacted, an email detailing the role, task and the web site link was sent to the potential respondent. Over 350 subjects completed the web experiment out of 638 subjects who responded to the request. Thus, the response rate was over 54%. The response rate was very high as emails were sent out to people who had already agreed to participate in the study.

Non-response bias was assessed by comparing data from early and late survey respondents (Armstrong and Overton 1977). The ANOVA tests revealed no significant differences between the two groups on willingness to continue ($t=0.283$), Levene's test for homogeneity also revealed that there was no significant difference in variance between the groups ($F=1.665$). A few people were contacted again after the initial email to see why they did not respond. The main reasons included 1) their job was not closely related to decision making 2) not enough knowledge about the situation and 3) busy schedule. Based on these, the threat from non-response bias appeared to be minimal.

Manipulation checks were conducted by asking subjects to respond to two questionnaire items for each manipulated variable in the study. Each of the items was measured on an

eight-point likert scale. One-way ANOVA tests were employed to determine if the manipulations were successful. Table 4.5 presents the results of the ANOVA tests. For each of the manipulated variables the means of the manipulation items for low and high conditions are presented in the Table 4.5. Between-group ANOVA statistics for low and high conditions shows that they are significantly different for all the manipulated variables ($p<0.001$), indicating that the manipulations were successful.

**Table 4.5: Results from the manipulation tests**

| Variable | Manipulation | | Between Group Statistics | | |
|---|---|---|---|---|---|
| | Easy | Difficult | Sum of Squares | F- Value | |
| Goal difficulty | 3.66 | 6.48 | 687.22 | 273.05 | Significant at p<0.001 |
| | | | | | |
| | Vague | Specific | Sum of Squares | F- Value | |
| Goal specificity | 3.61 | 6.03 | 505.11 | 111.08 | Significant at p<0.001 |
| | | | | | |
| | Low | High | Sum of Squares | F- Value | |
| Project completion | 3.12 | 5.89 | 642.46 | 171.58 | Significant at p<0.001 |

The IT managers belonged to over 150 companies mainly from the U.S. and India.

349 IT managers participated in the final role playing scenario experiment. Table 4.6 lists the top represented companies. Table 4.7 presents the demographics of the IT managers who participated in the study.

**Table 4.6: Respondents by company**

| *Company* | *Number of respondents* |
|---|---|
| Tata Consultancy Services | 24 |
| Infosys Technologies | 18 |
| Wipro Technologies | 15 |
| Microsoft Corporation | 10 |
| Business Objects | 10 |
| Intel Corporation | 7 |
| IBM | 6 |
| Cisco Systems | 6 |
| Manhattan Associates | 6 |
| Vishay Inc | 5 |
| Nokia | 5 |

**Table 4.7: Demographics**

| *Item* | *Description* |
|---|---|
| Sample size | 349 |
| Age | Mean of 28.4 Years |
| IT experience | Mean of 4.7 years with max of 30 years |
| Software development experience | Mean of 5.1 years with max of 30 years |
| Education | Doctoral Degree: 9<br>Masters Degree: 131<br>Bachelors Degree: 144<br>No Response:71 |

Given that we have subjects who participated from both the US and India, a simple t-test was performed to detect differences and no significant difference was found on the dependent variable (t=-0.902). Levene's test for homogeneity also revealed that there was no significant difference in variance between the groups (F=1.702). Thus we decided to pool the two groups for further analysis.

## *4.6. Data Analysis*

Instrument validation is an important step before one establishes internal validity or statistical construction validity(Straub, et al. 2004). Instrumentation validity ensures that

constructs are likely real and reliable and the instrument is likely measuring the right content.

Some of the recent research by Jarvis et al (2003) and Petter et al (2006) state that researchers have often mis-specified formative constructs as reflective constructs in their research. Jarvis et al (2003) note that the decision to model a construct as formative or reflective should be based on the four criteria shown in Table 4.8:

**Table 4.8: Decision rules to identify construct type**

| Decision Rule | Formative Model | Reflective Model |
|---|---|---|
| Direction of causality between construct and measures | Direction of causality is from measures to the construct | Direction of causality is from construct to measures |
| Interchangeability of measures | Measures need not be interchangeable | Measures should be interchangeable |
| Covariation among measures | Covariation among construct measures is not necessary | Measures are expected to covary |
| Nomological net of construct measures | Measure may or may not have same antecedents and consequences | Measures must have the same antecedents and consequences |

Using the criteria and the decision rules, each of the constructs and its measurement items used in the research were examined and classified as reflective or formative constructs. This is presented in Table 4.9.

**Table 4.9: Measures and construct type**

| Construct | Measures | Model type and Rationale |
|---|---|---|
| Escalation | 1. To what degree do you lean towards discontinuing or continuing the project<br>2. How strongly will you recommend to discontinue or continue the project | **Reflective construct**<br><br>*Rationale*:<br>Measures are expected to covary<br>Measures have a common theme<br>Dropping a measure should not affect the content validity |
| Goal Commitment | 1. Quite frankly, I don't care if I achieve this goal or not<br>**2.** I am strongly committed to pursuing this goal<br>3. It wouldn't take much to make me abandon this goal<br>4. I think this goal is a good deal to shoot for<br>5. I am willing to put in a great deal of effort to achieve this goal | **Reflective construct**<br><br>*Rationale*:<br>Measures have a common theme<br>Measures are expected to covary<br>Direction of causality is from construct to measures |
| Core self-evaluations | 1. I am confident I get the success I deserve in life<br>2. Sometimes I feel depressed<br>3. When I try, I generally succeed<br>4. Sometimes when I fail I feel worthless<br>5. I complete tasks successfully<br>6. Sometimes, I do not feel in control of my work<br>7. Overall, I am satisfied with myself<br>8. I am filled with doubts about my competence<br>9. I determine what will happen to my life<br>10. I do not feel in control of my success in my career<br>11. I am capable of coping with most of my problems<br>12. There are times when things look pretty bleak and hopeless to me | **Formative construct**<br><br>*Rationale*:<br>Measures define the construct<br>Direction of causality is from measures to construct<br>Not necessary for measures to covary<br>Measures don't share a common theme |
| Conscientiousness | 1. I am always prepared.<br>2. I pay attention to details.<br>3. I get chores done right away.<br>4. I carry out my plans. | **Formative construct**<br><br>*Rationale*:<br>Not necessary for measures to covary |

| | | |
|---|---|---|
| | 5. I make plans and stick to them.<br>6. I waste my time.<br>7. I find it difficult to get down to work.<br>8. I do just enough work to get by.<br>9. I don't see things through.<br>10. I shirk my duties. | Measures don't share a common theme |
| Self discipline | 1. I get chores done right away.<br>2. I am always prepared.<br>3. I start tasks right away.<br>4. I get to work at once.<br>5. I carry out my plans.<br>6. I find it difficult to get down to work<br>7. I waste my time.<br>8. I need a push to get started.<br>9. I have difficulty starting tasks.<br>10. I postpone decisions. | **Formative construct**<br><br>*Rationale*:<br>Not necessary for measures to covary<br>Measures don't share a common theme |
| Achievement striving | 1. I go straight for the goal.<br>2. I work hard.<br>3. I turn plans into actions.<br>4. I plunge into tasks with all my heart.<br>5. I do more than what's expected of me.<br>6. I set high standards for myself and others.<br>7. I demand quality.<br>8. I am not highly motivated to succeed.<br>9. I do just enough work to get by.<br>10. I put little time and effort into my work. | **Formative construct**<br><br>*Rationale*:<br>Not necessary for measures to covary<br>Measures don't share a common theme |
| Dutifulness | 1. I try to follow the rules.<br>2. I keep my promises.<br>3. I pay my bills on time.<br>4. I tell the truth.<br>5. I listen to my conscience.<br>6. I break rules.<br>7. I break my promises.<br>8. I get others to do my duties.<br>9. I do the opposite of what is asked.<br>10. I misrepresent the facts. | **Formative construct**<br><br>*Rationale*:<br>Not necessary for measures to covary<br>Measures don't share a common theme |

### 4.6.1. Framework

Validation is very important to establish scientific truth (Nunnally 1978, Straub, et al. 2004). Ahire and Devaraj's (2001) framework as depicted in Table 4.10 was used as a reference framework for validation. Validations were performed based on the guidelines provided by Straub (2004). The construct refinement and validation differ somewhat for formative versus reflective constructs (Petter, et al. 2006) as indicated in the table.

**Table 4.10: Framework for Measurement Validation.**

| ***Validity Check*** | ***Definition*** | ***Applicability*** | ***Actual Tests Used*** |
|---|---|---|---|
| Phase 1: Development of the Measurement Instrument | | | |
| Content Validity | The degree to which the measurement spans the domain of concept | Formative and Reflective constructs | Review of prior literature<br>Expert knowledge |
| Face Validity | The extent to which the measurement instrument "looks like" it measures what it is intended to measure | Formative and Reflective constructs | Expert knowledge<br>Pretests |
| Phase 2: Measurement Validation of the instrument | | | |
| Reliability | The degree of consistency between different measures of a construct | For Reflective constructs | Cronbach's alpha<br>Composite Reliability<br>Average Variance Extracted (AVE) |
| | | For Formative constructs | Variance inflation factor (VIF) |
| Convergent Validity | The degree to which multiple methods of a construct yield the same results | Reflective constructs only | Item to construct loading<br>Composite reliability |
| Discriminant Validity | The degree to which a concept and its indicators differ from another concept and its indicators | For Reflective constructs | AVE extracted vs. squared construct correlation<br>Item to construct loading vs item cross loading on all other constructs |
| | | For Formative constructs | Factor structure<br>Item to construct correlation |
| Nomological Validity | The extent to which constructs of the framework relate to each other in a manner consistent with theory and prior research | Formative and Reflective constructs | Regression Model |

| Phase 3: Post-Implementation Validation of the Instrument | | | |
|---|---|---|---|
| Concurrent Validity | The extent to which the construct correlates with a concurrently existing external criterion | Formative and Reflective constructs | Not tested |
| Predictive Validity | The extent to which the construct correlates with an external criterion occurring in the future | Formative and Reflective constructs | Not tested |

### 4.6.2. Development of Measurement Instrument

#### Content and Face Validity

Content validity is an issue of representation. Content validity establishes if the items measure the content of a given construct (Cronbach 1971, Kerlinger 1964). Content validity can be established through literature reviews and expert judges or panels (Straub, 1989).

In this research, all the constructs were derived from established literature streams of goal setting and escalation of commitment. Feedback from the committee and others was sought during and after the proposal defense. The proponents of goal setting theory, Edwin Locke and Gary Latham were also contacted by email to further establish content validity.

### 4.6.3. Measurement Validation for Reflective Constructs

#### Convergent Validity

Convergent validity is evidenced when items thought to reflect a construct converge, or show significant high correlations with each other, particularly when compared to the convergence of items relevant to other constructs, irrespective of method (Straub, et al.

2004). Convergent validity is applicable for reflective constructs. The measurement items of a formative construct are not expected to converge.

Factor analysis with Principal Component Analysis as the extraction method and Varimax with Kaiser Normalization as the rotation method was used to assess the convergent validity of reflective constructs. Initially the PCFA was applied to measurement items for all reflective constructs. The result of each iteration was analyzed and appropriate adjustments made before the next round of analysis.

The first round of PCFA was performed with five items of goal commitment and two items of escalation of commitment; it yielded three factors instead of the theoretically expected two factors. It was observed that gcq1 and gcq3 were loading on a different factor. Given the reflective nature of the construct, it is required that all the items load on the same factor. The AVE of the whole construct including gcq1 and gcq3 was found to be 0.41 which falls below the suggested minimum of 0.50. Further examining the items, it was noted that both gcq1 and gcq3 are reverse coded items. The literature suggests that reverse coded items can often cause problems with convergence (Samuelstuen 2003). Some researchers have argued that reverse coded items should be avoided (Magazine, et al. 1996, McDonald 1999, Schriesheim, et al. 1991). Some studies have reported that reverse coded items might result in impaired reliability and validity of measurement (Magazine, et al. 1996, McDonald 1999, Schriesheim, et al. 1991). Thus a decision was made to eliminate gcq1 and gcq3. After dropping the reverse coded items the measurement items loaded on two factors as expected. Table 4.11 presents the results of

the factor analysis and the factor loadings after eliminating the reverse coded items. Each of the loadings exceeded 0.707, indicating good convergent validity.

**Table 4.11: PCFA and Factor Loadings**

| | | 1 | 2 |
|---|---|---|---|
| Willingness to Continue | escq1 | ***0.950*** | 0.074 |
| | escq2 | ***0.949*** | 0.070 |
| Goal Commitment | gcq5 | 0.066 | ***0.802*** |
| | gcq2 | 0.018 | ***0.768*** |
| | gcq4 | 0.092 | ***0.742*** |

Hair et al (1998) recommend factor loadings of ±0.50 or more as acceptable for demonstrating practical significance, and for sample size of over 100, ±.30 is sufficient. In our case, all the factor loadings are over 0.51 and sample size is over 300. Table 19 also presents the item to construct loadings of individual items (Read column 1 as willingness to continue construct and Read column 2 as Goal commitment construct). Chin (1998) states that 0.5 loading is the minimum that may be accepted. As evidenced from Table 4.11, each of the item to construct loadings are higher than 0.5, indicating good convergent validity.

## Reliability

Reliability refers to the issue of measurement within the construct. Cronbach (1951) refers to reliability as a statement about measurement accuracy or the extent to which the respondent can answer the same questions or close approximations the same way each time (Straub, et al. 2004). Three approaches were used to measure the reliability of

constructs. The results from all three approaches are shown in Table 20. Although reliability is not required for formative constructs as the items are examining different facets of a construct (Diamantopoulos and Winklhofer 2001, Jarvis, et al. 2003, Petter, et al. 2006), our measurement items for formative constructs exhibit good cronbach's alpha and composite reliability and are reported here.

*Cronbach's Alpha*: Cronbach's Alpha is a measure of the internal reliability of a set of indicator items that constitute a scale purporting to represent a specific construct. It is a widely used measure indicating the lower bound of reliability of a scale (Chin 1998). Hair and his colleagues suggest a minimum alpha of 0.60 to demonstrate an acceptable degree of reliability (Hair, et al. 1998). As represented in Table 4.12, all the constructs satisfy the minimum recommended value of 0.60 for Cronbach Alpha.

*Composite Reliability*: Composite reliability is a measure to assess the internal reliability of a set of indicator items that constitute a scale purporting to represent a specific construct. According to Chin (1998), this measure is more representative of the actual reliability of the scale than Cronbach's alpha, which indicates the lower bound of reliability. It is thus expected that the composite reliability of a scale will be higher than its cronbach's alpha value. All the constructs have a composite reliability greater than 0.80.

*Average Variance Extracted (AVE)*: Average Variance Extracted is a measure of the proportion of variance captured by a construct that comes from its indicator items, as

opposed to that which is due to measurement error (Chin 1998). Fronell and Larcker (1981) suggest .50 as an acceptable value. Both the reflective constructs exceed the threshold as shown in Table 4.12.

**Table 4.12: Reliabilities of Constructs**

| Construct | Number of Items | Cronbach Alpha | Composite Reliability | AVE |
|---|---|---|---|---|
| Escalation | 2 | 0.90 | 0.95 | 0.90 |
| Goal Commitment | 3 | 0.66 | 0.82 | 0.60 |
| Core Self Evaluation | 12 | 0.75 | 0.82 | N/A |
| Conscientiousness | 10 | 0.80 | 0.83 | N/A |
| Dutifulness | 10 | 0.78 | 0.83 | N/A |
| Self Discipline | 10 | 0.82 | 0.86 | N/A |
| Achievement Striving | 10 | 0.82 | 0.88 | N/A |

Convergent validity can also be established using construct reliability and individual item reliabilities. The high reliabilities (cronbach alpha and composite reliability) indicates good convergent validity.

## Discriminant Validity

Discriminant validity is the extent to which items load on the same construct compared to loadings on other constructs. One test of the existence of a construct is that the measurement items posited to reflect that construct differ from those that are not believed to make up the construct (Straub, et al. 2004). Discriminant validity was assessed using two methods. The first test of discriminant validity was to compare the average variance extracted (AVE) for each of the latent constructs with the square of the correlations among the latent constructs. This is represented in Table 4.13. It can be observed that the diagonal representing the square root of AVE is greater than the correlations among the constructs, demonstrating good discriminant validity.

**Table 4.13: AVE and correlation for reflective constructs**

| | Mean | Std. Dev | Willingness to continue | Goal Commitment |
|---|---|---|---|---|
| Escalation (2) | 5.751 | 1.741 | 0.950 | |
| Goal Commitment (3) | 5.992 | 0.838 | 0.149 | 0.770 |

Discriminant validity can also be established by comparing the loading of each indicator item on its own construct with its cross-loading on all other constructs. Table 4.11 shows that individual indicator items loaded higher on their own construct than did the cross-loadings of any other indicator item on that construct.

### 4.6.4. Measurement Validation for Formative Constructs

#### Reliability

Reliability assesses the consistency and measurement error among the individual measures. As multicollinearity causes problems for formative constructs, Variance Inflation Factor (VIF) statistic is calculated to detect the multicollinearity. Myers (1990) suggests removing the item(s) that have a VIF statistic greater than 10. In our study, the VIF values of all items were less than 10 and thus multicollinearity was not a problem (See Table 4.14).

**Table 4.14: VIF for measurement items**

| | | **Variance Inflation Factor (VIF)** |
|---|---|---|
| Core Self Evaluation | cse1 | 1.26 |
| | cse2 | 1.33 |
| | cse3 | 1.23 |
| | cse4 | 1.42 |
| | cse5 | 1.20 |
| | cse6 | 1.29 |
| | cse7 | 1.41 |

| | | |
|---|---|---|
| | cse8 | 1.41 |
| | cse9 | 1.29 |
| | cse10 | 1.36 |
| | cse11 | 1.46 |
| | cse12 | 1.44 |
| Conscientiousness | con1 | 1.16 |
| | con2 | 1.65 |
| | con3 | 1.58 |
| | con4 | 1.47 |
| | con5 | 1.37 |
| | con6 | 1.72 |
| | con7 | 1.64 |
| | con8 | 1.31 |
| | con9 | 1.84 |
| | con10 | 1.84 |
| Dutifulness | dut1 | 1.49 |
| | dut2 | 1.60 |
| | dut3 | 1.31 |
| | dut4 | 1.47 |
| | dut5 | 1.39 |
| | dut6 | 1.96 |
| | dut7 | 2.14 |
| | dut8 | 1.54 |
| | dut9 | 2.05 |
| | dut10 | 1.84 |
| Self Discipline | sd1 | 1.21 |
| | sd2 | 1.62 |
| | sd3 | 2.17 |
| | sd4 | 1.78 |
| | sd5 | 1.48 |
| | sd6 | 1.45 |
| | sd7 | 1.81 |
| | sd8 | 1.91 |
| | sd9 | 2.24 |
| | sd10 | 2.00 |
| Achievement Striving | as1 | 1.23 |
| | as2 | 1.76 |
| | as3 | 1.95 |
| | as4 | 1.89 |
| | as5 | 2.28 |
| | as6 | 2.07 |

| | | |
|---|---|---|
| | as7 | 1.79 |
| | as8 | 1.25 |
| | as9 | 1.59 |
| | as10 | 1.67 |

## Item Weights

Item weights are important in the case of formative constructs to ensure the item significantly contributes to the construct (Chin, 1998). From Table 4.15, it can be observed that all the item weights are significant (t-statistic is greater than 2) and thus contribute strongly to the underlying construct. Table 4.16 presents the average weights of each of the construct and the square root of the inverse of number of items for each construct (SQRT(1/N) in Table 25). Petter et. al. (2006) suggest that for formative constructs the average weights should be lower than SQRT(1/N). The average weights of all the constructs satisfy this condition indicating that the items significantly contribute to the construct.

**Table 4.15: Item weights and t - statistic**

| | | Item Weights | Standard Error | T-Statistic |
|---|---|---|---|---|
| Core Self Evaluation | cse1 | 0.1544 | 0.0195 | 7.9055 |
| | cse2 | 0.1269 | 0.0252 | 5.0265 |
| | cse3 | 0.1081 | 0.0214 | 5.0526 |
| | cse4 | 0.1797 | 0.0157 | 11.4711 |
| | cse5 | 0.0994 | 0.0262 | 3.8008 |
| | cse6 | 0.1539 | 0.0161 | 9.569 |
| | cse7 | 0.1655 | 0.0196 | 8.4424 |
| | cse8 | 0.1729 | 0.0183 | 9.4491 |
| | cse9 | 0.1588 | 0.0206 | 7.7168 |
| | cse10 | 0.1943 | 0.0156 | 12.4293 |
| | cse11 | 0.1969 | 0.0165 | 11.9406 |
| | cse12 | 0.1774 | 0.0179 | 9.9323 |
| Conscientiousness | | | | |
| | con1 | 0.1046 | 0.0206 | 5.0709 |
| | con2 | 0.1925 | 0.0136 | 14.1843 |
| | con3 | 0.1979 | 0.0135 | 14.6294 |

| | | | | |
|---|---|---|---|---|
| | con4 | 0.1771 | 0.0176 | 10.0648 |
| | con5 | 0.1808 | 0.0144 | 12.5631 |
| | con6 | 0.179 | 0.0164 | 10.941 |
| | con7 | 0.2148 | 0.0129 | 16.6101 |
| | con8 | 0.2204 | 0.0137 | 16.0775 |
| | con9 | 0.1896 | 0.0188 | 10.0828 |
| | con10 | 0.1411 | 0.0099 | 14.2358 |
| Dutifulness | | | | |
| | dut1 | 0.1428 | 0.0189 | 7.5371 |
| | dut2 | 0.1668 | 0.0176 | 9.476 |
| | dut3 | 0.1485 | 0.0187 | 7.9495 |
| | dut4 | 0.144 | 0.0216 | 6.6618 |
| | dut5 | 0.1461 | 0.0178 | 8.1867 |
| | dut6 | 0.186 | 0.0174 | 10.6929 |
| | dut7 | 0.2141 | 0.0152 | 14.0798 |
| | dut8 | 0.159 | 0.0205 | 7.7481 |
| | dut9 | 0.2079 | 0.0148 | 14.0937 |
| | dut10 | 0.1937 | 0.0161 | 12.0065 |
| Achievement Striving | | | | |
| | as1 | 0.0981 | 0.0158 | 6.2029 |
| | as2 | 0.1725 | 0.011 | 15.6901 |
| | as3 | 0.1793 | 0.0083 | 21.6321 |
| | as4 | 0.1789 | 0.0084 | 21.2404 |
| | as5 | 0.1868 | 0.0082 | 22.8122 |
| | as6 | 0.1676 | 0.0113 | 14.8366 |
| | as7 | 0.1687 | 0.0104 | 16.2228 |
| | as8 | 0.0971 | 0.0157 | 6.1921 |
| | as9 | 0.135 | 0.013 | 10.4067 |
| | as10 | 0.1411 | 0.0099 | 14.2358 |
| Self discipline | | | | |
| | sd1 | 0.1036 | 0.0161 | 6.4398 |
| | sd2 | 0.157 | 0.0112 | 14.0455 |
| | sd3 | 0.1616 | 0.0112 | 14.4362 |
| | sd4 | 0.1534 | 0.0115 | 13.3201 |
| | sd5 | 0.1499 | 0.0109 | 13.7251 |
| | sd6 | 0.1463 | 0.0138 | 10.5938 |
| | sd7 | 0.1789 | 0.0119 | 14.9932 |
| | sd8 | 0.1832 | 0.0132 | 13.9259 |
| | sd9 | 0.188 | 0.0124 | 15.1776 |
| | sd10 | 0.1893 | 0.0138 | 13.7069 |

**Table 4.16: Average weights of constructs and Sqrt (1/N)**

| | N | Average Weights | SQRT(1/N) |
|---|---|---|---|
| Core Self Evaluation | 12 | 0.157 | 0.289 |
| Conscientiousness | 10 | 0.18 | 0.316 |
| Dutifulness | 10 | 0.171 | 0.316 |
| Self Discipline | 10 | 0.161 | 0.316 |
| Achievement Striving | 10 | 0.153 | 0.316 |

## Discriminant Validity

Discriminant validity in the case of formative constructs is examined using factor structure (or principal component structure) and the item weights. Factor structure examines whether the variance shared by a construct with its indicators is greater than the variance shared with other constructs in the model. Table 4.17 presents the principal component structure of the formative constructs, core self evaluation and three facets of conscientiousness, achievement striving, self discipline and dutifulness. Conscientiousness represents a second order construct and thus some of the indicators representing conscientiousness are the same as the indicators of its facets (dutifulness, achieving striving and self-discipline). For example, the indicators as7, as9 and as10 measure conscientiousness as well as achievement striving, the indicators sd1, sd2, sd5, sd6, sd7 measure conscientiousness as well as self-discipline. Thus conscientiousness is not included in Table 4.17.

Although there is no specific cut-off point for the variance when testing for discriminant validity, some of the loadings were observed to be below 0.4. One of the possible explanations is that formative constructs are not expected to converge as in the case of reflective constructs and thus have lower shared variance (Jarvis et al 2003). In case of formative constructs we are looking for a pattern of shared variance between the

constructs and their indicators. From Table 4-17, we can observe that the constructs and its indicators have a consistent pattern of low shared variance. For example, in the case of core self evaluation, the shared variance ranges between 0.37 and 0.63, in the case of self-discipline, the shared variance ranges between 0.43 and 0.72. As the variance shared by a construct with its indicators is consistently greater than the variance shared with other constructs in the model (Table 4-17), discriminant validity can be considered as established for these formative constructs.

**Table 4.17: Item to construct correlations**

| | CoreSelfEval | Dutifulness | SelfDiscipline | AchievementStriving |
|---|---|---|---|---|
| cse1 | ***0.472*** | 0.119 | 0.278 | 0.323 |
| cse2 | ***0.407*** | 0.211 | 0.263 | 0.326 |
| cse3 | ***0.370*** | 0.250 | 0.321 | 0.331 |
| cse4 | ***0.555*** | 0.128 | 0.258 | 0.281 |
| cse5 | ***0.380*** | 0.070 | 0.184 | 0.187 |
| cse6 | ***0.478*** | 0.242 | 0.304 | 0.285 |
| cse7 | ***0.557*** | 0.034 | 0.170 | 0.161 |
| cse8 | ***0.577*** | 0.108 | 0.166 | 0.147 |
| cse9 | ***0.548*** | 0.106 | 0.285 | 0.235 |
| cse10 | ***0.623*** | 0.240 | 0.319 | 0.311 |
| cse11 | ***0.629*** | 0.132 | 0.275 | 0.299 |
| cse12 | ***0.599*** | 0.180 | 0.267 | 0.219 |
| dut1 | 0.173 | ***0.481*** | 0.280 | 0.311 |
| dut2 | 0.189 | ***0.542*** | 0.300 | 0.339 |
| dut3 | 0.114 | ***0.480*** | 0.195 | 0.227 |
| dut4 | 0.119 | ***0.465*** | 0.231 | 0.273 |
| dut5 | 0.198 | ***0.474*** | 0.263 | 0.357 |
| dut6 | 0.101 | ***0.662*** | 0.299 | 0.211 |
| dut7 | 0.174 | ***0.723*** | 0.317 | 0.267 |
| dut8 | 0.148 | ***0.578*** | 0.264 | 0.193 |
| dut9 | 0.120 | ***0.695*** | 0.259 | 0.317 |
| dut10 | 0.212 | ***0.647*** | 0.322 | 0.401 |
| sd1 | 0.155 | 0.085 | ***0.434*** | 0.250 |
| sd2 | 0.285 | 0.250 | ***0.574*** | 0.433 |
| sd3 | 0.175 | 0.162 | ***0.602*** | 0.342 |
| sd4 | 0.116 | 0.147 | ***0.586*** | 0.324 |
| sd5 | 0.350 | 0.251 | ***0.547*** | 0.424 |

| | | | | |
|---|---|---|---|---|
| sd6 | 0.335 | 0.366 | ***0.571*** | 0.458 |
| sd7 | 0.293 | 0.393 | ***0.678*** | 0.406 |
| sd8 | 0.400 | 0.339 | ***0.700*** | 0.511 |
| sd9 | 0.383 | 0.427 | ***0.720*** | 0.491 |
| sd10 | 0.385 | 0.404 | ***0.720*** | 0.506 |
| as1 | 0.165 | 0.214 | 0.351 | ***0.398*** |
| as2 | 0.318 | 0.363 | 0.453 | ***0.655*** |
| as3 | 0.337 | 0.368 | 0.521 | ***0.675*** |
| as4 | 0.332 | 0.336 | 0.486 | ***0.701*** |
| as5 | 0.357 | 0.210 | 0.472 | ***0.741*** |
| as6 | 0.307 | 0.196 | 0.359 | ***0.661*** |
| as7 | 0.299 | 0.298 | 0.436 | ***0.667*** |
| as8 | 0.258 | 0.282 | 0.281 | ***0.532*** |
| as9 | 0.330 | 0.350 | 0.498 | ***0.640*** |
| as10 | 0.262 | 0.444 | 0.443 | ***0.657*** |

### 4.6.5. Validation of Assumptions

To derive confidence in the research analysis technique, it is important to establish statistical conclusion validity. Statistical conclusion validity concerns the mathematical relationships between the variables and allows us to make inferences about whether this statistical formulation correctly expresses the true covariation (Cook and Campbell 1979). Validation of assumptions is a very important part of establishing statistical conclusion validity (Field 2005). Berry (1993) lists several assumptions that need to be satisfied to draw conclusions about a population based on a regression analysis done on a sample.

**Table 4.18: Validation of assumptions**

| ***Assumption*** | ***Description*** | ***Actual Tests Used*** |
|---|---|---|
| ***Specification and Measurement Errors*** | | |
| Variable types | All predictor variables must be quantitative or categorical | All the variables are measured on a likert scale |
| No measurement error | The variables are accurately measured | All variables are from literature<br>Instrument was validated in earlier section |
| Linearity | The mean values of the outcome variable for each | Partial regression plots. No curvature was observed |

| | | |
|---|---|---|
| | increment of the predictor(s) lie along a straight line. | |
| ***Assumptions concerning the error term*** | | |
| No multicollinearity | There should not be perfect linear relationship between two or more predictors | Correlation matrix<br>Variance Inflation Factors<br>Collinearity tolerance statistic |
| Homoscedasticity | At each level of the predictor variable, the variance of the residual terms should be constant. | Scatterplots of residuals against predictors |
| No Autocorrelation or Independent errors | For any two observations the residual terms should be uncorrelated. | Correlation matrix<br>Durbin-Watson Statistic |
| Normally distributed errors | It is assumed that the residuals in the model are random, normally distributed variables with mean close to zero. | Histogram of regression standardized residuals<br>Normal P-P plot of Regression Standardized residuals |
| Zero mean | For each observation, the expected value of the error term is zero | Standardized mean score for variables (4.17x E-07) |

## Assumption of No Multicollinearity:

Multicollinearity exists when there is a strong correlation between two or more predictors in a regression model. High levels of multicollinerity increase the probability that a good predictor of the outcome will be found non-significant and rejected from the model (Type II error). Field (2005) mention three reasons why the presence of multicollinearity poses a threat to the validity of multiple regression analysis:

- Importance of predictors: Multicollinearity between predictors makes it difficult to assess the individual importance of a predictor. If the predictors are highly correlated, and each accounts for similar variance in the outcome, we cannot determine the effect of one of those predictors on the dependent variable.

- Unstable predictor equations: Multicollinearity increases the variances of the regression coefficients, resulting in unstable predictor equations. Thus the regression coefficients will be unstable from sample to sample.

- It limits the size of R: When predictors are highly correlated, the unique variance accounted by one or more predictors in the equation would end up being insignificant.

Multicollinearity can be identified by (1) scanning the correlation matrix of all the predictor variables and checking for any high correlations (0.9 or higher), and (2) Calculating the variance inflation factors (VIF). Table 4.19 presents the collinearity diagnostics with VIF and tolerance (inverse of VIF).

**Table 4.19: Collinearity Diagnostics and VIF**

| | | Collinearity Diagnostics | |
|---|---|---|---|
| Model | | **Tolerance** | **VIF** |
| 1 | (Constant) | | |
| | Core Self Evaluation | 0.730 | 1.370 |
| | Conscientiousness | 0.144 | 6.923 |
| | Dutifulness | 0.678 | 1.475 |
| | Self Discipline | 0.236 | 4.232 |
| | Achievement Striving | 0.324 | 3.084 |
| 2 | (Constant) | | |
| | Core Self Evaluation | 0.722 | 1.384 |
| | Conscientiousness | 0.142 | 7.030 |
| | Dutifulness | 0.658 | 1.520 |
| | Self Discipline | 0.234 | 4.271 |
| | Achievement Striving | 0.316 | 3.162 |
| | Goal Difficulty | 0.939 | 1.065 |
| | Goal Specificity | 0.975 | 1.025 |

| | | | |
|---|---|---|---|
| | Project Completion | 0.968 | 1.033 |
| | Goal Commitment | 0.906 | 1.104 |

Myers (1990) recommends a VIF between 1 and 10 and a tolerance less than 1 for no multicollinearity. The largest VIF in the table has a value of 7.030 for conscientiousness which is well within the suggested range. The average VIF of the whole model was 2.3, confirming that that collinearity is not a problem for this model (Bowerman and O'Connell 1990).

The Durbin_Watson statistic needs be close to 2 to confirm that no multicollinearity is present (Field 2005). The Durbin-Watson statistic was found to be 2.026 for the whole model confirming that the measurements are independent and there is no multicollinearity in the regression model (Field 2005).

## Assumption of Normal Distribution of Error Terms

To test the normality of residuals, we can look at the histogram and normal probability plot (Figure 4.1 and Figure 4.2). The histogram in Figure 4.1 is slightly skewed towards the right, but resembles a normal distribution. The normal probability plot shows that the residuals fall along the diagonal confirming the normal distribution of error terms. Figure 4.2 shows the Normal P-P[§] plot of regression standardized residual. It can be observed that all the observed data falls close to the diagonal, validating the Normality assumption.

[§] P-P refers for plots with Probability-Probability on both axes

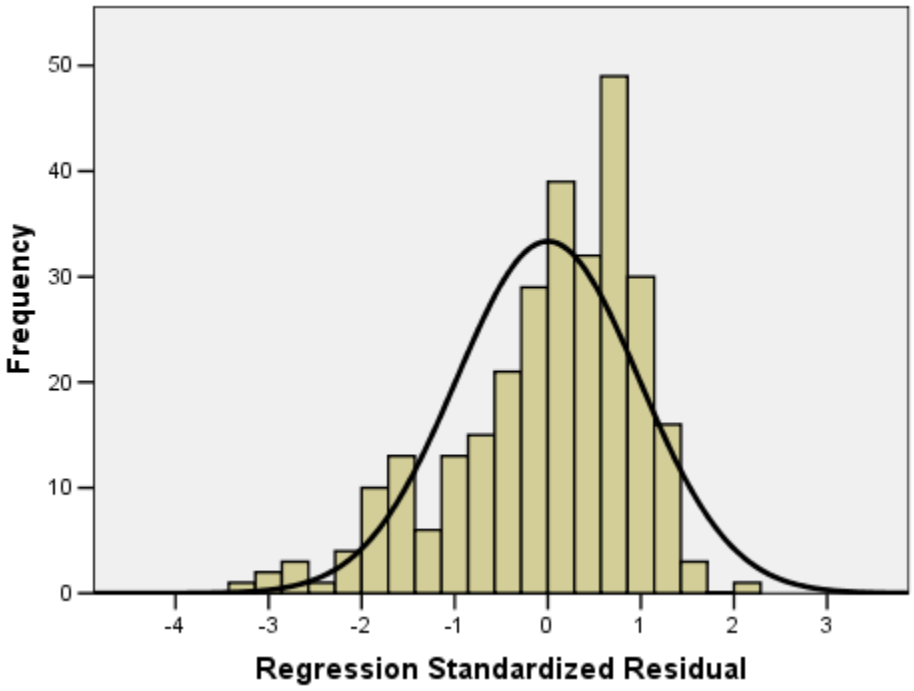


**Figure 4.1: Histogram of regression standardized residual**

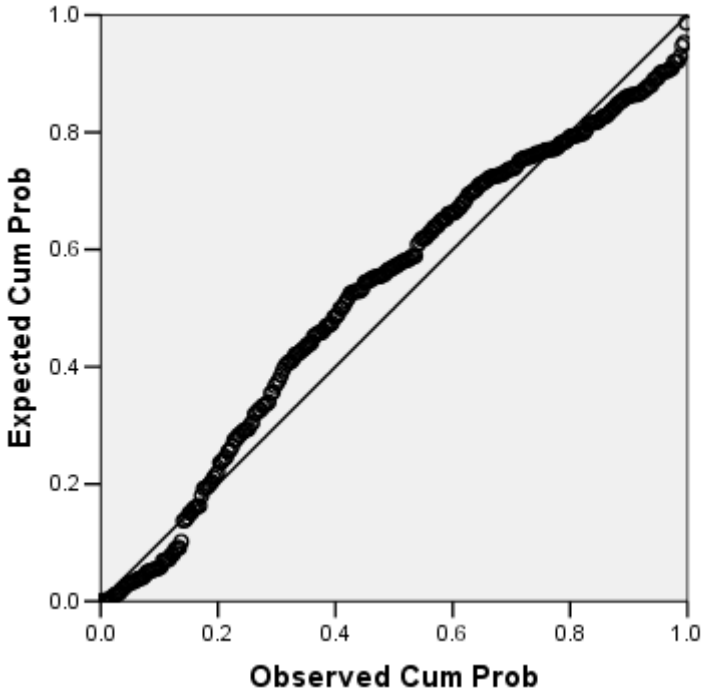


**Figure 4.2: Normal P-P plot of regression standardized residual**

## Assumption of No Homoscedasticity

The scatter plot of the residuals against the predictors indicates the validity of the homoscedasticity and autocorrelation assumptions (Figure 4.3). The plot represents a random distribution of dots without any pattern such as fanning in or fanning out.

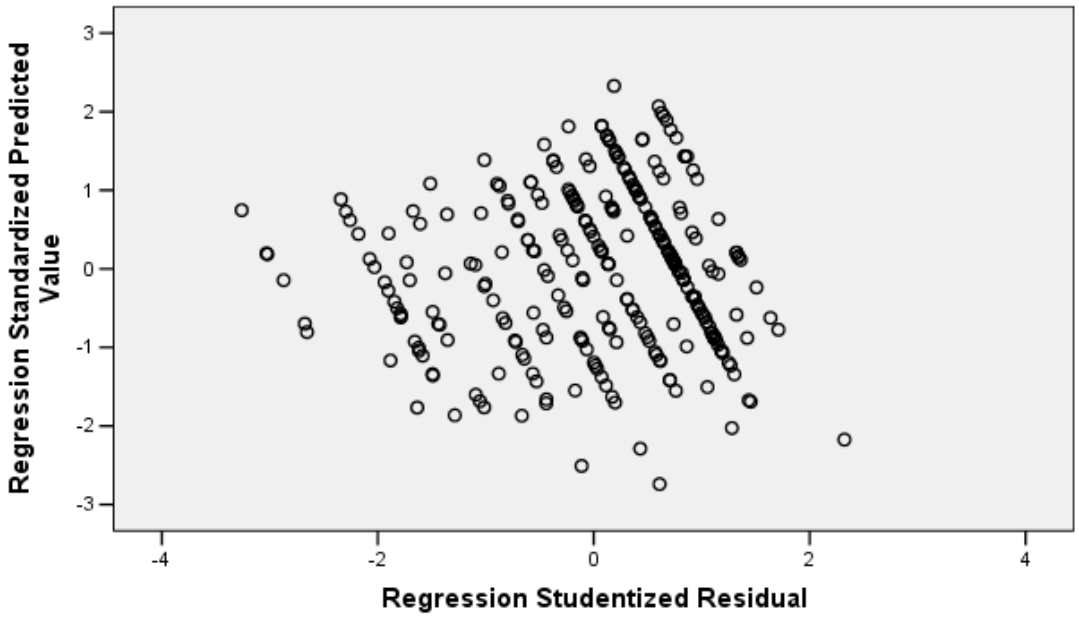


**Figure 4.3: Scatter plot of residuals**

## Summary

All measures passed the validity tests and satisfied the assumptions necessary to run regression analysis and have therefore been included in the final hypotheses tests.

## 4.6.6. Structural Model

Following establishment of an adequate measurement model, the overall structural model was examined. This was done in two stages: evaluation of the overall explanatory power of the structural model, and examination of the level of support given to the individual

hypotheses as demonstrated by the paths. Figure 4.4 shows the overall model and indicates the results obtained. In our model, willingness to continue is our criterion variable and goal difficulty, goal specificity, goal commitment and project completion are the predictor variables. Core self evaluation, conscientiousness, self discipline, achievement striving, dutifulness are the control variables which are treated as covariates in the model. Table 4.20 presents the correlation table of all these variables.

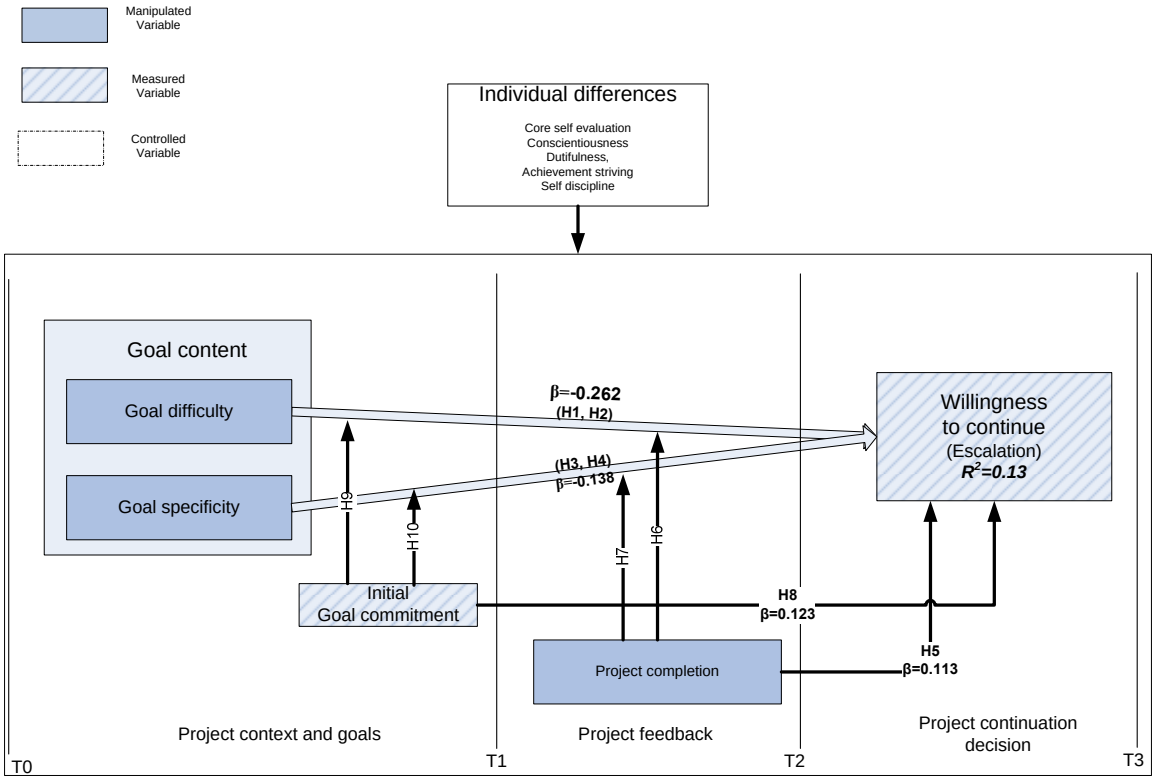


**Figure 4.4: Model with results**

**Table 4.20: Correlation Matrix**

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Escalation | 1 | | | | | | | | | |
| 2 | Goal Difficulty | -0.231** | 1 | | | | | | | | |
| 3 | Goal Specificity | -0.164** | 0.054 | 1 | | | | | | | |
| 4 | Project Completion | 0.107* | 0.082 | 0.042 | 1 | | | | | | |
| 5 | Goal Commitment | 0.149** | -0.111* | 0.006 | 0.026 | 1 | | | | | |
| 6 | Core Self Evaluation | 0.040 | -0.019 | -0.037 | 0.062 | 0.150** | 1 | | | | |
| 7 | Conscientiousness | -0.009 | 0.048 | 0.041 | -0.009 | 0.203** | 0.523** | 1 | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | Dutifulness | -0.037 | -0.079 | 0.031 | -0.102 | 0.143* | 0.266** | 0.546** | 1 | | |
| 9 | Self Discipline | -0.017 | 0.028 | 0.073 | -0.016 | 0.201** | 0.478** | 0.873** | 0.470** | 1 | |
| 10 | Achievement Striving | 0.069 | -0.026 | -0.001 | -0.020 | 0.246** | 0.470** | 0.811** | 0.485** | 0.676** | 1 |

*Significant at the 0.01 level **Significant at the 0.05 level

Table 4.21 and Table 4.22 present the model summary results of the hierarchical regression analysis results. Table 4.23 and Table 4.24 present the detailed results of the hierarchical regression analysis. The first step in each case included the control variables (Model 1) and in the second step of the analysis all the predictors (Model 2) were added to the regression model.

The control variables in the research model include core self evaluation, conscientiousness and the three facets of conscientiousness: dutifulness, self discipline and achievement striving. Conscientiousness and three of its facets in the same model would be redundant as they share common indicators. Thus, two models were run, one with core self evaluation and conscientiousness as the control variables (Table 4.21, Table 4.23), and second with core self evaluation, dutifulness, self discipline and achieving striving as the control variables (Table 4.22, Table 4.24) . It can be observed from Table 4.23 and Table 4.24, that the control variables in both cases are non significant. Core self evaluation, dutifulness, self discipline and achieving striving were used as the control variables for rest of the analysis.

In the overall regression model in Table 4.22 and Table 4.24, the results suggested that all the variables in the model accounted for 13% of variance in willingness to continue, indicated by an $R^2$ of 0.13. The predictors (goal difficulty, goal specificity, project

completion and goal commitment) alone accounted for 12.1% of the variance above and beyond the control variables, this increase in explained variance ($R^2$) was statistically significant, $F(4, 279)= 9.726$, $p<0.001$.

**Table 4.21: Hierarchical regression analysis for overall model with conscientiousness**

| Model | R | R Square | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|
| | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .039(a) | 0.002 | .002 | 0.222 | 2 | 288 | 0.801 |
| 2 | .353(b) | 0.125 | .123 | 9.990 | 4 | 284 | 0.000 |

a Predictors: (Constant), Core Self Evaluation, Conscientiousness
b Predictors: (Constant), Core Self Evaluation, Conscientiousness, Goal Difficulty, Goal Specificity, Project Completion, Goal Commitment
c Dependent Variable: Escalation

**Table 4.22: Hierarchical regression analysis for overall model with facets of conscientiousness**

| Model | R | R Square | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|
| | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .093(a) | 0.009 | .009 | 0.623 | 4 | 283 | 0.646 |
| 2 | .361(b) | 0.130 | .121 | 9.726 | 4 | 279 | 0.000 |

a Predictors: (Constant), Core Self Evaluation, Dutifulness, Self Discipline, Achievement Striving
b Predictors: (Constant), Core Self Evaluation, Dutifulness, Self Discipline, Achievement Striving, Goal Difficulty, Goal Specificity, Project Completion, Goal Commitment
c Dependent Variable: Escalation

The research model shown in Figure 4.4 proposed a direct path from goal difficulty, goal specificity, goal commitment, and project completion to willingness to continue. Each of the paths were tested for statistical significance and the regression analysis results are presented in Table 4.24. In the first step of the analysis, the control variables core self evaluation and three facets of conscientiousness (self discipline, dutifulness and achievement striving) were added. In the second step of the analysis, the main effect variables (goal difficulty, goal specificity, project completion and goal commitment) were added.

**Table 4.23: Results with regression coefficients for main variables (with conscientiousness)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 5.778 | 0.891 | | 6.487 | 0.000 |
| | Core Self Evaluation | 0.133 | 0.260 | 0.035 | 0.510 | 0.610 |
| | Conscientiousness | -0.136 | 0.217 | -0.043 | -0.629 | 0.530 |
| 2 | (Constant) | 5.008 | 1.011 | | 4.955 | 0.000 |
| Control variables | Core Self Evaluation | -0.029 | 0.247 | -0.008 | -0.116 | 0.908 |
| | Conscientiousness | -0.060 | 0.209 | -0.019 | -0.288 | 0.774 |
| Independent variables | Goal Difficulty | -0.901 | 0.196 | -0.261 | -4.584 | 0.000** |
| | Goal Specificity | -0.462 | 0.193 | -0.134 | -2.393 | 0.017* |
| | Project Completion | 0.456 | 0.194 | 0.132 | 2.354 | 0.019* |
| | Goal Commitment | 0.248 | 0.120 | 0.120 | 2.076 | 0.039* |

**** Significant at α=0.001, * Significant at α=0.05**

**Table 4.24: Results with regression coefficients for main variables (with facets of conscientiousness)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 5.941 | 1.108 | | 5.360 | 0.000 |
| | Core Self Evaluation | -0.013 | 0.262 | -0.003 | -0.049 | 0.961 |
| | Dutifulness | -0.196 | 0.258 | -0.054 | -0.758 | 0.449 |
| | Self Discipline | -0.251 | 0.238 | -0.089 | -1.056 | 0.292 |
| | Achievement Striving | 0.394 | 0.277 | 0.123 | 1.420 | 0.157 |
| 2 | (Constant) | 5.406 | 1.186 | | 4.559 | 0.000 |
| Control variables | Core Self Evaluation | -0.128 | 0.248 | -0.034 | -0.515 | 0.607 |
| | Dutifulness | -0.196 | 0.247 | -0.054 | -0.792 | 0.429 |
| | Self Discipline | -0.101 | 0.228 | -0.036 | -0.445 | 0.657 |
| | Achievement Striving | 0.232 | 0.265 | 0.073 | 0.877 | 0.381 |
| Independent variables | Goal Difficulty | -0.902 | 0.197 | -0.262 | -4.568 | 0.000** |
| | Goal Specificity | -0.476 | 0.195 | -0.138 | -2.444 | 0.015* |
| | Project Completion | 0.392 | 0.196 | 0.113 | 1.999 | 0.047* |
| | Goal Commitment | 0.254 | 0.121 | 0.123 | 2.104 | 0.036* |

**** Significant at α=0.001, * Significant at α=0.05**

Hypothesis 1 posited that an individual would be more willing to escalate under the influence of a difficult goal. Hypothesis 2 posited that an individual would be less willing to escalate under the influence of an easy goal. Results presented in Table 4.24 suggested a significant negative relationship between goal difficulty and willingness to continue ($\beta$=-0.262, t=-4.568, $p<0.001$). This indicated that individuals are more willing to escalate under an easy goal than a difficult goal. Thus the results offered support for Hypothesis 2. In addition, the absolute value of the standardized regression coefficient $\beta$ for goal difficulty in the whole regression equation (model 2) was the highest.

Hypothesis 3 posited that an individual would be more willing to escalate under a specific goal than a vague goal. Hypothesis 4 posited that an individual would be less willing to escalate under a specific goal than a vague goal. Results presented in Table 4.24 suggested a significant negative relationship between goal specificity and willingness to continue ($\beta$=-0.138, t=-2.444, $p<0.05$). The results indicated that individuals are more willing to escalate under a vague goal compared to a specific goal, offering support for Hypothesis 4. The effect of goal specificity on willingness to continue was second in importance indicated by the absolute standardized regression coefficient in the regression equation (model 2). We can observe that H2 and H4 were supported and H1 and H3 did not find support, This suggests that goal setting theory was very useful in identifying the variables that were related to escalation, yet the direction of effect was better determined when additional information on the context of the project (negative feedback in the escalation situations) was considered.

Hypothesis 5 posited a positive relationship between level of project completion and willingness to continue. Results presented in Table 4.24 suggested a significant relationship between level of project completion and willingness to continue ($\beta$=0.113, t=-1.999, $p<0.05$). Hypothesis 8 posited that an individual with a high initial goal commitment would be more willing to escalate. Results presented in Table 4.24 suggested a significant support for the relationship between goal commitment and willingness to continue ($\beta$=0.123, t=-2.104, $p<0.05$).

### 4.6.7. Moderating Effects

### Moderating Effect of Level of completion

Hypotheses H6 and H7 posited the moderating effect of level of completion on the relationship between goal difficulty and willingness to continue (H4) and goal specificity and willingness to continue (H5). Analysis of variance with covariates (ANCOVA) was used to test for the moderating effect of level of completion as both the independent variables (goal difficulty and goal specificity) and the moderating variable level of completion were dichotomous. Table 4.25 and Table 4.26 presents the ANCOVA Full factorial analysis to test the moderating effect of project completion on the relationship goal difficulty and willingness to continue (Table 4.25), and between goal specificity and willingness to continue (Table 4.26). The results did not support the posited hypotheses (H4 and H5). The interaction term of goal difficulty and project completion was not significant (F=0.791, p=0.374), the interaction term of goal specificity and project completion was also not significant (F=0.720, p=0.397).

**Table 4.25: Moderating effect of project completion for the relationship between goal difficulty and escalation**

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 90.762 | 7.000 | 12.966 | 4.778 | 0.000 |
| Intercept | 80.736 | 1.000 | 80.736 | 29.750 | 0.000 |
| Core Self Evaluation | 0.003 | 1.000 | 0.003 | 0.001 | 0.973 |
| Dutifulness | 2.448 | 1.000 | 2.448 | 0.902 | 0.343 |
| Self Discipline | 1.986 | 1.000 | 1.986 | 0.732 | 0.393 |
| Achievement Striving | 8.345 | 1.000 | 8.345 | 3.075 | 0.081 |
| Goal Difficulty | 68.008 | 1.000 | 68.008 | 25.060 | 0.000 |
| Project Completion | 14.916 | 1.000 | 14.916 | 5.496 | 0.020 |
| GoalDiff * ProjCompletion | 2.148 | 1.000 | 2.148 | 0.791 | 0.374 |
| Error | 811.420 | 299.000 | 2.714 | | |
| Total | 11,038.000 | 307.000 | | | |
| Corrected Total | 902.182 | 306.000 | | | |

**Table 4.26: Moderating effect of project completion for the relationship between goal specificity and escalation**

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 42.134 | 7.000 | 6.019 | 2.093 | 0.044 |
| Intercept | 78.852 | 1.000 | 78.852 | 27.413 | 0.000 |
| Core Self Evaluation | 0.075 | 1.000 | 0.075 | 0.026 | 0.872 |
| Dutifulness | 0.790 | 1.000 | 0.790 | 0.275 | 0.601 |
| Self Discipline | 2.654 | 1.000 | 2.654 | 0.923 | 0.338 |
| Achievement Striving | 8.464 | 1.000 | 8.464 | 2.943 | 0.087 |
| Goal Specificity | 10.715 | 1.000 | 10.715 | 3.725 | 0.055 |
| Project Completion | 17.111 | 1.000 | 17.111 | 5.949 | 0.015 |
| GoalSpec* ProjCompletion | 2.071 | 1.000 | 2.071 | 0.720 | 0.397 |
| Error | 860.049 | 299.000 | 2.876 | . | |
| Total | 11,038.000 | 307.000 | | | |
| Corrected Total | 902.182 | 306.000 | | | |

## Moderating Effect of Goal Commitment

H9 and H10 posited a moderating effect of goal commitment on the relationships between goal difficulty and willingness to continue (H7) and between goal specificity and

willingness to continue (H8). As goal commitment is a continuous variable, hierarchical regression analysis was used to determine the moderating effect of goal commitment on the relationships between goal difficulty and willingness to continue (Table 4.27) and between goal specificity and willingness to continue (Table 4.28). In the hierarchical regression analysis, step 1 included the control variables, step 2 included the main variables, and step 3 included the interaction term.

The results from Table 4.27 suggests a significant moderation effect of goal commitment on the relationship between goal difficulty and willingness to continue. The interaction term (goal difficulty*goal commitment) explained 2.5% of variance in the criterion variable above and beyond the other variables in the model and it was found to be significant ($\Delta R^2$=0.025, $\Delta F$=7.7960, $p<0.01$**).** On the other hand, results from Table 4.28 do not suggest any significant moderating effect of goal commitment on the relationship between goal specificity and willingness to continue ($\Delta R^2$=0.009, $\Delta F$=2.767, p=0.097).

**Table 4.27: Moderating Effect of Goal Commitment on the relationship between goal difficulty and escalation**

| | Predictors | Df | $R^2$ | $\Delta R^2$ | $\Delta F$ | Sig. $\Delta F$ |
|---|---|---|---|---|---|---|
| Step 1<br>(Control Variables) | Core Self Evaluation<br>Dutifulness<br>Achievement Striving<br>Self Discipline | ( 4, 283) | 0.009 | 0.009 | 0.623 | 0.646 |
| Step 2<br>(Main effects) | Goal Difficulty,<br>Goal Commitment | ( 2, 281) | 0.099 | 0.090 | 14.009 | 0.000 |
| Step 3<br>(Interaction effects) | GoalDiff X Goal Commitment | ( 1, 280) | 0.124 | 0.025 | 7.960 | 0.005** |

**Table 4.28: Moderating Effect of Goal Commitment on the relationship between goal specificity and escalation**

| | Predictors | df | $R^2$ | $\Delta R^2$ | $\Delta F$ | Sig. $\Delta F$ |
|---|---|---|---|---|---|---|
| Step 1<br>(Control Variables) | Core Self Evaluation<br>Dutifulness<br>Achievement Striving<br>Self Discipline | ( 4, 283) | 0.009 | 0.009 | 0.623 | 0.646 |
| Step 2<br>(Main effects) | Goal Specificity,<br>Goal Commitment | ( 2, 281) | 0.057 | 0.048 | 7.167 | 0.001 |
| Step 3<br>(Interaction effects) | GoalSpec X Goal Commitment | ( 1, 280) | 0.066 | 0.009 | 2.767 | 0.097 |

# Chapter 5. Discussion and Conclusions

This chapter discusses the results that were obtained in the study and their implications.

Limitations and directions for future research are also discussed.

## *5.1. Summary of Results*

**Table 5.1: Summary of results**

| Key determinant | Hypothesis | Results |
|---|---|---|
| Goal Difficulty | H1: The higher the difficulty of the goal, the more willing the individual is to continue his/her chosen course of action. | Not supported |
| | H2: The higher the easiness of the goal, the more willing the individual is to continue his/her chosen course of action. | Statistically significant at $p<.01$ |
| Goal Specificity | H3: The higher the degree of specificity of the goal, the more willing the individual is to continue his/her chosen course of action to achieve the goal. | Not supported |
| | H4: The higher the degree of specificity of the goal, the less willing the individual is to continue his/her chosen course of action to achieve the goal. | Statistically significant at $p<.05$ |
| Project Completion | H5: The higher the level of completion, the more willing the individual is to continue his/her course of action. | Statistically significant at $p<.05$ |
| | H6: The level of completion moderates the relationship between goal difficulty and an individual's willingness to continue. | Not supported |
| | H7: The level of completion moderates the relationship between goal specificity and willingness to continue of an individual. | Not supported |
| Goal Commitment | H8: The higher the level of goal commitment, the more willing an individual is to continue his/her course of action. | Statistically significant at $p<0.05$ |
| | H9: The level of goal commitment moderates the relationship between goal difficulty and willingness to continue. | Statistically significant at $p<0.05$ |
| | H10: The level of goal commitment moderates the relationship between goal specificity and willingness to continue. | Not supported |

## 5.2. Main Effects

Goal content defined by two variables, goal difficulty and goal specificity, was posited to have an effect on an individual's willingness to continue. Both goal difficulty and goal specificity were manipulated at two levels: easy goal, difficult goal in the case of goal difficulty; vague goal, specific goal in the case of goal specificity. Willingness to continue was measured for subjects with each of these conditions. Post hoc tests break down the effect of goal content on willingness to continue. Table 5.2 presents the results of the post-hoc tests with Bonferroni at both low and high level of completion. The Bonferroni tests show that subjects' willingness to continue in easy-vague and difficult-specific conditions were significantly different at both low and high levels of completion. Figure 5.1 presents the line graph for the subjects at low level of completion and Figure 5.2 presents the results for the subjects at high level of completion. It was also observed that at a low level of completion, subjects' willingness to continue with easy-specific goals and difficult-specific goals was different. This difference was not observed at a high level of completion.

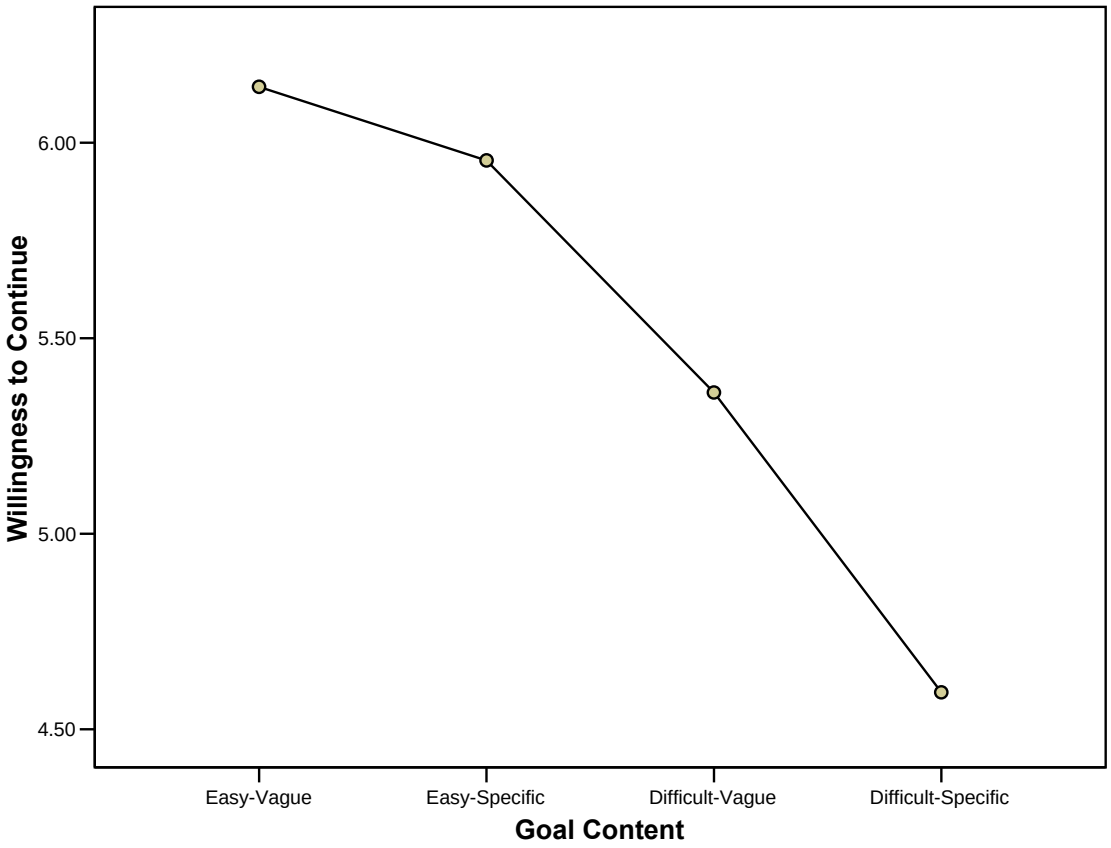


**Figure 5.1: Goal content and willingness to continue at low completion**

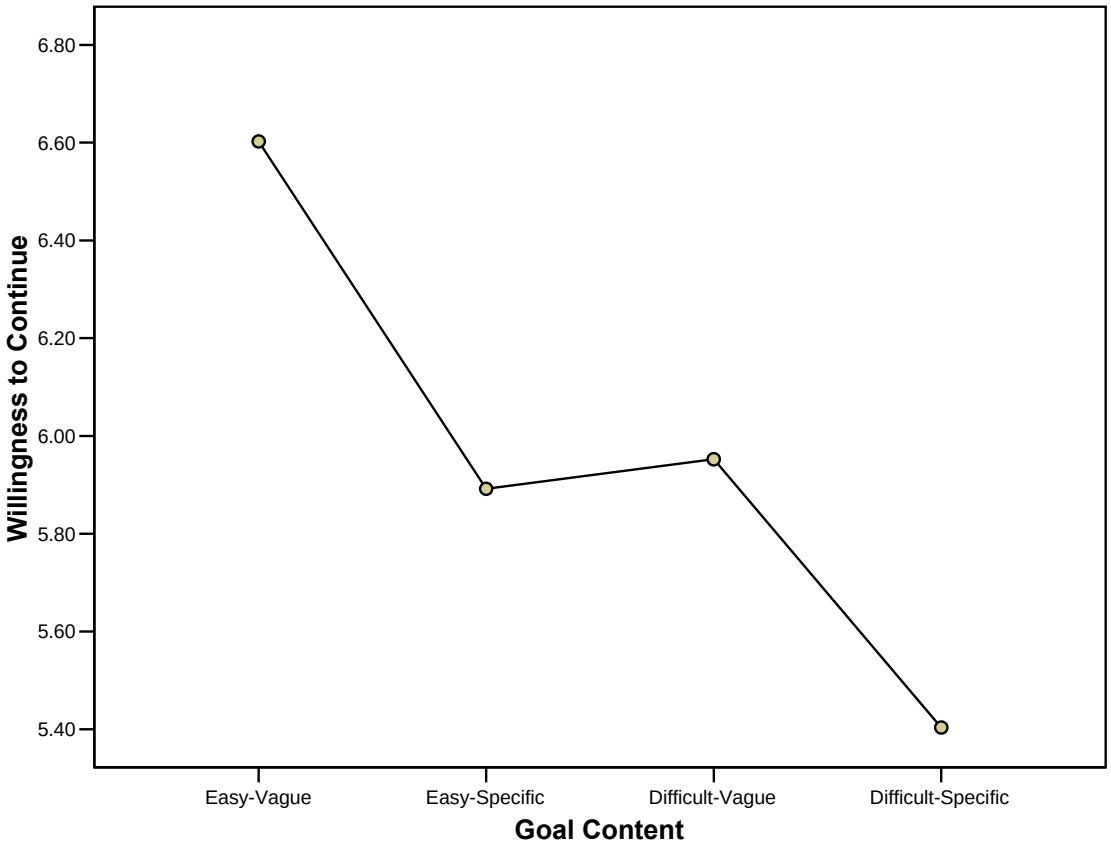


**Figure 5.2: Goal content and willingness to continue at high completion**

**Table 5.2: Post hoc tests with Bonferroni for goal difficulty and goal specificity on willingness to continue**

| | (I) DS | (J) DS | Mean Difference (I-J) | Std. Error | Sig. |
|---|---|---|---|---|---|
| | | | | | |
| Low completion | Easy-Vague | Easy-Specific | 0.19 | 0.36 | 1.00 |
| | | Difficult-Vague | 0.78 | 0.38 | 0.26 |
| | | Difficult-Specific | 1.55* | 0.38 | 0.00 |
| | Easy-Specific | Easy-Vague | -0.19 | 0.36 | 1.00 |
| | | Difficult-Vague | 0.59 | 0.38 | 0.71 |
| | | Difficult-Specific | 1.36* | 0.38 | 0.00 |
| | Difficult-Vague | Easy-Vague | -0.78 | 0.38 | 0.26 |
| | | Easy-Specific | -0.59 | 0.38 | 0.71 |
| | | Difficult-Specific | 0.77 | 0.39 | 0.32 |
| | Difficult-Specific | Easy-Vague | -1.55* | 0.38 | 0.00 |

| | | | | | |
|---|---|---|---|---|---|
| | | Easy-Specific | -1.36* | 0.38 | 0.00 |
| | | Difficult-Vague | -0.77 | 0.39 | 0.32 |
| High completion | Easy-Vague | Easy-Specific | 0.71 | 0.37 | 0.33 |
| | | Difficult-Vague | 0.65 | 0.36 | 0.42 |
| | | Difficult-Specific | 1.20* | 0.33 | 0.00 |
| | Easy-Specific | Easy-Vague | -0.71 | 0.37 | 0.33 |
| | | Difficult-Vague | -0.06 | 0.37 | 1.00 |
| | | Difficult-Specific | 0.49 | 0.35 | 0.98 |
| | Difficult-Vague | Easy-Vague | -0.65 | 0.36 | 0.42 |
| | | Easy-Specific | 0.06 | 0.37 | 1.00 |
| | | Difficult-Specific | 0.55 | 0.34 | 0.63 |
| | Difficult-Specific | Easy-Vague | -1.20* | 0.33 | 0.00 |
| | | Easy-Specific | -0.49 | 0.35 | 0.98 |
| | | Difficult-Vague | -0.55 | 0.34 | 0.63 |

*The mean difference is significant at the .05 level.

In general the effect of goal difficulty on escalation was higher than the effect of goal specificity on escalation. This was determined by the difference in the standardized regression coefficients of goal difficulty on escalation ($\beta$=-0.262) and goal specificity on escalation ($\beta$=-0.138). The significance of the difference in betas was validated using the test as outlined in Neter et. al's (2003). The test involved comparing the difference in the explained variance ($R^2$) on the dependent variable between the following two regression models:

1. Full model which includes goal difficulty and goal specificity and
2. Revised model with the cross product of goal difficulty and goal specificity instead of entering these variables separately.

It was observed the full model explained 13% of the variance on willingness to continue and the revised model explained 9.7% of the variance on willingness to continue. The F-ratio for the difference in explained variance was computed as 10.58 which is much

higher than the required value of 3.84. Thus goal difficulty can be said to have a stronger effect than goal specificity.

### 5.2.1. Effect of Goal Difficulty on Willingness to Continue

Goal setting literature states that that goal difficulty has a linear relationship with performance until the subject reaches the limits of his/her ability (Field 2005, Locke and Latham 1990). Based on this theory, it was expected that a difficult goal intensifies effort and increases the persistence of an individual. Thus H1 was posited as "the higher the difficulty of the goal, the more willing the individual is to continue his/her chosen course of action." Considering the difference in contexts between goal setting and escalation, H2 was posited as "The higher the easiness of the goal, the more willing the individual is to continue his/her chosen course of action."

The results provided support for H2 where individuals were found to be more willing to escalate under an easy goal than a difficult goal. The standardized regression coefficient ($\beta$) was found to be -0.262 for the path from goal difficulty to the criterion variable, willingness to continue. This path was significant ($\beta$=-0.262, t=-4.568, $p<0.001$). Goal difficulty was also observed to have the highest effect on willingness to continue as compared other variables (goal specificity, project completion and goal commitment).

There are two possible reasons for observed support for H2 and not H1. First, there is a difference between the escalation context and the goal setting context. Within the escalation context, negative feedback is given to the subject to impart some level of uncertainty about completion of the project. The negative feedback in this study was

introduced by informing the subject that there was an unexpected and very serious technical problem with the application that needed to be overcome for successful completion of the project. In addition, they were told that the technical people have informed that it may be impossible to solve the problem. This negative feedback is relevant to escalation contexts. In the typical goal setting scenarios, the subject is only given performance based feedback such as number of puzzles solved, amount of time spent etc and uncertainty about completion is not part of feedback. Thus the level of uncertainty imparted into the scenario in escalation setting is probably causing some of the subjects to believe that it would be impractical to achieve the difficult goal with the extent of uncertainty. Thus the subjects with difficult goals were more inclined to give up on the project than the easy goal subjects who were a little more confident of completion. The observation is similar to Bandura and Cervone's (1982) study on role of feedback on performance. They observed that subjects who were given feedback about their substandard performance actually abandoned the goal (Bandura and Cervone 1983).

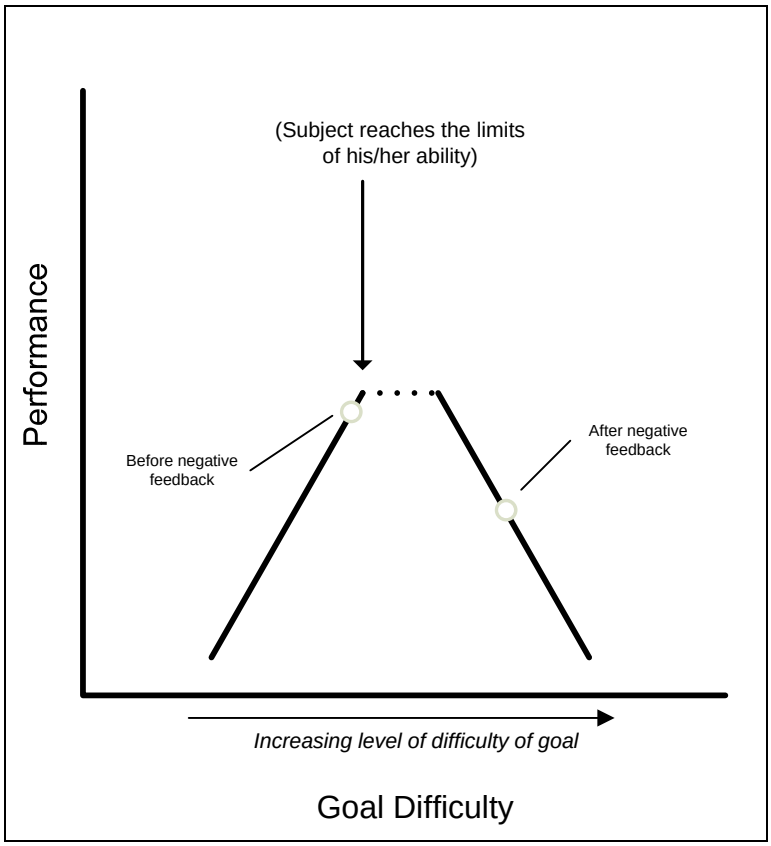


**Figure 5.3: Goal difficulty and performance**

Second, the curvilinear relationship between goal difficulty and performance is curvilinear. According to goal setting theory, the higher the difficulty of the goal, the more the subject will increase his/her effort until s/he reaches the limits of his ability. Some researchers have observed a curvilinear relationship between goal difficulty and performance. In this work, although the level of difficulty was established such that it was more within the ability of the subject to achieve the goal, the negative feedback in the project may make the subject perceive the already difficult goal as more difficult, thereby pushing it from within to beyond the ability of the subject's reached. If this is the case, this could be causing the subject to be less willing to continue (See Figure 5.2).

### 5.2.2. Effect of Goal Specificity on Willingness to Continue

Based on goal setting theory which theorizes that a difficult and specific goal leads a subject to increase his effort and persistence towards the goal, H3 was posited as "The higher the degree of specificity of the goal, the less willing the individual is to continue his/her chosen course of action to achieve the goal". Based on the escalation literature, H4 was posited as "The higher the degree of specificity of the goal, the less willing the individual is to continue his/her chosen course of action to achieve the goal." The results suggested that an individual is more willing to continue his actions under a vague goal than under a specific goal, thus offering support for H4. The standardized regression coefficient (β) for the path from goal specificity was found to be -0.138. This path was significant ($\beta$=-0.138, t=-2.444, $p<0.05$). Goal specificity was observed to have the second highest effect on the criterion, willingness to continue (after goal difficulty).

In this research, we found support for H4 where vague goals led subjects to be more willing to escalate than specific goals. According to the previous work on goal specificity, specific goals enable subjects to use feedback information precisely (Campion and Lord 1982, Kernan and Lord 1989). Vague goals may not serve well as reference points because the feedback information can be interpreted as indicating success and thus make the individual more willing to escalate. The vague goal combined with the negative feedback is increasing the ambiguity and equivocality of the situation. Bowen's decision dilemma theory within the escalation literature suggests that individuals are more willing to escalate under equivocal conditions and thus the results can be said to be consistent with this theory. Other studies in the escalation literature have observed the same effect (Bowen 1987, Bragger, et al. 1998, Bragger, et al. 2003, Hantula and DeNicolis Bragger 1999). Results are consistent with Kernan and Lord

(1989) who found that individuals escalated more in the presence of a general goal than an explicit goal.

### 5.2.3. Effect of Project Completion on Willingness to Continue

Escalation literature points to project completion as one of the factors that influence an individual to escalate his commitment (Conlon and Garland 1993). It has also been termed as the completion effect. Based on the literature, it was posited that individuals closer to the completion of the project (goal proximity) have higher willingness to continue than those who are far from completion. Thus H3 was posited as "The higher the level of completion, the more willing the individual is to continue his/her course of action".

Results supported the posited hypotheses. The standardized regression coefficient (β) for the path between project completion and willingness to continue was found to be significant at $p<0.05$ ($\beta=0.113$, $t=1.999$). This finding is consistent with escalation theory where an individual is said to be willing to continue when he is close to completion. This is also consistent with goal setting theory, where a proximal goal is said to increase the performance of an individual more than a distal goal (Katz and Kahn 1966, Miller 1944, Ryan 1970). The results of project completion in this study is consistent with Conlon and Garland (1993), who found a very strong and significant main effect of project completion on reported willingness to allocate resources.

### 5.2.4. Effect of Goal commitment on Willingness to Continue

Goal commitment refers to the determination and commitment of the individual to reach a goal. Locke and Latham (1990) have observed that goal commitment has a direct and

positive impact on the performance of an individual. H6 was thus posited as "The higher the level of goal commitment, the more willing an individual is to continue his/her course of action."

Results showed support for H6, the standardized regression coefficient (β) for the path from goal commitment to willingness to continue was significant at $p<0.05$ ($\beta=0.12$, $t=2.104$). Thus individuals with higher initial goal commitment are more willing to escalate, in accordance with goal setting theory. This results supports the other research in this area (Harrison and Liska 1994, Johnson and Parlow 1992, Klein and Kim 1998, Klein, et al. 1999)

## *5.3. Moderating Effects*

### 5.3.1. Moderating Effect of Goal Commitment

Goal commitment is found to be moderator in the goal setting theory. It is observed to moderate the relationship between goal difficulty and performance, and between goal specificity and performance. Positing goal commitment as a moderator between goal difficulty and performance, H7 was stated as "The level of goal commitment moderates the relationship between goal difficulty and willingness to continue". Positing goal commitment as a moderator between goal specificity and willingness to continue, H8 was stated as "The level of goal commitment moderates the relationship between goal specificity and willingness to continue"

In the hierarchical regression, the interaction term of goal commitment and goal difficult was added and this increased the $R^2$ by 0.025 and the increase in $R^2$ was found to be

significant at P<0.001. On the other hand the interaction term of goal commitment and goal specificity increased the $R^2$ by 0.009 and was not statistically significant. Thus H7 was supported and H8 was not supported.

According to goal setting theory, goal commitment is a moderator of the relationship between goal difficulty and performance. Locke and Latham (1990) state that goal level should be more highly and positively related to high performance among individuals with high commitment than among those with low commitment to goals. Erez and Zidon's (1984) study is a case in point. During phase 1 of their study, when commitment to all goal levels was high, goal level and performance were positively related. In phase 2, when commitment was artificially decreased as the goals became more difficult, goal level and performance were negatively related. Similarly the effect of goal commitment on willingness to continue differed from subjects with easy goals and difficulty goals. The rate of increase of the effect of goal commitment under an easy goal was higher than the increase in the effect of goal commitment on willingness to continue under a difficult goal.

### 5.3.2. Moderating Effect of Project Completion

Project completion was posited to moderate the relationships between goal difficulty and willingness to continue, and between goal specificity and willingness to continue. These were posited as H4 "The level of completion moderates the relationship between goal difficulty and an individual's willingness to continue", and H5 as "The level of

completion moderates the relationship between goal specificity and willingness to continue of an individual"

Results suggested no support for these hypotheses as neither interaction terms were statistically significant. Project completion was posited as a moderator as it represents a form of feedback given to the subject on the completion of the project. In this research the subject was given the information on project completion along with the negative feedback. The same negative feedback was given to all the subjects across all eight treatment conditions. This negative feedback might have masked any differential effect of the level of project completion preventing us from detecting any significant effect of project completion on the relationship between goals and willingness to continue.

## *5.4. Implications*

### 5.4.1. Implications for Research

In terms of research contributions, this study has implications for both the escalation literature and the goal setting literature. This is the first study, to the best of our knowledge to theorize and empirically test the effect of nature of goals, such as goal difficulty and goal specificity on escalation of commitment of an individual.

It was observed that goal difficulty and goal specificity have an effect on an individual's willingness to continue. An individual is more willing to continue under an easy, vague goal compared to a difficult, specific goal. The effects of goal difficulty and goal

specificity were also separated in this research and it was found that difficulty of the goal has a larger effect on an individual's willing to escalate as compared to goal specificity.

Goal commitment not only has a direct effect on willingness to continue, it also moderates the relationship between goal difficulty and escalation. But, goal commitment did not moderate the relationship between goal specificity and willingness to continue.

By identifying factors informed by goal setting theory that may contribute to escalation, this research provides a better understanding of the escalation phenomenon. By integrating the two theory streams, this study opens up avenues for future research to identify factors and conditions based on goal setting research that may contribute to escalation.

Goal setting theory states that difficult and specific goals increase an individual's effort, direct his/her attention and encourage persistence in his/her actions, yet these results do not appear to occur in escalation situations which include negative feedback conditions.

Within the goal setting literature, goal specificity is almost always examined in tandem with goal difficulty. This study attempts to separate out the effect of goal specificity and goal difficulty. By having both of these constructs in the same study and manipulating them independently, the relative effect of each of these variables could be teased out and it was observed that goal difficulty had more effect on the criterion variable than goal specificity.

### 5.4.2. Implications for Practice

This research contributes to practice by establishing the relationship between goal setting and escalation of commitment. This should aid top management and project managers in understanding that project goals may have both positive and negative consequences depending on this difficulty and specificity. The results shows that individuals with specific goals are less willing to escalate compared to individuals with vague goals. This research suggests that top managers should set project goals as specifically as possible.

Further, the research shows that individuals with very easy goals are more inclined to escalate. Thus top managers should set goals that are difficult and challenging, yet within the ability of the project manager to reach. Goal commitment functions as a double edged sword. The top managers should provide incentives to project mangers to increase their commitment towards the project goals, yet the commitment cannot be so high that project managers would never abandon their project. Projects that are close to completion are more inclined to escalate compared to projects that are far from completion. Thus, managers should be aware of this situation and process the feedback from the project in a manner that is best for the situation.

## *5.5. Limitations*

This research is subject to a number of limitations.

First, the research employed a relatively simple worded scenario to model the real world. We acknowledge that the real world is much complex than what the scenario portrays,

and thus decisions may not be the exact same in the real world. Nevertheless, the controlled environment of role playing scenario experiment helped us to test the research model with higher internal validity. The controlled environment also limits the generalizability of the findings. Thus more research has to be conducted for higher generalizability of the findings.

Second, the research measured the self-reported behavioral intention of the subject rather than the actual behavior exhibited by the subject. Intention might not actually translate to behavior in real settings.

Third, the research examined an individual's willingness to continue by keeping the nature of the project (developing a business process management application) constant. The feedback given to the subject was also constant. Future research could investigate the effect of level of feedback or the type of project on willingness to continue.

Fourth, the subjects were recruited based on personal contacts and thus do not represent a random sample of IT managers.

## *5.6. Directions for Future Research*

As this research is one of the first to examine the effect of goals on willingness to continue, there is still a lot to understand from future research in this area. Some directions for future research are provided in this section.

In this research, two levels of goal difficulty and goal specificity were examined. Examining only two levels of a variable eliminates the possibility of identifying any curvilinear effects of this variable on the criterion. Thus, future research can examine the effect of three or more levels of goal difficulty on willingness to continue.

Feedback is central to this research and the same feedback was given to the subject. Additional insights can be obtained by varying the negativity of the feedback and observing if it has any effect on the criterion variable and the results.

An experiment which is more dynamic than the current research could provide further insights. Designing an experiment using a computer simulated project in which subjects make decisions might yield valuable insights into this phenomenon. This would greatly enhance the involvement of the subject. Such an environment would be conducive to giving dynamic feedback to the subject.

In the present research, all the subjects were given the same project context, i.e. developing a business process management application. This prevented us from deriving any insights on the effect of the project context on an individual's willingness to continue. Further research can vary the nature of the project to study any effect of the type of project on willingness to continue.

Although the present research used IT managers working on real projects in companies, it employed hypothetical scenarios to model the real world thereby limiting the findings.

Further research using data from a real project, by means of case studies or other qualitative techniques could provide additional insights and enhance the validity of the findings.

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# Appendices

# APPENDIX A: Informed Consent Form

Informed consent form for students participating in the pretests

# Informed Consent Form

**Title:** Study of decision-making.

**Principal Investigator:** Vijay Kasi, Mark Keil

## I. Introduction/Background/Purpose:

You have been asked to participate in a **research** study investigating decision-making. You have been asked to participate to assist us in understanding how decisions are made. Your total time should not exceed 30 minutes.

## II. Procedures:

Immediately after completing this consent form, in the room where you now are, one of the investigators will provide you a form consisting of a scenario and a survey. You will be asked to read the scenario and then answer questions about the scenario on the survey instrument. When complete, you will be asked to return the forms to the investigator. It should take you no more than 30 minutes.

## III. Risks:

There is no risk to you.

## IV. Benefits:

Your participation may not benefit you directly. By participating in this research, you will help us understand the decision-making process of IT project managers better.

## V. Voluntary Participation and Withdrawal:

Participation in research is voluntary. You have the right to refuse to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip questions or discontinue participation at any time. However, any information already used to the point when you withdraw consent will not be removed. Whatever you decide, you will not lose any benefits to which you are otherwise entitled.

## VI. Confidentiality:

We will keep your records private to the extent allowed by law. We will not use any identifying information on study records. Your name and other facts that might point to you will not appear when we present this study or publish its results.

Findings will be summarized and reported in group form. You will not be identified personally.

## VII. Contact Persons:

Call Vijay Kasi at 404-463-9297 or Mark Keil at 404-651-3830 if you have questions about this study.
If you have questions or concerns about your rights as a participant in this research study, you may contact the Institutional Review Board (IRB), which oversees the protection of human research participants. Susan Vogtner in the office of research compliance can be reached at 404-463-0674.

## VIII. Copy of Consent Form to Subject:

We will give you a copy of this consent form to keep. If you are willing to volunteer for this research, please sign below.

_____

Participant Date

# APPENDIX B: Informed Consent Form

Informed Consent Form for IT Managers who participated in the web experiment

Georgia State University
Department of Computer Information Systems and Center for Process Innovation

# Informed Consent Form

Title: Study on decision making

Principal Investigator: Mark Keil
Vijay Kasi, Student Principal Investigator.

## I. Purpose:

You have been asked to participate in a **research** study investigating decision-making. You have been asked to participate to assist us in understanding how decisions are made. Your total time should not exceed 30 minutes.

## II. Procedures:

If you decide to participate, you would be contacted by email to spend 20-30 minutes responding to a specific request. You will be asked to read the scenario and then answer questions about the scenario on the survey instrument. When complete, you will be asked to return the forms to the investigator. It should take you no more than 30 minutes.

## III. Risks:

This study does not pose any risk to you.

## IV. Benefits:

Your participation may not benefit you directly. By participating in this research, you will help us understand the decision-making process of IT project managers better.

## V. Voluntary Participation and Withdrawal:

Participation in research is voluntary. You have the right to refuse to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip questions or discontinue participation at any time. However, any information already used to the point when you withdraw consent will not be removed. Whatever you decide, you will not lose any benefits to which you are otherwise entitled.

VI. Confidentiality:

We will keep your records private to the extent allowed by law. We will not use any identifying information on study records. Your name and other facts that might point to you will not appear when we present this study or publish its results. We will use a code number rather than your name on study records. Only researchers involved in this study (Mark Keil, and Vijay Kasi) will have access to the information you provide. It will be stored on servers and desktops in the Center for Process Innovation (CEPRIN) at GSU. These computers will be password- and firewall-protected and located in locked offices. Your name and other facts that might point to you will not appear when we present this study or publish its results. The findings will be summarized and reported in group form. You will not be identified personally.

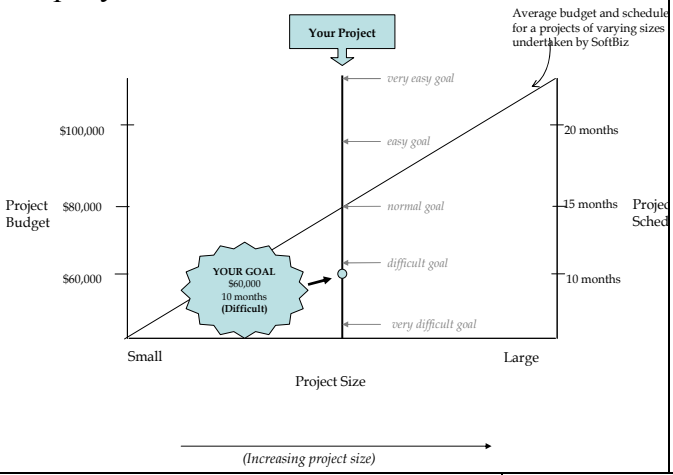
VII. Contact Persons:

Contact Vijay Kasi at 404-463-9297 or vkasi@gsu.edu or Mark Keil at 404-651-3830 mkeil@gsu.edu if you have questions about this study.
If you have questions or concerns about your rights as a participant in this research study, you may contact Susan Vogtner in the Office of Research Integrity at 404-463-0674 or svogtner1@gsu.edu.

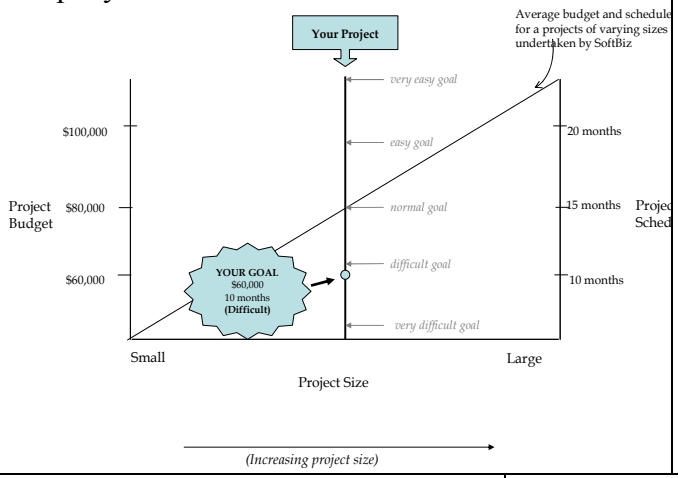
VIII. Copy of Consent Form to Subject:
Please print a copy of this consent form for your records.

If you are willing to volunteer for this research, please click on the "**I accept**" button at the bottom of this page, and continue with your participation in this study.

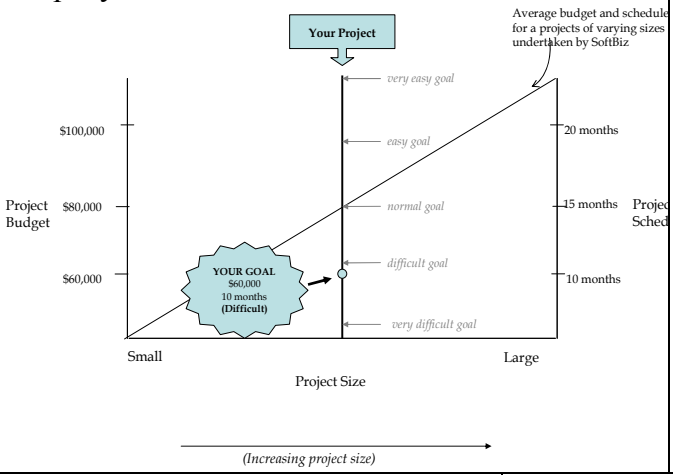
# APPENDIX C: Pre-test 1

<table>
<tr><td>Environment Establishment<br><br>EE(1): The organization<br>EE(2): Subject role</td><td colspan="2">You are a lead software developer of SoftBiz, a company that specializes in developing software products. You are assigned to a promising and lucrative project aimed at developing a business process management software product for external sale. This development effort is named SoftBPM and will appeal to companies that are experiencing significant costs due to inefficiently managed business processes. SoftBPM enables efficient management of business processes. Your goal is to deliver this completed fully functional, software product.</td></tr>
<tr><td>Factor Manipulations<br><br>CF(1): Goal difficulty and Goal specificity</td><td>The budget and schedule for the project are <u>very specific</u>. You will need to complete the project with a $60,000 budget and a 10 month schedule. This is a <u>difficult goal</u> considering other projects you and your company have undertaken in the past (See Figure below). This project is very important for your career prospects within the company.<br> 
</td><td>The budget and schedule for the project are <u>very vague</u>. You need to complete this project taking as much budget and as long a schedule as needed. This is an <u>easy goal</u> considering other projects you and your company have undertaken in the past. This project is very important for your career prospects within the company.</td></tr>
<tr><td>Level of completion</td><td>Your SoftBPM project is now 10% complete.</td><td>Your SoftBPM project is now 90% complete.</td></tr>
<tr><td>Project uncertainty and Negative feedback</td><td colspan="2">It has come to your attention that another firm has just begun marketing a Business Process Management (BPM) software product that serves the same purpose and is reported to have better features, greater ease-of-use and is far more economical than SoftBPM.</td></tr>
<tr><td>Your Role</td><td colspan="2">Now your company is faced with the decision whether to continue with SoftBPM project. You are required to make a recommendation to your upper management regarding this.</td></tr>
</table>

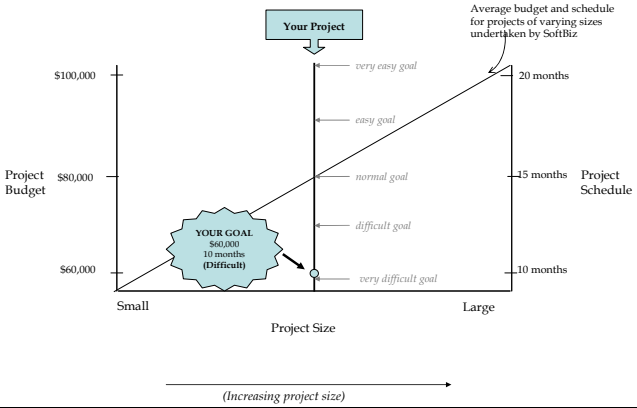
# APPENDIX D: Pre-test 2

<table>
<tr><td>Environment Establishment<br><br>EE(1): The organization<br>EE(2): Subject role</td><td colspan="2">You are a lead software developer of SoftBiz, a company that specializes in developing software products. You are assigned to a promising and lucrative project aimed at developing a business process management software product for external sale. This development effort is named SoftBPM and will appeal to companies that are experiencing significant costs due to inefficiently managed business processes. SoftBPM enables efficient management of business processes. Your goal is to deliver this completed fully functional, software product.</td></tr>
<tr><td>Factor Manipulations<br><br>CF(1): Goal difficulty and Goal specificity</td><td>The budget and schedule for the project are <u>very specific</u>. You have only a $60,000 budget and a 10 month schedule to complete the project. This is a <u>difficult goal</u> considering other projects you and your company have undertaken in the past (See Figure below). This project is very important for your career prospects within the company.<br> 
</td><td>The budget and schedule for the project are <u>very vague</u>. You have as much budget and schedule as needed to complete this project. This is a <u>very easy goal</u> considering other projects you and your company have undertaken in the past. This project is very important for your career prospects within the company.</td></tr>
<tr><td>Level of completion</td><td>Your SoftBPM project is now 10% complete.</td><td>Your SoftBPM project is now 90% complete.</td></tr>
<tr><td>Project uncertainty and Negative feedback</td><td colspan="2">It has come to your attention that another firm has just begun marketing a Business Process Management (BPM) software product that serves the same purpose and is reported to have better features, greater ease-of-use and is far more economical than SoftBPM.</td></tr>
<tr><td>Your Role</td><td colspan="2">Now your company is faced with the decision whether to continue with SoftBPM project. You are required to make a recommendation to your upper management regarding this.</td></tr>
</table>

# APPENDIX E: Pre-test 3

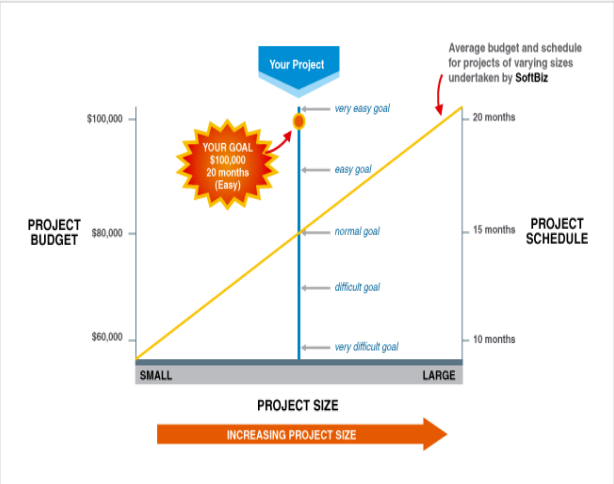
<table>
<tr><td>Environment Establishment<br><br>EE(1): The organization<br>EE(2): Subject role</td><td colspan="2">You are a lead software developer of SoftBiz, a company that specializes in developing software products. You are assigned to a promising and lucrative project aimed at developing a business process management software product for external sale. This development effort is named SoftBPM and will appeal to companies that are experiencing significant costs due to inefficiently managed business processes. SoftBPM enables efficient management of business processes. Your goal is to deliver this completed fully functional, software product.</td></tr>
<tr><td>Factor Manipulations<br><br>CF(1): Goal difficulty and Goal specificity</td><td>The budget and schedule for the project are <u>very specific</u>. You will need to complete the project with a $60,000 budget and a 10 month schedule. This is a <u>difficult goal</u> considering other projects you and your company have undertaken in the past (See Figure below). This project is very important for your career prospects within the company.<br> 
</td><td>The budget and schedule for the project are <u>very vague</u>. You need to complete this project taking as much budget and as long a schedule as needed. This is an <u>easy goal</u> considering other projects you and your company have undertaken in the past. This project is very important for your career prospects within the company.</td></tr>
<tr><td>Level of completion</td><td>Your SoftBPM project is now 10% complete.</td><td>Your SoftBPM project is now 90% complete.</td></tr>
<tr><td>Project uncertainty and Negative feedback</td><td colspan="2">It has come to your attention that another firm has just begun marketing a Business Process Management (BPM) software product that serves the same purpose and is reported to have better features, greater ease-of-use and is far more economical than SoftBPM.</td></tr>
<tr><td>Your Role</td><td>Now your company is faced with the decision whether to continue with SoftBPM project. You are required to make a recommendation to your upper management regarding this. Considering the difficult and specific nature of your goal on this project…</td><td>Now your company is faced with the decision whether to continue with SoftBPM project. You are required to make a recommendation to your upper management regarding this. Considering the easy and vague nature of your goal on this project…</td></tr>
</table>

# APPENDIX F: Pre-test 4

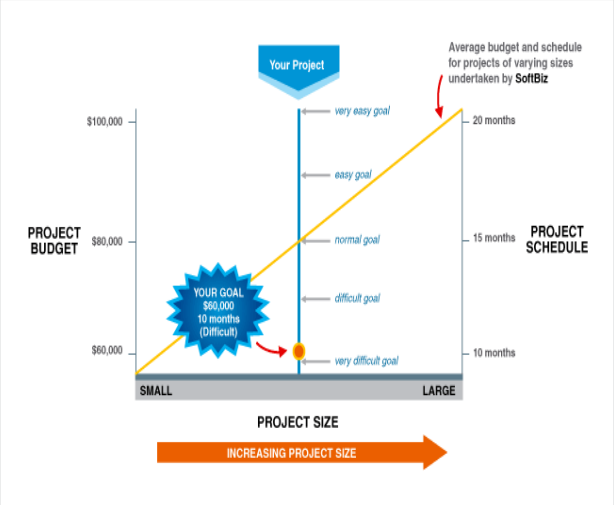
<table>
<tr><td>Environment Establishment<br><br>EE(1): The organization<br>EE(2): Subject role</td><td colspan="2">You are a lead software developer of SoftBiz, a company that specializes in developing software products. You are assigned to a promising and lucrative project aimed at developing a business process management software product for external sale. This development effort is named SoftBPM and will appeal to companies that are experiencing significant costs due to inefficiently managed business processes. SoftBPM enables efficient management of business processes. Your goal is to deliver this completed fully functional, software product.</td></tr>
<tr><td>Factor Manipulations<br><br>CF(1): Goal difficulty and Goal specificity</td><td>The budget and schedule for the project are <u>very specific</u>. You have only a $60,000 budget and a 10 month schedule to complete the project. This is a <u>very difficult goal</u> considering other projects you and your company have undertaken in the past (See Figure below). SoftBPM project is very important for your career prospects within the company.<br> 
</td><td>The budget and schedule for the project are <u>very vague</u>. You have as much budget and schedule as needed to complete this project. This is a <u>very easy goal</u> considering other projects you and your company have undertaken in the past. SoftBPM project is very important for your career prospects within the company.</td></tr>
<tr><td>Level of completion</td><td>At this point, your project is 10% complete and you are already behind schedule and over budget relative to where you should be for this completion level.</td><td>At this point, your project is 90% complete and you are already behind schedule and over budget relative to where you should be for this completion level.</td></tr>
<tr><td>Project uncertainty and Negative feedback</td><td colspan="2">Moreover, it has come to your attention that there is an unexpected and very serious technical problem with SoftBPM that will need to be overcome in order to complete the project successfully. Your technical people have informed you that it may be impossible to solve the problem. Now your company is faced with the decision of whether or not to continue with the SoftBPM project.</td></tr>
<tr><td>Your Role</td><td>You are required to make a recommendation to your upper management regarding this. Considering the <u>very difficult and very specific</u> nature of your</td><td>You are required to make a recommendation to your upper management regarding this. Considering the <u>very easy and very vague</u> nature of your goal on</td></tr>
</table>

| | | |
|---|---|---|
| | ***goal on this SoftBPM project (i.e., a $60,000 budget and a 10 month schedule***)… | ***this SoftBPM project (i.e., as much budget and schedule as needed***)… |

# APPENDIX G: Real Experiment

<table>
<tr><td>Environment Establishment<br><br>EE(1): The organization<br>EE(2): Subject role</td><td colspan="2">You are a lead software developer of SoftBiz, a company that specializes in developing software products. You are assigned to a promising and lucrative project aimed at developing a business process management software product for external sale. This development effort is named SoftBPM and will appeal to companies that are experiencing significant costs due to inefficiently managed business processes. SoftBPM enables efficient management of business processes. Your goal is to deliver this completed fully functional, software product.</td></tr>
<tr><td>Factor Manipulations<br><br>CF(1): Goal difficulty and Goal specificity<br><br>(Easy, Specific)<br><br>(Easy, Vague)</td><td>The budget and schedule for the project are <u>very specific</u>. You have a $100,000 and a 20 month schedule to complete this project. This is a <u>very easy goal</u> considering other projects you and your company have undertaken in the past. SoftBPM project is very important for your career prospects within the company.<br> 
</td><td>The budget and schedule for the project are <u>very vague</u>. You have as much budget and schedule as needed to complete this project. This is a <u>very easy goal</u> considering other projects you and your company have undertaken in the past. SoftBPM project is very important for your career prospects within the company.</td></tr>
<tr><td>Level of completion</td><td>At this point, your project is 10% complete and you are already behind schedule and over budget relative to where you should be for this completion level.</td><td>At this point, your project is 90% complete and you are already behind schedule and over budget relative to where you should be for this completion level.</td></tr>
<tr><td>Project uncertainty and Negative feedback</td><td colspan="2">Moreover, it has come to your attention that there is an unexpected and very serious technical problem with SoftBPM that will need to be overcome in order to complete the project successfully. Your technical people have informed you that it may be impossible to solve the problem. Now your company is faced with the decision of whether or not to continue with the SoftBPM project. You are required to make a recommendation to your upper management regarding this.</td></tr>
<tr><td>Your Role</td><td>Considering the <u>very easy and</u></td><td>Considering the <u>very easy and</u></td></tr>
</table>

| | | |
|---|---|---|
| | ***very specific*** ***nature of your goal on this SoftBPM project (i.e., a $100,000 and as much budget 20 month schedule***)… | ***very vague*** ***nature of your goal on this SoftBPM project (i.e., as much budget and schedule as needed***)… |

| | | |
|---|---|---|
| Environment Establishment<br><br>EE(1): The organization<br>EE(2): Subject role | You are a lead software developer of SoftBiz, a company that specializes in developing software products. You are assigned to a promising and lucrative project aimed at developing a business process management software product for external sale. This development effort is named SoftBPM and will appeal to companies that are experiencing significant costs due to inefficiently managed business processes. SoftBPM enables efficient management of business processes. Your goal is to deliver this completed fully functional, software product. | |
| Factor Manipulations<br><br>CF(1): Goal difficulty and Goal specificity<br><br>(Difficult, Specific)<br>(Difficult, Vague) | The budget and schedule for the project are ***very specific***. You have ***only a $60,000 budget and a 10 month schedule*** to complete the project. This is a ***very difficult goal*** considering other projects you and your company have undertaken in the past (See Figure below). SoftBPM project is very important for your career prospects within the company.<br><br>  <br> | The budget and schedule for the project are ***very vague***. You need to complete this project with ***as little budget and as short schedule as possible***. This is a ***very difficult goal*** considering other projects you and your company have undertaken in the past. SoftBPM project is very important for your career prospects within the company. |
| Level of completion | At this point, your project is 10% complete and you are already behind schedule and over budget relative to where you should be for this completion level. | At this point, your project is 90% complete and you are already behind schedule and over budget relative to where you should be for this completion level. |
| Project uncertainty and Negative feedback | Moreover, it has come to your attention that there is an unexpected and very serious technical problem with SoftBPM that will need to be overcome in order to complete the project successfully. Your technical people have informed you that it may be impossible to solve the problem. Now your | |

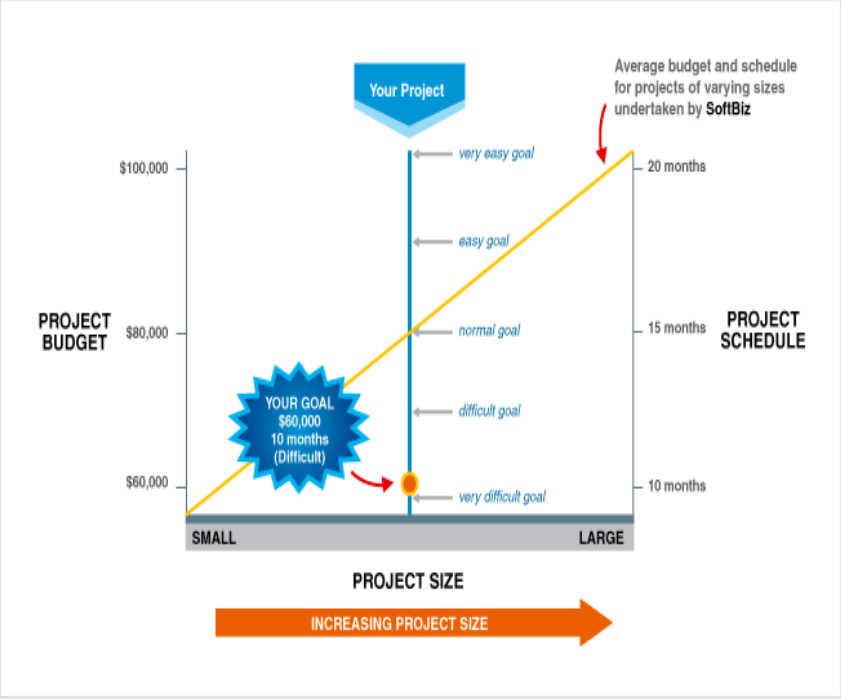
| | | |
|---|---|---|
| | company is faced with the decision of whether or not to continue with the SoftBPM project. You are required to make a recommendation to your upper management regarding this. | |
| Your Role | ***Considering the very difficult and very specific nature of your goal on this SoftBPM project (i.e., a $60,000 and a 10 month schedule***)… | ***Considering the very difficult and very vague nature of your goal on this SoftBPM project (i.e as little budget and as short schedule as possible***)… |

# Appendix H: Sample Scenario

**INSTRUCTIONS:** The business case that follows is part of a study that examines business decision-making. Please take a few minutes to read over the case and to answer the questionnaire that follows. Read the material and complete the questions in the order in which they are presented—Do NOT skip ahead. There are no right or wrong answers.

## SoftBiz Software Corporation (A)

You are a lead software developer of SoftBiz, a company that specializes in developing software products. You are assigned to a promising and lucrative project aimed at developing a business process management software product for external sale. This development effort is named SoftBPM and will appeal to companies that are experiencing significant costs due to inefficiently managed business processes. SoftBPM enables efficient management of business processes. Your goal is to deliver this completed fully functional, software product. The budget and schedule for the project are ***very specific***. You have ***only a $60,000 budget and a 10 month schedule*** to complete the project. This is a ***very difficult goal*** considering other projects you and your company have undertaken in the past (See Figure below). SoftBPM project is very important for your career prospects within the company.



Please answer as the software developer of the project
Mark only one box for each statement

| **Putting yourself in the role of the software developer, mark only one of the seven boxes to the right of each question** | Strongly Disagree | Disagree | Slightly Disagree | Neutral | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 1. Quite frankly, I don't care if I achieve this goal or not | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. I am strongly committed to pursuing this goal | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. It wouldn't take much to make me abandon this goal | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. I think this goal is a good deal to shoot for | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. I am willing to put in a great deal of effort to achieve this goal | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| **Now, please answer the following questions about your SoftBPM project goal** | Strongly Disagree | | | | | | | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| 1. My goal is very difficult relative to other projects SoftBiz has undertaken in the past | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| | Not at all Challenging | | | | | | | Very Challenging |
|---|---|---|---|---|---|---|---|---|
| 2. The budget and schedule goal for completing the project was | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| | Very Vague | | | | | | | Very Specific |
|---|---|---|---|---|---|---|---|---|
| 3. The budget and schedule goal was | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| | Strongly Disagree | | | | | | | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| 4. My budget and schedule goal was specific and concrete | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

# Case (B)

At this point, your project is 90% complete and you are already behind schedule and over budget relative to where you should be for this completion level. Moreover, it has come to your attention that there is an unexpected and very serious technical problem with SoftBPM that will need to be overcome in order to complete the project successfully. Your technical people have informed you that it may be impossible to solve the problem. Now your company is faced with the decision of whether or not to continue with the SoftBPM project. You are required to make a recommendation to your upper management regarding this. ***Considering the very difficult and very specific nature of your goal on this SoftBPM project (i.e., a $60,000 budget and a 10 month schedule***)…

1. To what degree do you lean towards discontinuing or continuing the project

| | **Lean towards Discontinuing** | | | | **Lean towards Continuing** | | | |
|---|---|---|---|---|---|---|---|---|
| | Definitely | Strongly | Some-what | Slightly | Slightly | Some-what | Strongly | Definitely |
| | \| | \| | \| | \| | \| | \| | \| | \| |
| | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**[Mark only one of the 8 boxes]**

2. How strongly will you recommend to discontinue or continue the project

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| | \| | \| | \| | \| | \| | \| | \| | \| |
| | Definitely | Strongly | Some-what | Slightly | Slightly | Some-what | Strongly | Definitely |
| | **Lean towards Discontinuing** | | | | **Lean towards Continuing** | | | |

Now please explain the basis for you decision:

_____

_____

_____

_____

Now, please answer the questions below.

| | Initial Stages of Completion | | | | | | | Final stages of completion |
|---|---|---|---|---|---|---|---|---|
| 1. The state of the project was | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| | Very far from completion | | | | | | | Very close to Completion |
|---|---|---|---|---|---|---|---|---|
| 2. The state of the project was | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| **Putting yourself in the role of the project manager, mark only one of the seven boxes to the right of each question** | Strongly Disagree | Disagree | Slightly Disagree | Neutral | Slightly Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 1. I would be highly embarrassed if I failed to complete this project | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. My career would be negatively impacted if I fail to successfully | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. My manager and co-workers would view me as a quitter if I gave up on | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. I would feel horrible, if I failed to complete this project successfully | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

Instructions: Please provide the following information about yourself by filling in the blanks or checking the appropriate box.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 1. I am confident I get the success I deserve in life | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. Sometimes I feel depressed | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. When I try, I generally succeed | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. Sometimes when I fail I feel worthless | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. I complete tasks successfully | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. Sometimes, I do not feel in control of my work | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. Overall, I am satisfied with myself | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. I am filled with doubts about my competence | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9. I determine what will happen to my life | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10. I do not feel in control of my success in my career | ☐ | ☐ | ☐ | ☐ | ☐ |
| 11. I am capable of coping with most of my problems | ☐ | ☐ | ☐ | ☐ | ☐ |
| 12. There are times when things look pretty bleak and hopeless to me | ☐ | ☐ | ☐ | ☐ | ☐ |

**Instructions: Please provide the following information about yourself by filling in the blanks or checking the appropriate box.**

| | Very Inaccurate | Moderately Inaccurate | Neither Accurate nor Inaccurate | Moderately Accurate | Very Accurate |
|---|---|---|---|---|---|
| 1. I try to follow the rules | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. I keep my promises | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. I pay my bills on time. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. I tell the truth. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. I listen to my conscience | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. I break rules. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. I break my promises. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. I get others to do my duties. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9. I do the opposite of what is asked. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10. I misrepresent the facts. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 11. I get chores done right away. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 12. I am always prepared. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 13. I start tasks right away. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 14. I get to work at once. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 15. I carry out my plans. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 16. I find it difficult to get down to work. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 17. I waste my time. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 18. I need a push to get started. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 19. I have difficulty starting tasks. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 20. I postpone decisions. | ☐ | ☐ | ☐ | ☐ | ☐ |

| | Very Inaccurate | Moderately Inaccurate | Neither Accurate nor Inaccurate | Moderately Accurate | Very Accurate |
|---|---|---|---|---|---|
| 21. I make plans and stick to them | ☐ | ☐ | ☐ | ☐ | ☐ |
| 22. I do just enough work to get by | ☐ | ☐ | ☐ | ☐ | ☐ |
| 23. I don't see things through | ☐ | ☐ | ☐ | ☐ | ☐ |
| 24. I shirk my duties | ☐ | ☐ | ☐ | ☐ | ☐ |
| 25. I go straight for the goal | ☐ | ☐ | ☐ | ☐ | ☐ |
| 26. I work hard | ☐ | ☐ | ☐ | ☐ | ☐ |
| 27. I turn plans into actions | ☐ | ☐ | ☐ | ☐ | ☐ |
| 28. I plunge into tasks with all my heart | ☐ | ☐ | ☐ | ☐ | ☐ |
| 29. I do more than what is expected of me | ☐ | ☐ | ☐ | ☐ | ☐ |
| 30. I set high standards for myself and others | ☐ | ☐ | ☐ | ☐ | ☐ |
| 31. I demand quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| 32. I am not highly motivated to succeed | ☐ | ☐ | ☐ | ☐ | ☐ |
| 33. I do just enough work to get by | ☐ | ☐ | ☐ | ☐ | ☐ |
| 34. I put little time and effort into my work | ☐ | ☐ | ☐ | ☐ | ☐ |

**BACKGROUND Questionnaire**

1. What is your age? _____ **years**

2. What is your gender? **Male** ❑ **Female** ❑

3. What is your undergraduate major? _____

4. How many years of work experience do you have? _____ **years**